

Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	960.82928884	
1	2	781.83362452	4.10041167
2	1	780.63871503	0.58653206
3	2	774.97403782	0.00755528
4	1	774.65296099	0.00005472
5	1	774.65071164	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03043	0.01213	2.51	0.0061
Variance	Intercept	0.2352	0.04895	4.81	<.0001
SP(POW)	Intercept	0.4401	0.1222	3.60	0.0003
Residual		0.1783	0.01394	12.80	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	774.7
AIC (smaller is better)	782.7
AICC (smaller is better)	782.7
BIC (smaller is better)	790.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-180.83	58.7630	14.1	-3.08	0.0081
season	1	-0.1298	0.2167	70.7	-0.60	0.5512
season	2	0.3840	0.2705	81.3	1.42	0.1595
season	3	0.003578	0.2565	83.1	0.01	0.9889
season	4	-0.07344	0.2677	82.4	-0.27	0.7845
season	5	-0.1118	0.2623	77.1	-0.43	0.6710
season	6	0.1261	0.2627	76.2	0.48	0.6326
season	7	0.3092	0.2676	78.1	1.16	0.2513
season	8	0.3685	0.2618	80.8	1.41	0.1631
season	9	0.2534	0.2562	82.5	0.99	0.3255
season	10	0.08101	0.2459	81.3	0.33	0.7426
season	11	0.02939	0.2255	69.9	0.13	0.8967
season	12	0	.	.	.	.
date1		0.09004	0.02928	14.1	3.08	0.0081
temp_dev		0.02566	0.04110	201	0.62	0.5332

Mixed Model With Local Nugget

The Mixed Procedure

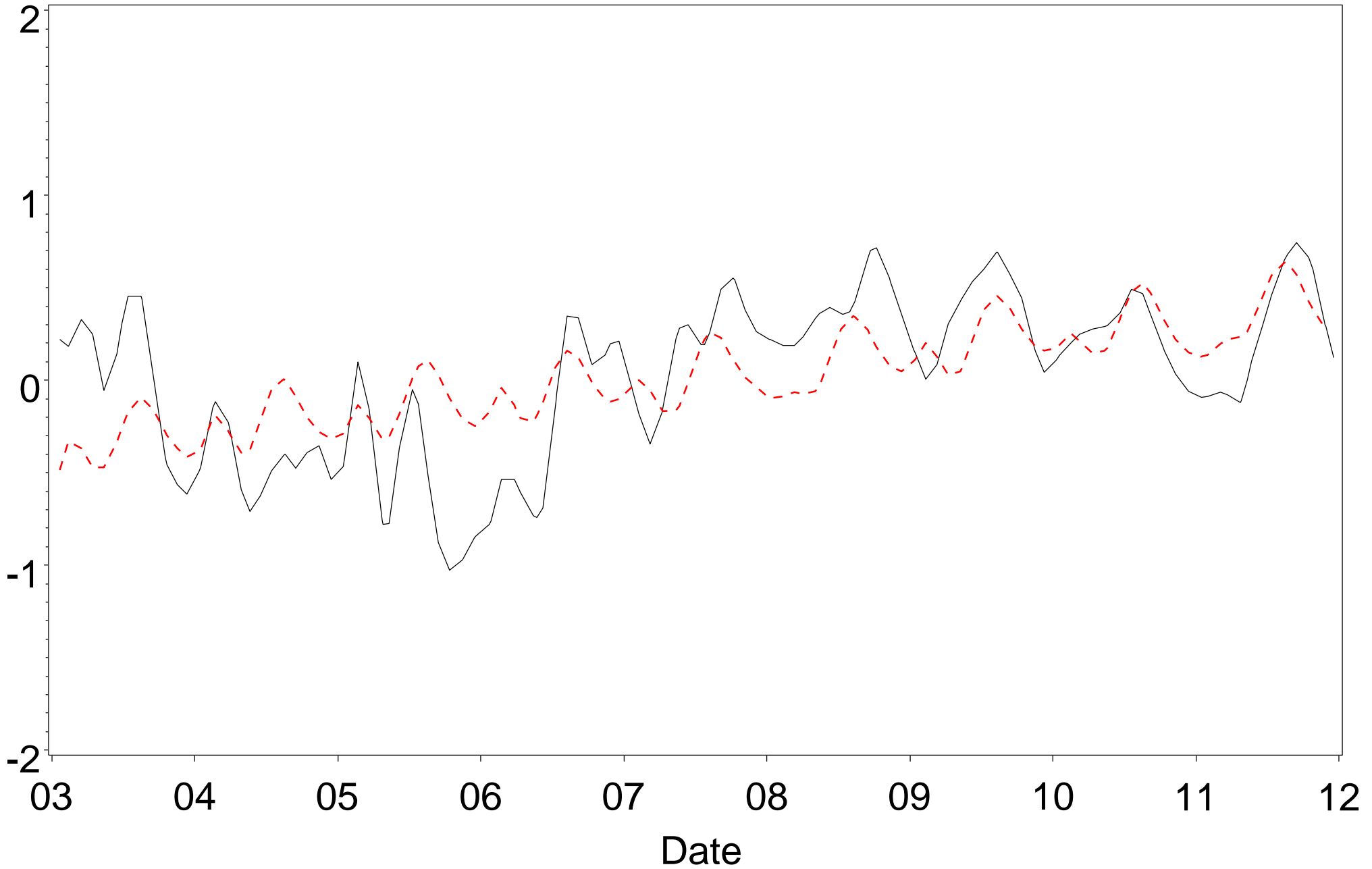
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.9	0.99	0.4633
date1	1	14.1	9.46	0.0081
temp_dev	1	201	0.39	0.5332

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

Log Scale
BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
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Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1218.77662889	
1	2	1053.41745162	0.03194376
2	1	1049.52790577	0.01014608
3	2	1048.52912420	0.00117451
4	1	1048.41276905	0.00000292
5	1	1048.41248864	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.09987	0.03235	3.09	0.0010
Variance	Intercept	0.3543	0.09273	3.82	<.0001
SP(POW)	Intercept	0.6429	0.1087	5.92	<.0001
Residual		0.3308	0.02613	12.66	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1048.4
AIC (smaller is better)	1056.4
AICC (smaller is better)	1056.5
BIC (smaller is better)	1064.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		269.60	90.1836	8.5	2.99	0.0162
season	1	-0.1305	0.2393	78	-0.55	0.5871
season	2	-0.4013	0.3034	73.1	-1.32	0.1901
season	3	-0.6452	0.2960	71.5	-2.18	0.0325
season	4	-0.3329	0.3153	74.2	-1.06	0.2945
season	5	-0.4610	0.3135	71.4	-1.47	0.1458
season	6	0.2077	0.3156	71.3	0.66	0.5125
season	7	0.5784	0.3184	71.6	1.82	0.0734
season	8	0.6053	0.3091	72.9	1.96	0.0540
season	9	1.3116	0.2950	70.6	4.45	<.0001
season	10	0.9306	0.2762	71.1	3.37	0.0012
season	11	0.08272	0.2478	75.2	0.33	0.7395
season	12	0	.	.	.	.
date1		-0.1340	0.04493	8.5	-2.98	0.0164
temp_dev		-0.01156	0.04900	139	-0.24	0.8139

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.1	5.29	<.0001
date1	1	8.5	8.90	0.0164
temp_dev	1	139	0.06	0.8139

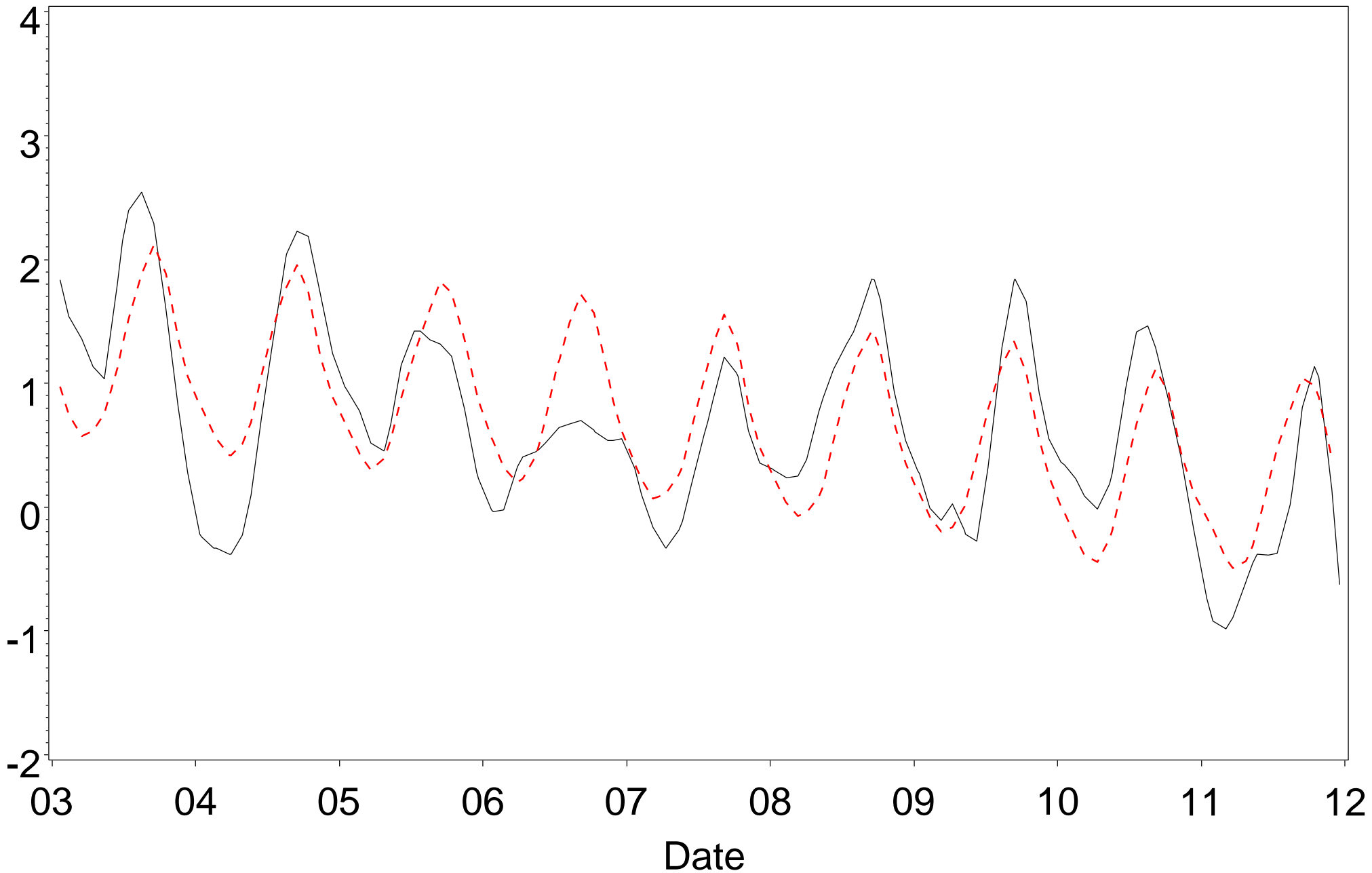
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1401.36596054	
1	2	930.29901781	0.06324115
2	1	927.59535324	0.01242657
3	2	927.15379670	0.00175439
4	1	927.09013207	0.00000318
5	1	927.09001942	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1474	0.03994	3.69	0.0001
Variance	Intercept	0.8838	0.2796	3.16	0.0008
SP(POW)	Intercept	0.7673	0.07871	9.75	<.0001
Residual		0.2040	0.01598	12.76	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	927.1
AIC (smaller is better)	935.1
AICC (smaller is better)	935.2
BIC (smaller is better)	942.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		288.79	167.88	5.85	1.72	0.1374
season	1	-0.6261	0.2708	78.2	-2.31	0.0234
season	2	-0.5106	0.3586	75.1	-1.42	0.1587
season	3	-0.8191	0.3668	72.9	-2.23	0.0286
season	4	-1.3691	0.3961	74.1	-3.46	0.0009
season	5	-1.2240	0.4016	72.6	-3.05	0.0032
season	6	-1.0022	0.4058	72.6	-2.47	0.0159
season	7	-0.4655	0.4067	72.7	-1.14	0.2561
season	8	0.1287	0.3904	73.6	0.33	0.7426
season	9	0.8156	0.3664	72.4	2.23	0.0291
season	10	0.5108	0.3311	73.5	1.54	0.1272
season	11	-0.04089	0.2807	76.3	-0.15	0.8846
season	12	0	.	.	.	.
date1		-0.1426	0.08363	5.85	-1.71	0.1403
temp_dev		-0.00511	0.04894	211	-0.10	0.9169

Mixed Model With Local Nugget

The Mixed Procedure

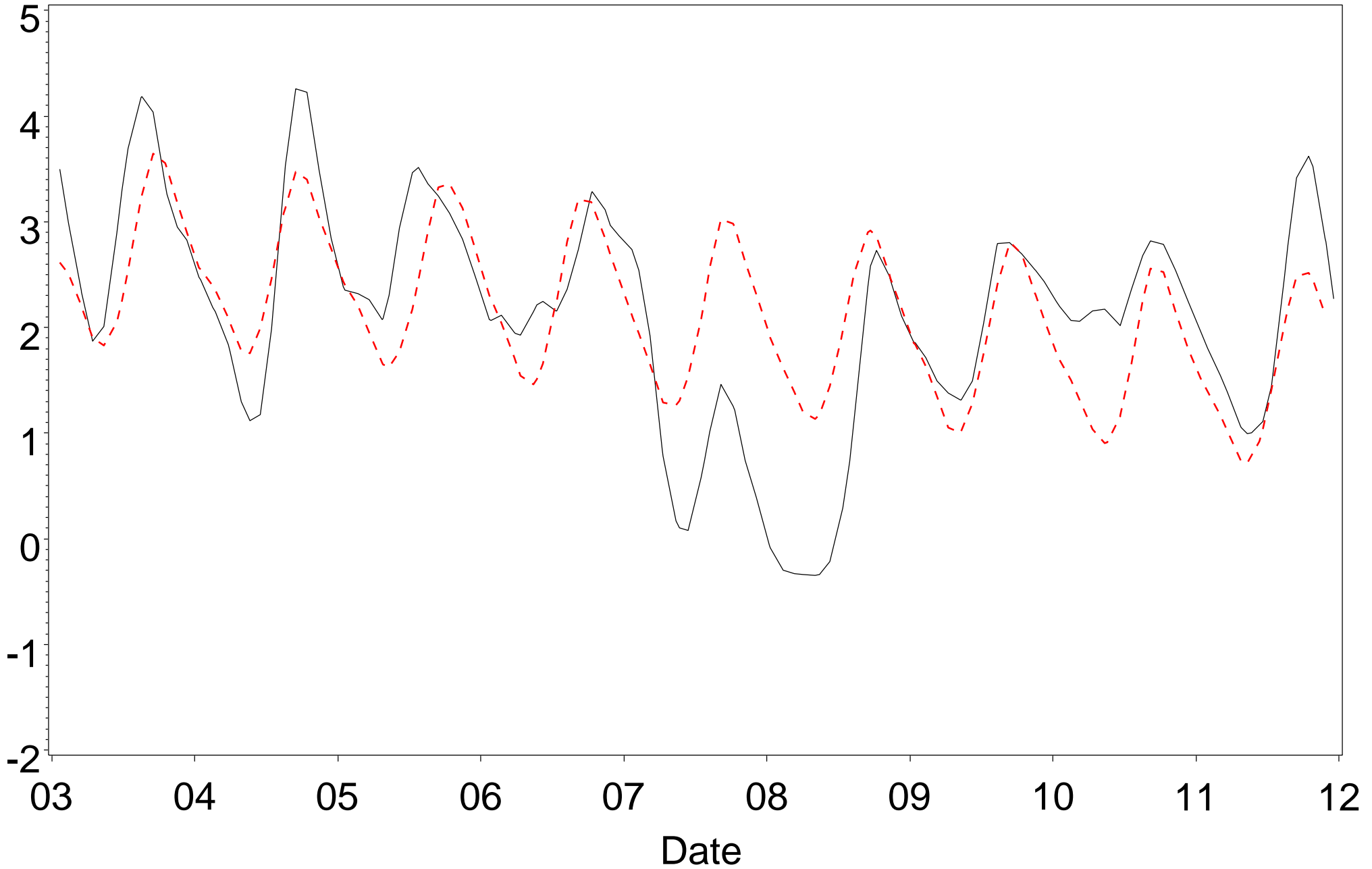
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.7	3.66	0.0004
date1	1	5.85	2.91	0.1403
temp_dev	1	211	0.01	0.9169

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Color (PCU) and Sample Level = Surface

Log Scale
COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	492
Number of Observations Not Used	26

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1072.47853958	
1	4	797.95144790	2.15921291
2	1	695.32616192	.
3	2	669.33918452	0.13156125
4	2	659.35247571	0.04613423
5	2	653.29420099	0.00828811
6	1	652.23439204	0.00049993
7	1	652.17534828	0.00000243
8	1	652.17507267	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004094	0.004889	0.84	0.2012
Variance	Intercept	0.4904	0.07831	6.26	<.0001
SP(POW)	Intercept	0.002730	0.1115	0.02	0.9805
Residual		0.1116	0.008807	12.67	<.0001

Fit Statistics	
-2 Res Log Likelihood	652.2
AIC (smaller is better)	660.2
AICC (smaller is better)	660.3
BIC (smaller is better)	667.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		16.4679	56.1812	33.5	0.29	0.7712
season	1	-0.00172	0.3626	63.3	-0.00	0.9962
season	2	-0.02322	0.3877	86.7	-0.06	0.9524
season	3	0.01315	0.3629	86.5	0.04	0.9712
season	4	0.08139	0.3734	86.9	0.22	0.8280
season	5	0.06222	0.3630	86.6	0.17	0.8643
season	6	0.006907	0.3630	86.5	0.02	0.9849
season	7	-0.07528	0.3631	86.5	-0.21	0.8363

Mixed Model With Local Nugget

The Mixed Procedure

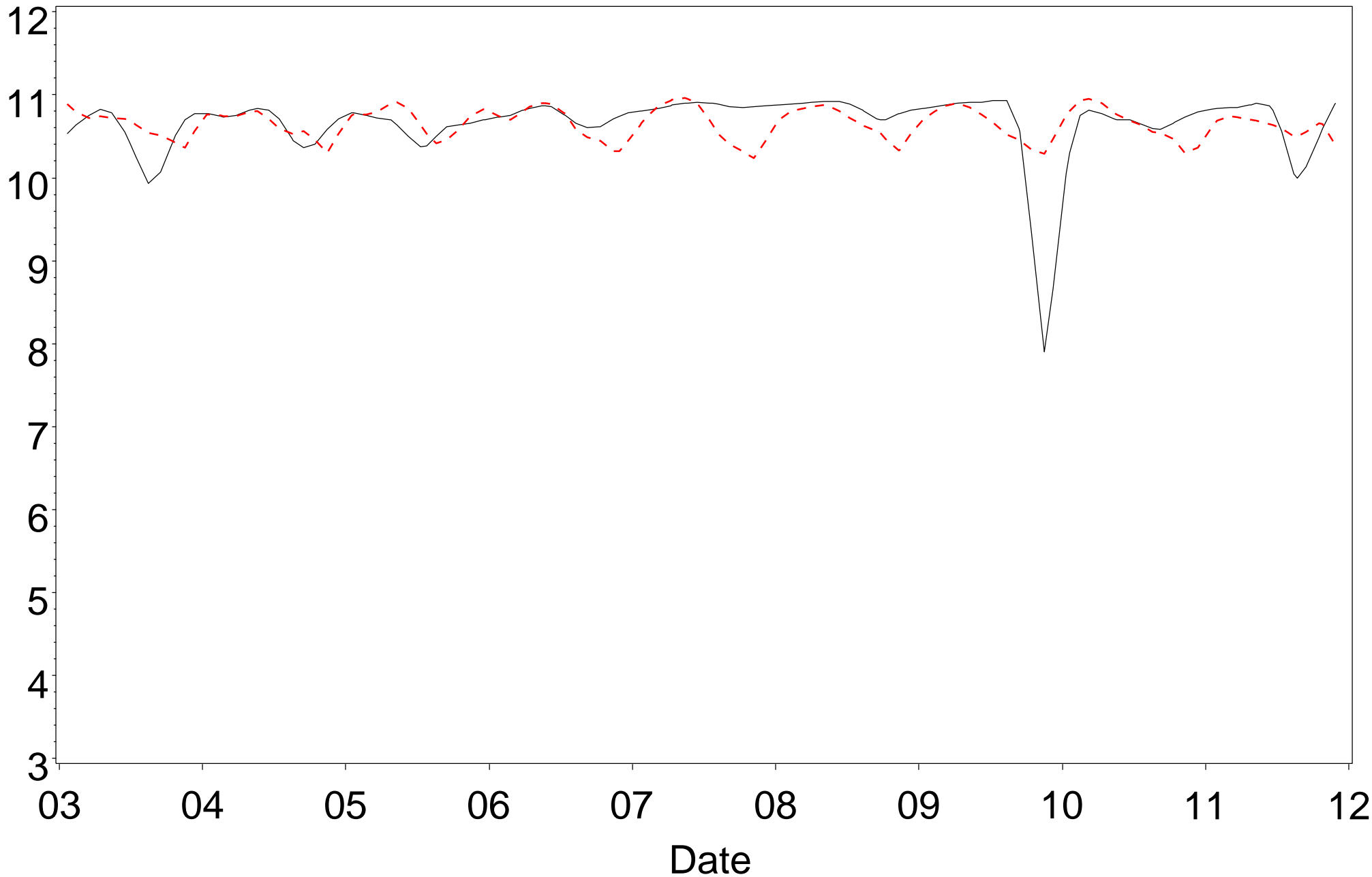
Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.3762	0.3636	86.8	-1.03	0.3037
season	9	-0.2227	0.3634	86.5	-0.61	0.5415
season	10	-0.1410	0.3655	86.6	-0.39	0.7006
season	11	-0.8709	0.3754	66.5	-2.32	0.0234
season	12	0	.	.	.	.
date1		-0.00284	0.02799	33.5	-0.10	0.9199
temp_dev		-0.1112	0.04111	417	-2.71	0.0071

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.1	1.09	0.3825
date1	1	33.5	0.01	0.9199
temp_dev	1	417	7.32	0.0071

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale
COND
Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	481
Number of Observations Not Used	37

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1117.76959504	
1	2	1035.93175716	0.10471537
2	2	1031.04197113	0.04814638
3	2	1026.59965606	0.00082585
4	1	1026.52864528	0.00000104
5	1	1026.52855737	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03968	0.01802	2.20	0.0138
Variance	Intercept	0.2467	0.05642	4.37	<.0001
SP(POW)	Intercept	0.2418	0.1657	1.46	0.1444
Residual		0.3314	0.02589	12.80	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1026.5
AIC (smaller is better)	1034.5
AICC (smaller is better)	1034.6
BIC (smaller is better)	1042.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		111.41	53.2858	17.9	2.09	0.0511
season	1	0.2733	0.2646	52.4	1.03	0.3064
season	2	0.6381	0.3025	68.7	2.11	0.0386
season	3	-0.1745	0.2877	70.7	-0.61	0.5462
season	4	-0.6198	0.3077	73	-2.01	0.0477
season	5	-1.3306	0.2873	69.5	-4.63	<.0001
season	6	-1.1243	0.2871	69.3	-3.92	0.0002
season	7	-1.4331	0.2869	69	-4.99	<.0001
season	8	-1.2044	0.2891	70.9	-4.17	<.0001
season	9	-1.3948	0.2951	70.5	-4.73	<.0001
season	10	-0.9622	0.2851	68.6	-3.38	0.0012
season	11	-0.1693	0.2756	52.6	-0.61	0.5417
season	12	0	.	.	.	.
date1		-0.05189	0.02655	17.9	-1.95	0.0664
temp_dev		-0.05852	0.05143	158	-1.14	0.2569

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	57.2	9.84	<.0001
date1	1	17.9	3.82	0.0664
temp_dev	1	158	1.29	0.2569

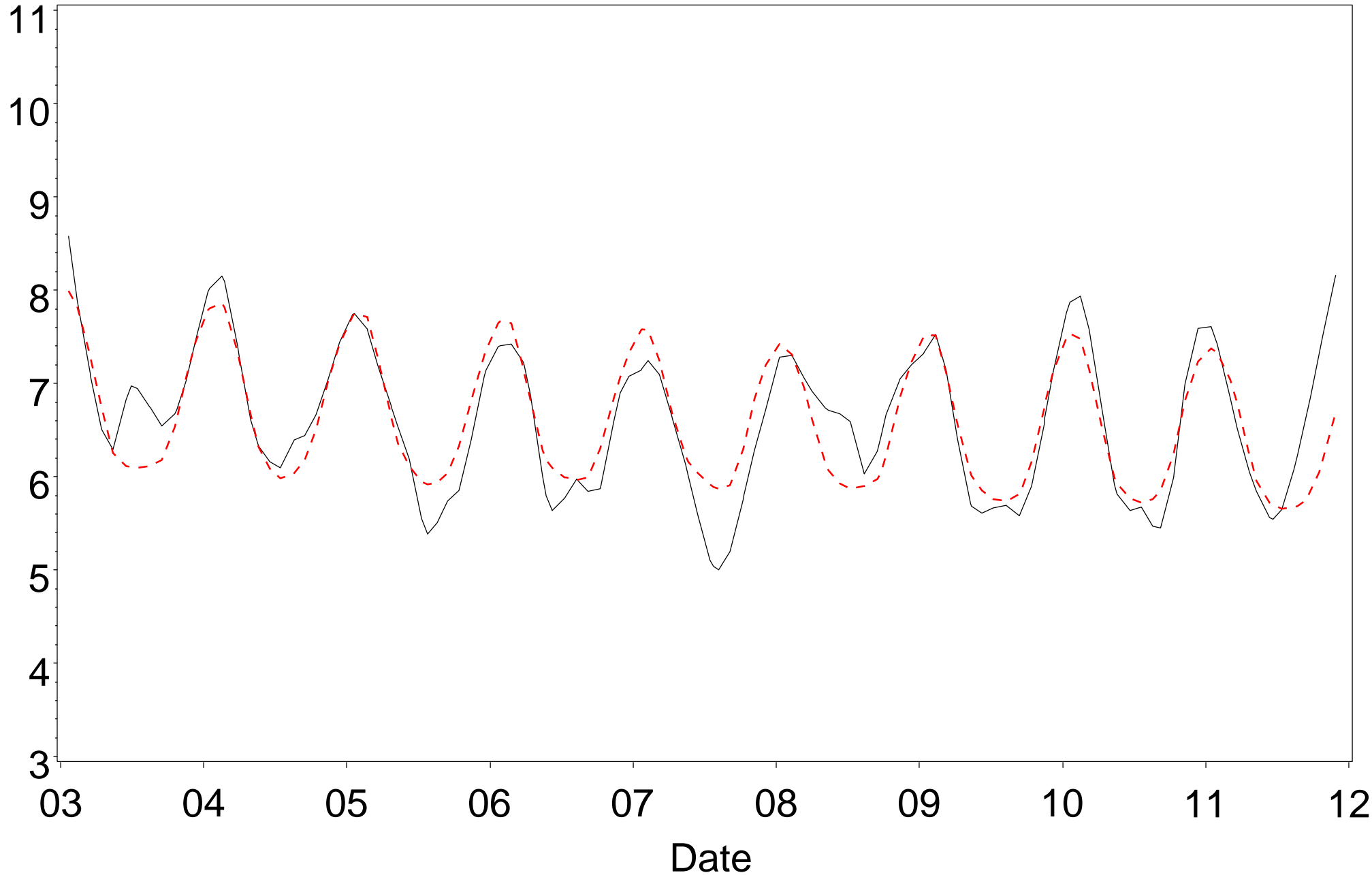
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1208.06313133	
1	2	1043.32441381	0.08669177
2	1	1032.83416810	0.07750930
3	2	1028.58112080	0.04204569
4	1	1024.45115710	0.00310369
5	1	1024.17504064	0.00002954
6	1	1024.17254541	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08583	0.02623	3.27	0.0005
Variance	Intercept	0.3845	0.07587	5.07	<.0001
SP(POW)	Intercept	0.3456	0.1207	2.86	0.0042
Residual		0.2911	0.02277	12.78	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1024.2
AIC (smaller is better)	1032.2
AICC (smaller is better)	1032.3
BIC (smaller is better)	1039.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-11.8802	69.2575	18.3	-0.17	0.8657
season	1	-0.1320	0.2935	72.2	-0.45	0.6541
season	2	-0.1641	0.3604	85.2	-0.46	0.6501
season	3	-0.6814	0.3351	84.2	-2.03	0.0452
season	4	-0.3858	0.3474	83.5	-1.11	0.2700
season	5	-0.2881	0.3380	79.1	-0.85	0.3966
season	6	0.2396	0.3383	78.6	0.71	0.4810
season	7	0.4487	0.3454	79.7	1.30	0.1977
season	8	0.9509	0.3389	81.9	2.81	0.0063
season	9	1.4703	0.3344	83.2	4.40	<.0001
season	10	0.9387	0.3261	84.4	2.88	0.0051
season	11	0.2368	0.3053	72	0.78	0.4404
season	12	0	.	.	.	.
date1		0.005680	0.03450	18.3	0.16	0.8710
temp_dev		0.1288	0.05420	217	2.38	0.0184

Mixed Model With Local Nugget

The Mixed Procedure

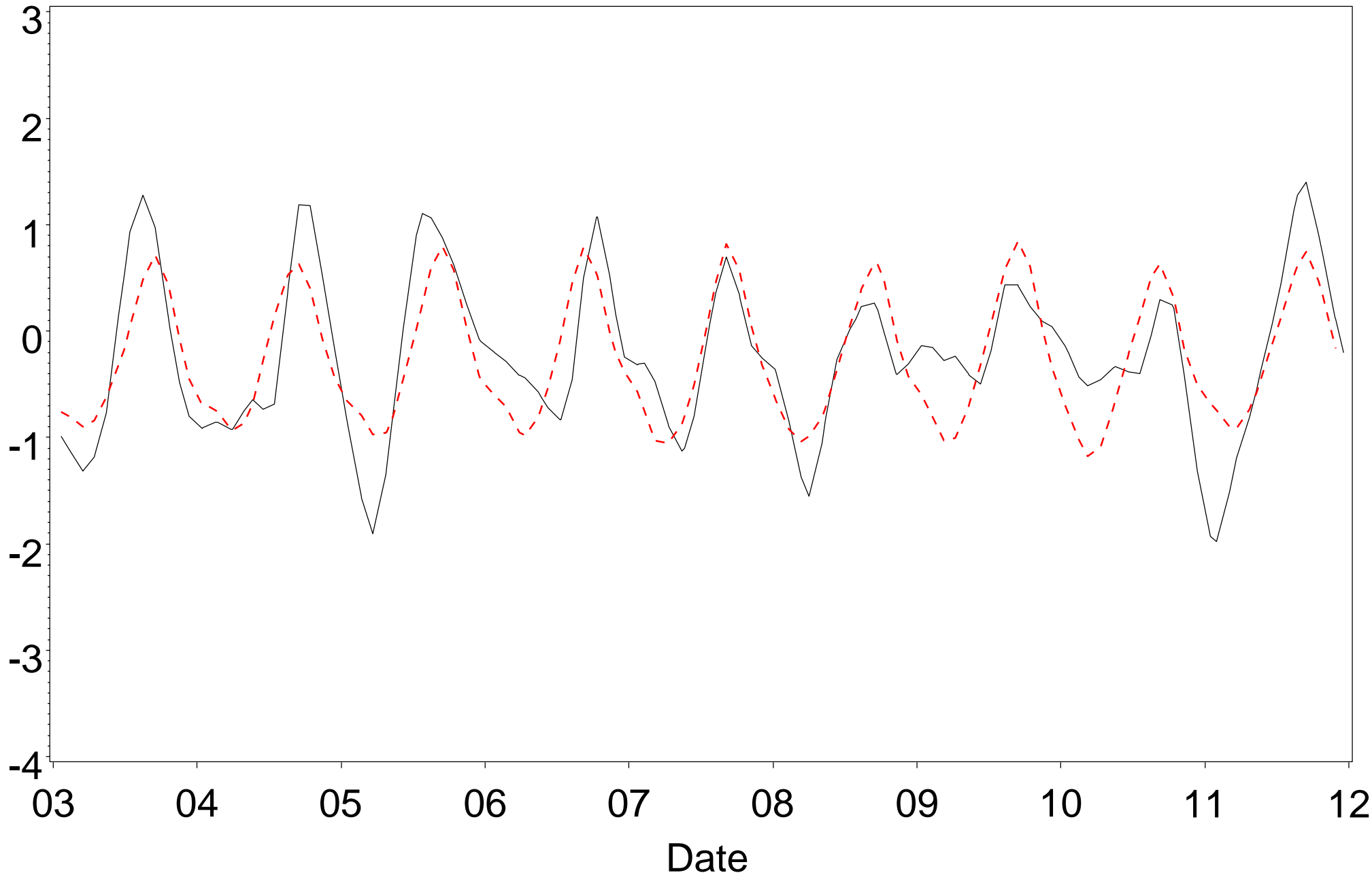
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.2	5.43	<.0001
date1	1	18.3	0.03	0.8710
temp_dev	1	217	5.64	0.0184

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale Parameter = Dissolved Silica (as SiO₂) (mg/L) and Sample Level = Surface

DSI_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	400
Number of Observations Not Used	118

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	658.68140269	
1	3	600.66074829	0.08347980
2	2	595.92903245	0.04962170
3	1	592.70520069	0.00379101
4	1	592.47032489	0.00003768
5	1	592.46810741	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006463	0.007743	0.83	0.2019
Variance	Intercept	0.1024	0.02607	3.93	<.0001
SP(POW)	Intercept	0.4322	0.1550	2.79	0.0053
Residual		0.1836	0.01597	11.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	592.5
AIC (smaller is better)	600.5
AICC (smaller is better)	600.6
BIC (smaller is better)	608.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		65.5650	43.7539	13.9	1.50	0.1564
season	1	0.04903	0.1897	64.4	0.26	0.7969
season	2	-0.01122	0.2142	67.2	-0.05	0.9584
season	3	0.05371	0.1972	70.7	0.27	0.7862
season	4	-0.04242	0.2069	73.8	-0.20	0.8381
season	5	-0.1859	0.1981	71.3	-0.94	0.3513
season	6	0.05327	0.2017	70.9	0.26	0.7924
season	7	0.2865	0.1962	68.7	1.46	0.1488
season	8	0.3784	0.2027	73.7	1.87	0.0659
season	9	0.4310	0.1990	71.7	2.17	0.0337
season	10	0.7391	0.1968	67.6	3.76	0.0004
season	11	0.02253	0.1846	62.1	0.12	0.9033
season	12	0	.	.	.	.
date1		-0.03230	0.02180	13.9	-1.48	0.1609
temp_dev		0.02045	0.03575	129	0.57	0.5682

Mixed Model With Local Nugget

The Mixed Procedure

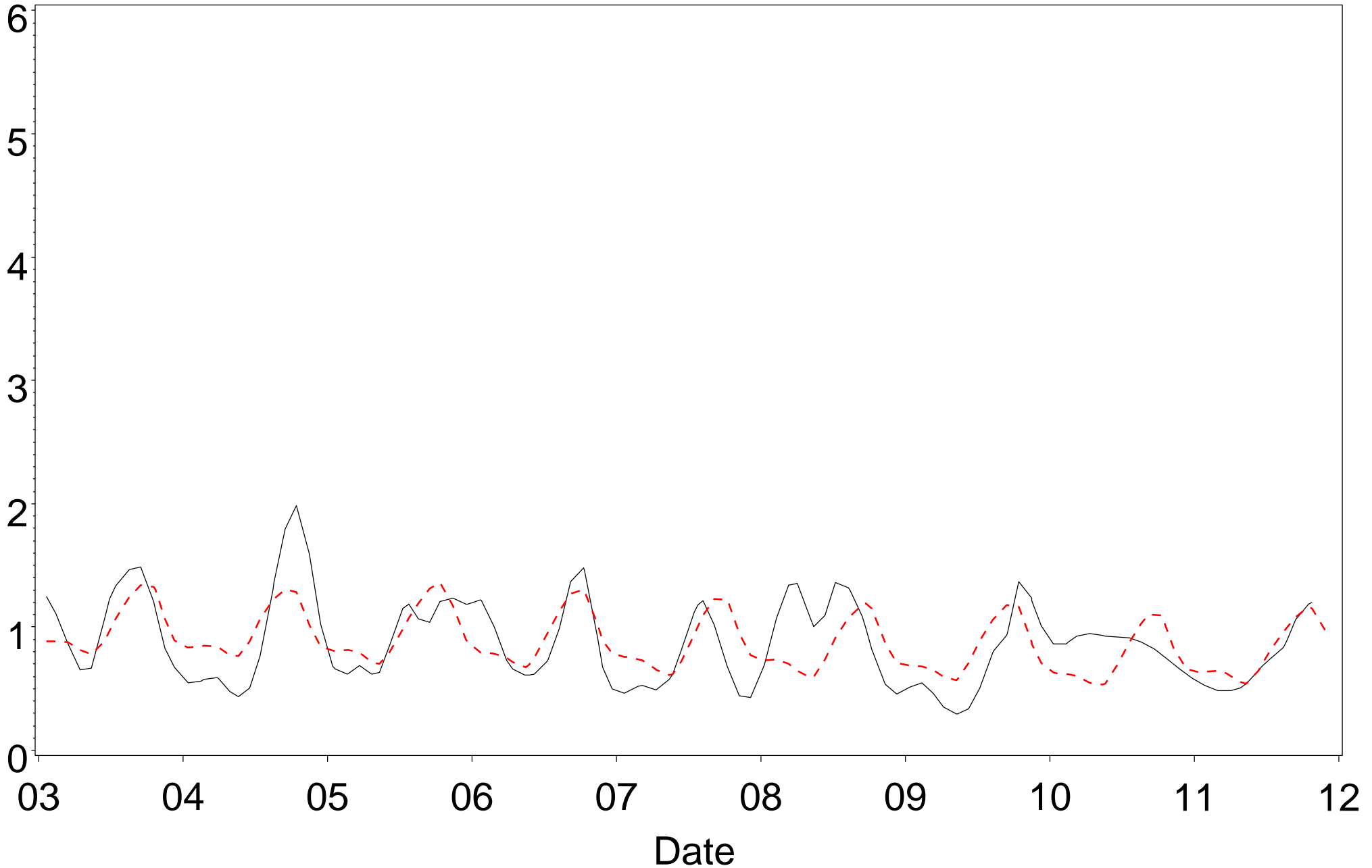
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	62.3	2.91	0.0037
date1	1	13.9	2.19	0.1609
temp_dev	1	129	0.33	0.5682

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1228.08413574	
1	2	861.69979512	3.21636107
2	1	851.23036006	2.19704389
3	2	847.78412282	0.92863324
4	1	843.16041186	0.04767410
5	1	842.82402395	0.00047202
6	1	842.82078495	0.00000006
7	1	842.82078456	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.5825	0.1125	5.18	<.0001
SP(POW)	Intercept	0.4441	0.1049	4.23	<.0001
Residual		0.1976	0.01439	13.73	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	842.8
AIC (smaller is better)	848.8
AICC (smaller is better)	848.9
BIC (smaller is better)	854.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		140.98	91.2108	15.8	1.55	0.1419
season	1	-0.1802	0.3130	69.1	-0.58	0.5667
season	2	-0.3032	0.3957	79.7	-0.77	0.4458
season	3	-0.1529	0.3803	81.3	-0.40	0.6888
season	4	-0.1481	0.3966	79.1	-0.37	0.7099
season	5	0.06659	0.3908	74.4	0.17	0.8652
season	6	-0.07045	0.3915	73.4	-0.18	0.8577
season	7	0.004101	0.3989	76	0.01	0.9918
season	8	0.009432	0.3885	77.7	0.02	0.9807
season	9	-0.1420	0.3810	81.5	-0.37	0.7103
season	10	-0.1042	0.3621	80.9	-0.29	0.7742
season	11	0.1910	0.3269	69.4	0.58	0.5609
season	12	0	.	.	.	.
date1		-0.07241	0.04544	15.9	-1.59	0.1308
temp_dev		0.04344	0.04867	341	0.89	0.3727

Mixed Model With Local Nugget

The Mixed Procedure

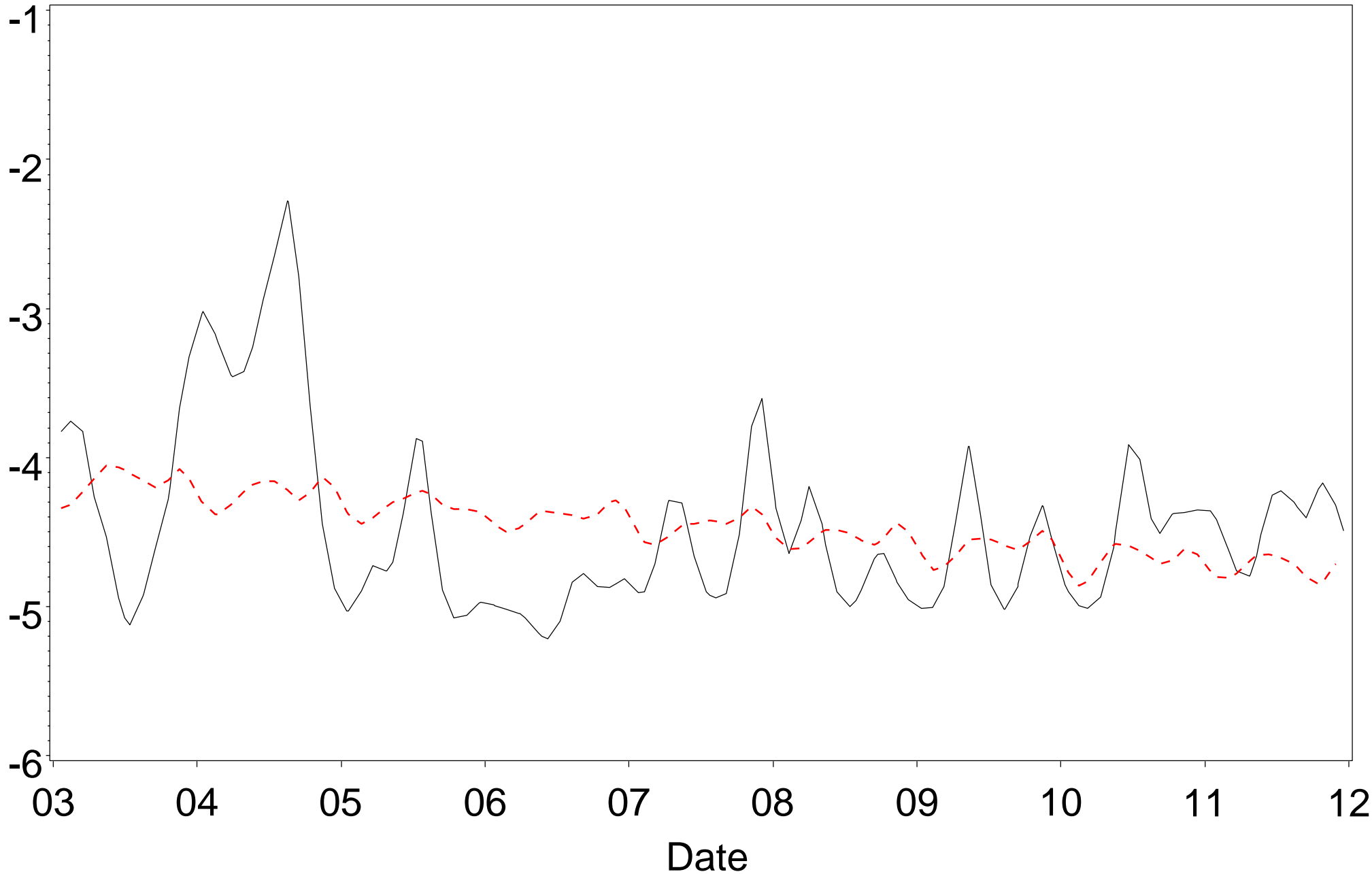
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.9	0.25	0.9926
date1	1	15.9	2.54	0.1308
temp_dev	1	341	0.80	0.3727

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1079.07793719	
1	2	894.36731373	0.44207229
2	2	882.55947609	0.74139991
3	2	875.29940558	0.48856925
4	2	870.02906841	0.05345199
5	1	869.64029969	0.00081592
6	1	869.63485325	0.00000029
7	1	869.63485129	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.001872	0.005464	0.34	0.3659
Variance	Intercept	0.3283	0.05924	5.54	<.0001
SP(POW)	Intercept	0.2030	0.1177	1.72	0.0846
Residual		0.2280	0.01737	13.13	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	869.6
AIC (smaller is better)	877.6
AICC (smaller is better)	877.7
BIC (smaller is better)	885.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		150.84	56.4684	25.2	2.67	0.0130
season	1	-0.1162	0.2853	69.5	-0.41	0.6850
season	2	0.04536	0.3388	85.7	0.13	0.8938
season	3	-0.5879	0.3091	84.7	-1.90	0.0606
season	4	-0.6418	0.3184	85	-2.02	0.0470
season	5	-0.2992	0.3095	83.4	-0.97	0.3365
season	6	-0.2442	0.3095	83.3	-0.79	0.4324
season	7	-0.2093	0.3177	84	-0.66	0.5118
season	8	-0.2538	0.3103	84.1	-0.82	0.4156
season	9	0.2962	0.3098	85	0.96	0.3418
season	10	0.004504	0.3070	85.8	0.01	0.9883
season	11	0.007828	0.2979	71.5	0.03	0.9791
season	12	0	.	.	.	.
date1		-0.07744	0.02813	25.2	-2.75	0.0108
temp_dev		0.01227	0.04782	272	0.26	0.7978

Mixed Model With Local Nugget

The Mixed Procedure

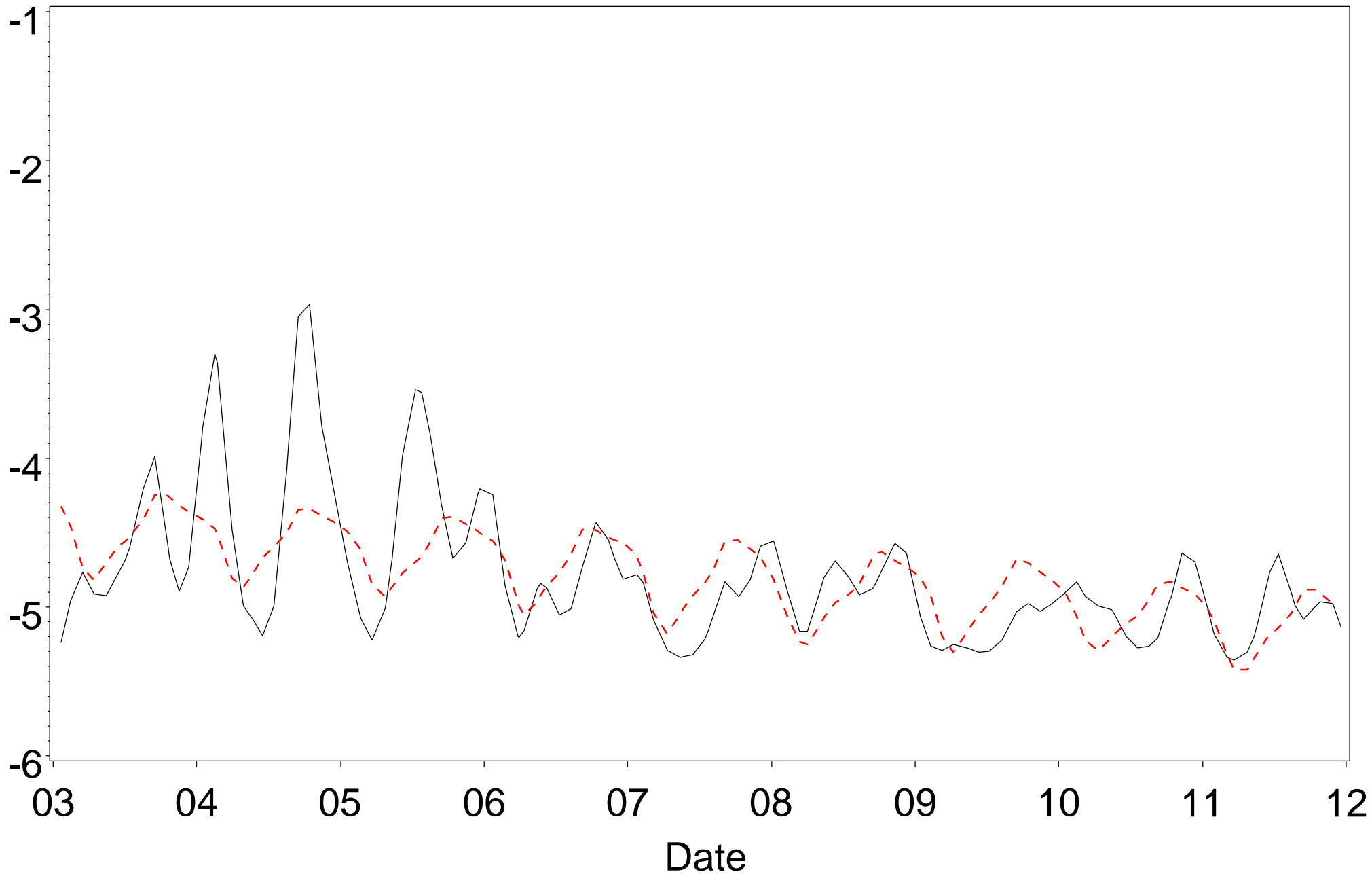
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.6	1.44	0.1740
date1	1	25.2	7.58	0.0108
temp_dev	1	272	0.07	0.7978

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	470
Number of Observations Not Used	48

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1251.20590197	
1	2	984.46939775	0.14986631
2	1	970.85162266	.
3	2	964.85686266	0.08809899
4	1	958.23195784	0.01261680
5	1	957.41064910	0.00025808
6	1	957.39502311	0.00000013
7	1	957.39501512	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.003586	0.007091	0.51	0.3065
Variance	Intercept	0.5878	0.1095	5.37	<.0001
SP(POW)	Intercept	0.3491	0.1086	3.22	0.0013
Residual		0.2715	0.02100	12.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	957.4
AIC (smaller is better)	965.4
AICC (smaller is better)	965.5
BIC (smaller is better)	973.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		233.54	84.4138	19.3	2.77	0.0122
season	1	0.3041	0.3425	71.7	0.89	0.3775
season	2	-0.08745	0.4229	83.2	-0.21	0.8367
season	3	-0.1184	0.3970	82.1	-0.30	0.7662
season	4	-0.5724	0.4110	80.4	-1.39	0.1676
season	5	0.1368	0.4019	76.7	0.34	0.7344
season	6	0.3024	0.4021	76.1	0.75	0.4544
season	7	0.3940	0.4121	77.5	0.96	0.3421
season	8	-0.1820	0.4131	79.2	-0.44	0.6607
season	9	0.7177	0.4079	82.6	1.76	0.0822
season	10	0.4753	0.3853	83.7	1.23	0.2207
season	11	-0.1250	0.3577	72.6	-0.35	0.7278
season	12	0	.	.	.	.
date1		-0.1195	0.04206	19.3	-2.84	0.0103
temp_dev		-0.06008	0.05631	309	-1.07	0.2869

Mixed Model With Local Nugget

The Mixed Procedure

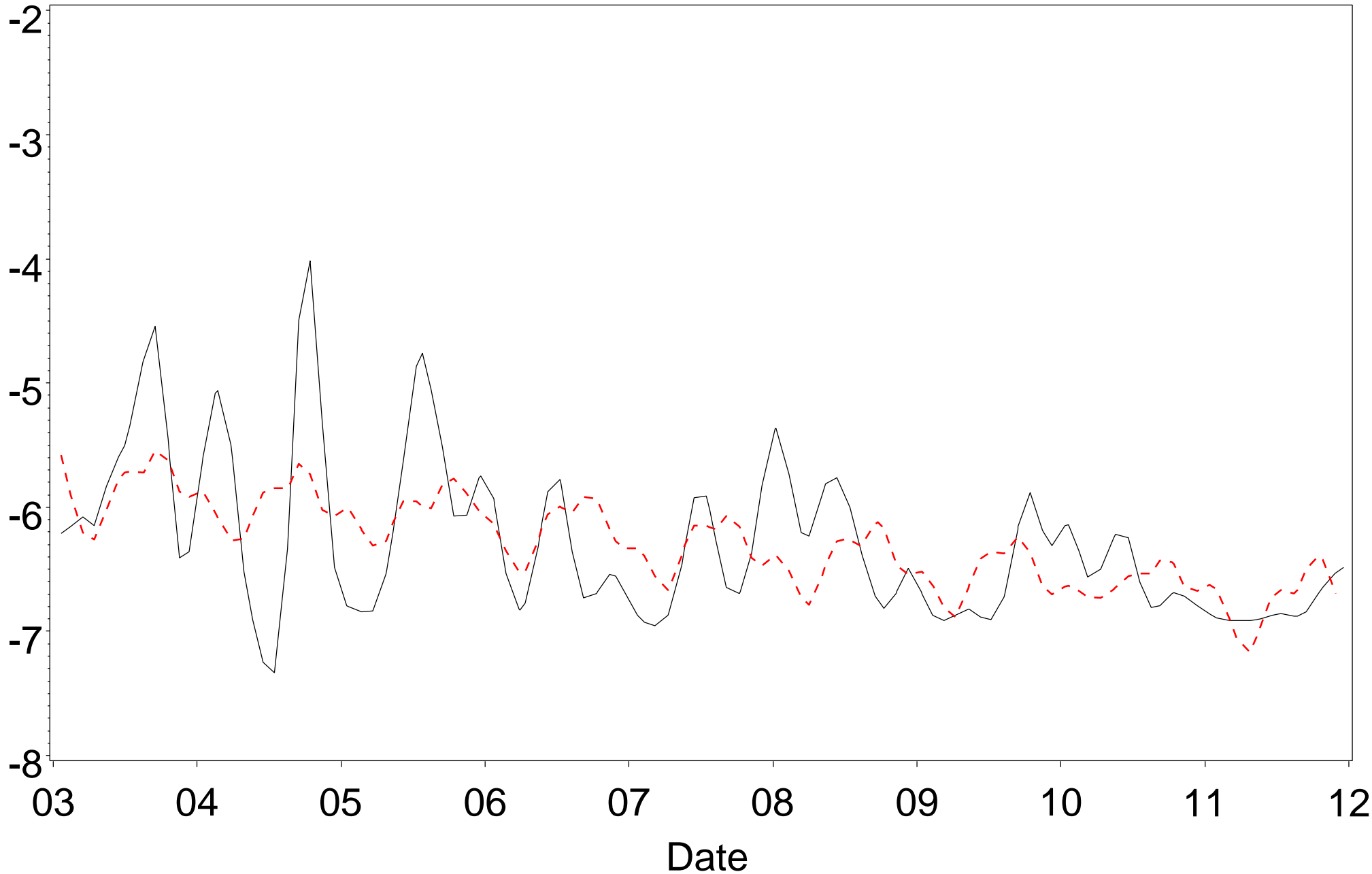
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73	1.80	0.0702
date1	1	19.3	8.08	0.0103
temp_dev	1	309	1.14	0.2869

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

Log Scale
NO2_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	479
Number of Observations Not Used	39

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	971.07509554	
1	2	816.51789607	1.54080754
2	2	809.71627088	0.46674392
3	2	796.43833995	0.09311387
4	2	793.49619496	0.00278989
5	1	793.40801747	0.00000884
6	1	793.40774614	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000841	0.004612	0.18	0.4276
Variance	Intercept	0.2429	0.04411	5.51	<.0001
SP(POW)	Intercept	0.1252	0.1218	1.03	0.3038
Residual		0.1993	0.01520	13.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	793.4
AIC (smaller is better)	801.4
AICC (smaller is better)	801.5
BIC (smaller is better)	809.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		115.68	46.1839	28.6	2.50	0.0182
season	1	-0.1615	0.2575	67.5	-0.63	0.5326
season	2	0.02210	0.2988	85.7	0.07	0.9412
season	3	-0.6063	0.2698	84.9	-2.25	0.0272
season	4	-0.6253	0.2779	85.8	-2.25	0.0270
season	5	-0.3024	0.2698	84.7	-1.12	0.2656
season	6	-0.2568	0.2701	85	-0.95	0.3444
season	7	-0.3847	0.2773	85	-1.39	0.1689
season	8	-0.2964	0.2706	85.2	-1.10	0.2764
season	9	0.07824	0.2705	85.2	0.29	0.7731
season	10	-0.1167	0.2703	85.7	-0.43	0.6672
season	11	-0.00736	0.2687	70.1	-0.03	0.9782
season	12	0	.	.	.	.
date1		-0.05993	0.02301	28.6	-2.60	0.0144
temp_dev		0.01242	0.04322	249	0.29	0.7740

Mixed Model With Local Nugget

The Mixed Procedure

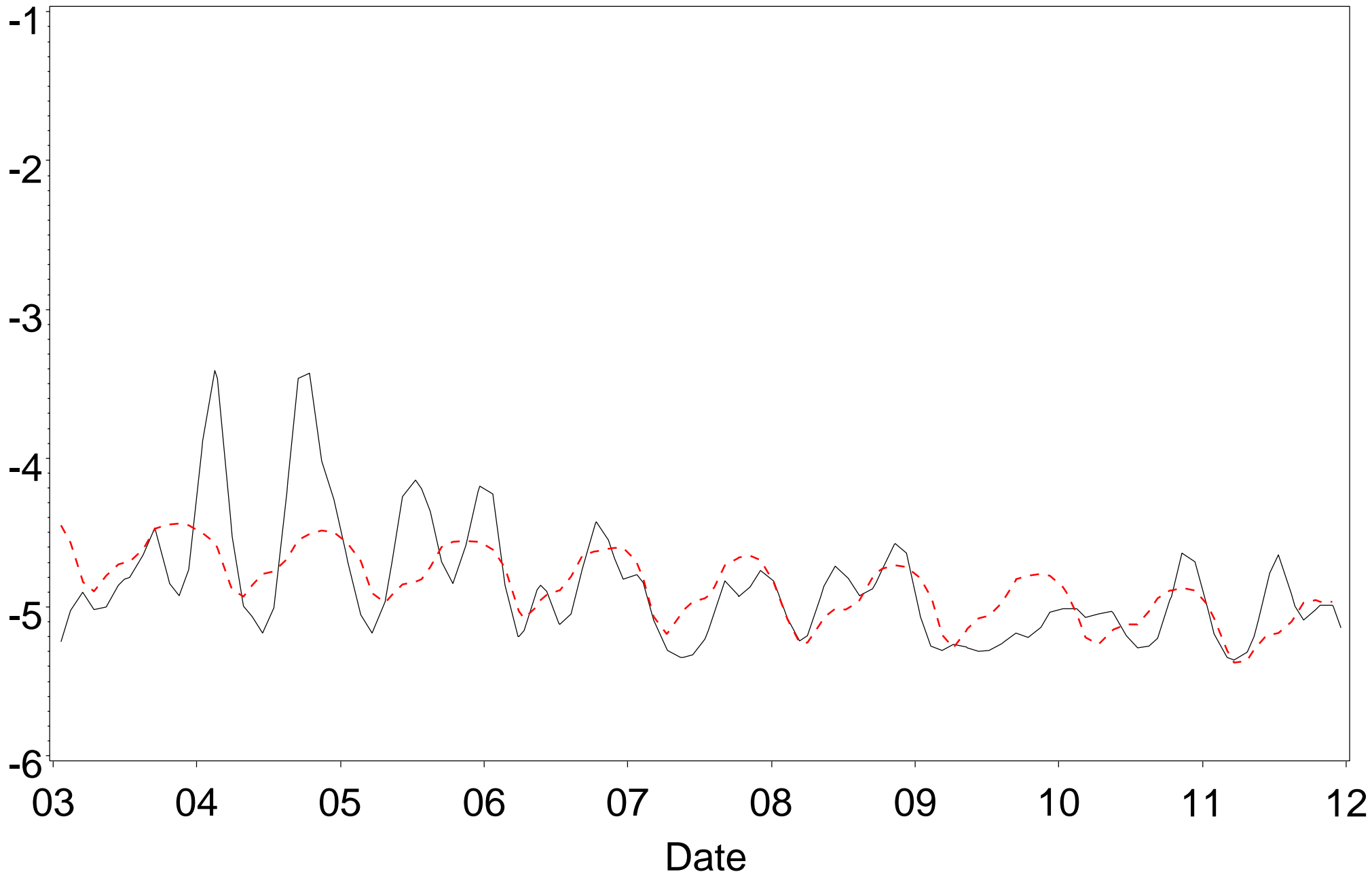
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.1	1.46	0.1643
date1	1	28.6	6.78	0.0144
temp_dev	1	249	0.08	0.7740

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	492
Number of Observations Not Used	26

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-489.43984490	
1	4	-856.37496542	.
2	1	-866.20165335	0.00642360
3	2	-869.35680392	0.00460463
4	2	-873.98441969	0.00037163
5	1	-874.33112912	0.00000419
6	1	-874.33483173	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000049	0.000124	0.39	0.3473
Variance	Intercept	0.01553	0.002998	5.18	<.0001
SP(POW)	Intercept	0.4369	0.1066	4.10	<.0001
Residual		0.005153	0.000385	13.37	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-874.3
AIC (smaller is better)	-866.3
AICC (smaller is better)	-866.3
BIC (smaller is better)	-858.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		6.8608	14.7314	15.3	0.47	0.6480
season	1	-0.01388	0.05142	72.6	-0.27	0.7880
season	2	0.02355	0.06249	83.9	0.38	0.7073
season	3	0.08167	0.06227	83.6	1.31	0.1933
season	4	0.07195	0.06490	80.5	1.11	0.2709
season	5	0.06157	0.06389	75.1	0.96	0.3383
season	6	0.1225	0.06398	73.9	1.91	0.0594
season	7	0.08394	0.06391	75.2	1.31	0.1930
season	8	0.09025	0.06357	79	1.42	0.1596
season	9	0.04150	0.06237	83.7	0.67	0.5076
season	10	0.06077	0.05938	84.6	1.02	0.3090
season	11	0.03324	0.05369	72.8	0.62	0.5377
season	12	0	.	.	.	.
date1		0.000458	0.007339	15.3	0.06	0.9511
temp_dev		-0.00292	0.007914	341	-0.37	0.7125

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.7	0.69	0.7460
date1	1	15.3	0.00	0.9511
temp_dev	1	341	0.14	0.7125

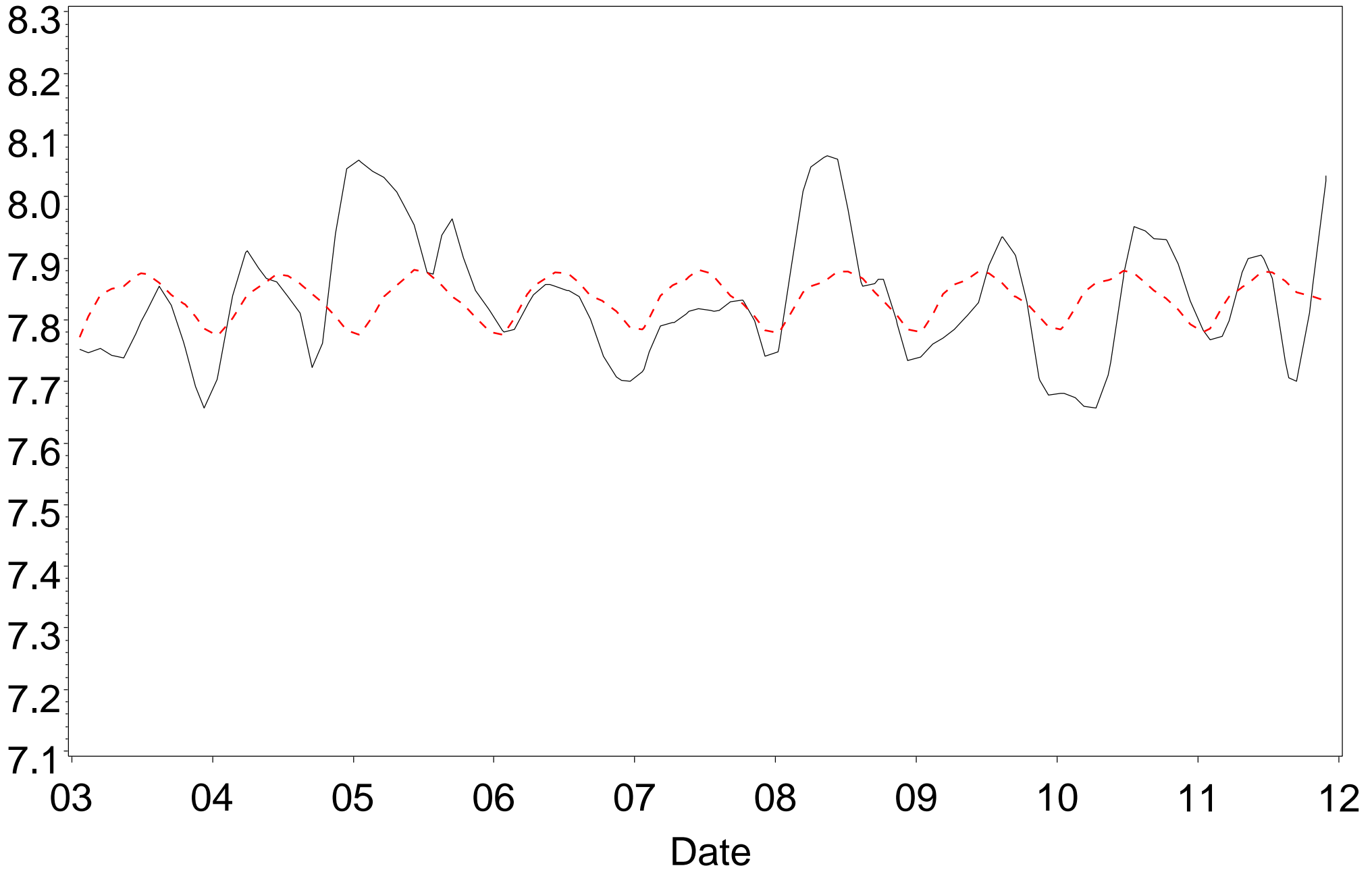
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1501.04006358	
1	2	1131.92344084	0.01909908
2	1	1128.77127376	0.00650791
3	2	1127.99610112	0.00179735
4	1	1127.73994768	0.00001217
5	1	1127.73828533	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.3339	0.08173	4.09	<.0001
Variance	Intercept	0.8182	0.2305	3.55	0.0002
SP(POW)	Intercept	0.7142	0.08675	8.23	<.0001
Residual		0.3216	0.02496	12.89	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1127.7
AIC (smaller is better)	1135.7
AICC (smaller is better)	1135.8
BIC (smaller is better)	1143.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		444.79	149.58	7.23	2.97	0.0199
season	1	-0.3335	0.2977	82.1	-1.12	0.2657
season	2	-0.2850	0.3887	78.7	-0.73	0.4657
season	3	-0.9150	0.3901	75.6	-2.35	0.0216
season	4	-0.6041	0.4191	76.7	-1.44	0.1535
season	5	-0.6871	0.4216	73.9	-1.63	0.1075
season	6	-0.5402	0.4255	73.7	-1.27	0.2082
season	7	-0.5254	0.4273	74	-1.23	0.2228
season	8	0.3194	0.4122	75.7	0.77	0.4408
season	9	0.9613	0.3892	74.6	2.47	0.0158
season	10	0.8230	0.3565	76.4	2.31	0.0237
season	11	0.3298	0.3082	79.6	1.07	0.2877
season	12	0	.	.	.	.
date1		-0.2235	0.07451	7.24	-3.00	0.0192
temp_dev		-0.00857	0.05704	181	-0.15	0.8808

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.5	2.87	0.0033
date1	1	7.24	9.00	0.0192
temp_dev	1	181	0.02	0.8808

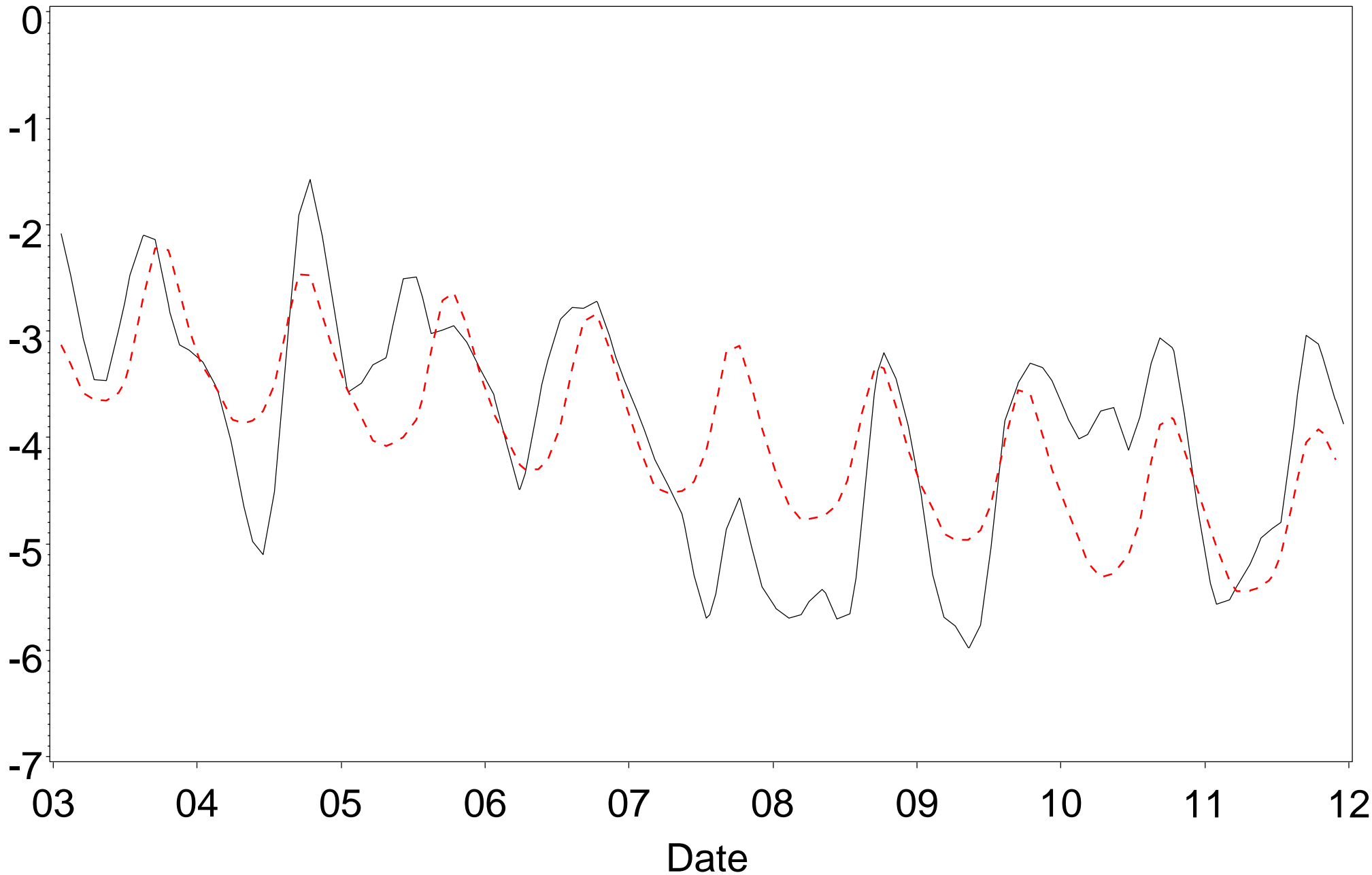
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

Log Scale

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	491
Number of Observations Not Used	27

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-86.14070722	
1	2	-350.60668585	0.01106614
2	1	-358.71834252	0.00321021
3	2	-360.93248423	0.00067046
4	1	-361.37720731	0.00001046
5	1	-361.38375802	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004764	0.001430	3.33	0.0004
Variance	Intercept	0.02983	0.007017	4.25	<.0001
SP(POW)	Intercept	0.5977	0.09791	6.11	<.0001
Residual		0.01477	0.001139	12.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-361.4
AIC (smaller is better)	-353.4
AICC (smaller is better)	-353.3
BIC (smaller is better)	-345.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-57.0087	24.5850	10.6	-2.32	0.0414
season	1	0.02706	0.06543	76.6	0.41	0.6804
season	2	0.06229	0.08094	77.5	0.77	0.4439
season	3	0.05464	0.08281	77.8	0.66	0.5113
season	4	0.01105	0.08798	77.8	0.13	0.9004
season	5	0.08532	0.08750	72.9	0.98	0.3327
season	6	0.005266	0.08797	71.9	0.06	0.9524
season	7	-0.06860	0.08741	72.5	-0.78	0.4352
season	8	-0.1828	0.08625	76.2	-2.12	0.0373
season	9	-0.2407	0.08269	77.1	-2.91	0.0047
season	10	-0.1473	0.07700	77.5	-1.91	0.0594
season	11	-0.01004	0.06796	75	-0.15	0.8829
season	12	0	.	.	.	.
date1		0.03010	0.01225	10.6	2.46	0.0325
temp_dev		-0.02519	0.01216	199	-2.07	0.0396

Mixed Model With Local Nugget

The Mixed Procedure

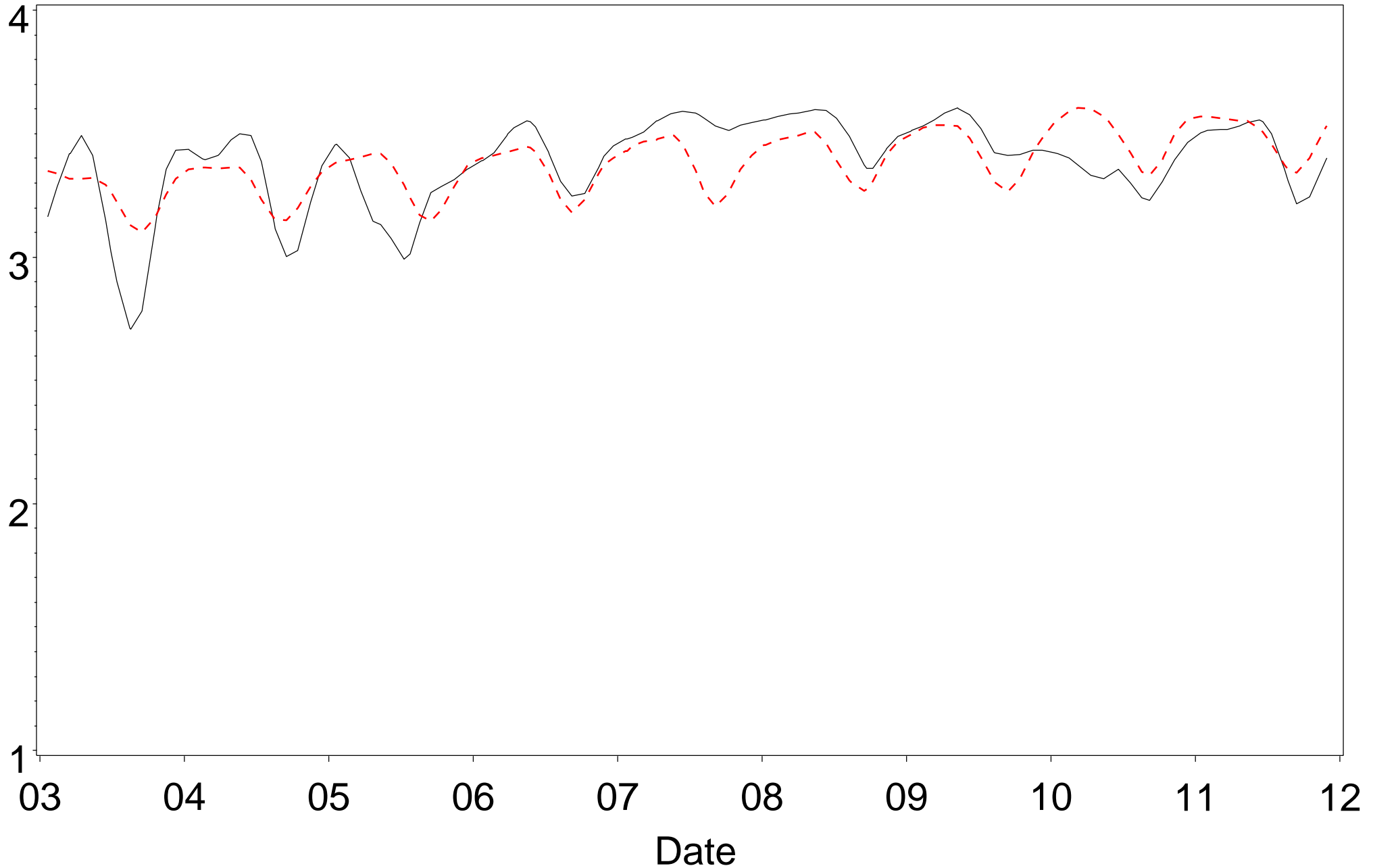
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.4	2.05	0.0356
date1	1	10.6	6.04	0.0325
temp_dev	1	199	4.29	0.0396

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale
Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	492
Number of Observations Not Used	26

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1706.17110314	
1	4	-2197.25365630	0.07612061
2	1	-2345.22816757	.
3	1	-2399.95831988	0.00912233
4	1	-2418.79512481	0.00406206
5	2	-2426.66558181	0.00088635
6	1	-2428.30511147	0.00004011
7	1	-2428.37368741	0.00000012
8	1	-2428.37388271	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		9.091E-6	6.577E-6	1.38	0.0834
Variance	Intercept	0.001998	0.000329	6.07	<.0001
SP(POW)	Intercept	0.1924	0.1174	1.64	0.1012
Residual		0.000143	0.000011	12.69	<.0001

Fit Statistics	
-2 Res Log Likelihood	-2428.4
AIC (smaller is better)	-2420.4
AICC (smaller is better)	-2420.3
BIC (smaller is better)	-2412.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		7.2546	4.1329	21.7	1.76	0.0933
season	1	-0.1159	0.02077	62.2	-5.58	<.0001
season	2	-0.08919	0.02384	82	-3.74	0.0003
season	3	0.08001	0.02269	80.7	3.53	0.0007
season	4	0.1782	0.02331	80	7.64	<.0001
season	5	0.3340	0.02270	78.9	14.71	<.0001
season	6	0.4212	0.02270	78.8	18.56	<.0001
season	7	0.4489	0.02271	78.9	19.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.4786	0.02273	79.4	21.05	<.0001
season	9	0.4260	0.02273	80.7	18.74	<.0001
season	10	0.3224	0.02252	82.2	14.32	<.0001
season	11	0.09590	0.02160	64.3	4.44	<.0001
season	12	0	.	.	.	.
date1		-0.00213	0.002059	21.7	-1.04	0.3113
temp_dev		0.04805	0.001639	442	29.32	<.0001

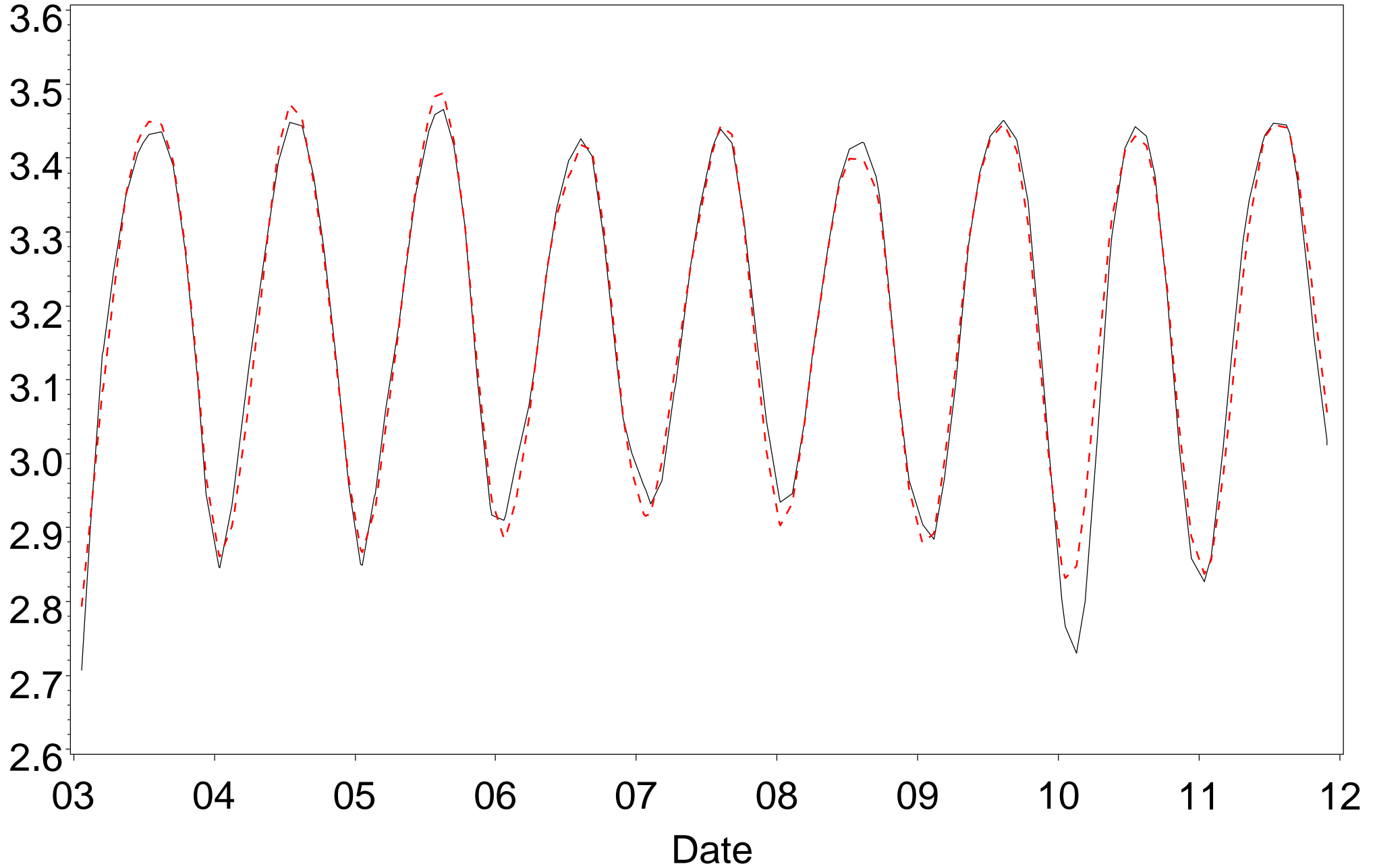
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67	146.19	<.0001
date1	1	21.7	1.07	0.3113
temp_dev	1	442	859.41	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale
TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1067.52415344	
1	2	867.06680315	0.21519016
2	2	865.69066389	0.06223024
3	1	865.37447206	0.00206415
4	1	865.36510837	0.00000203
5	1	865.36509932	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04887	0.02146	2.28	0.0114
Variance	Intercept	0.2992	0.08983	3.33	0.0004
SP(POW)	Intercept	0.7210	0.09878	7.30	<.0001
Residual		0.2273	0.01803	12.61	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	865.4
AIC (smaller is better)	873.4
AICC (smaller is better)	873.5
BIC (smaller is better)	881.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		179.29	91.1002	6.29	1.97	0.0944
season	1	-0.01657	0.1970	75.7	-0.08	0.9332
season	2	0.02571	0.2516	66.4	0.10	0.9189
season	3	-0.1207	0.2492	61.9	-0.48	0.6298
season	4	-0.2071	0.2674	64	-0.77	0.4415
season	5	-0.02845	0.2679	62.1	-0.11	0.9158
season	6	0.1193	0.2702	62.3	0.44	0.6604
season	7	0.2607	0.2719	62.2	0.96	0.3414
season	8	0.4386	0.2627	63	1.67	0.1000
season	9	0.4563	0.2487	61.2	1.83	0.0714
season	10	0.3699	0.2301	63.8	1.61	0.1130
season	11	0.4896	0.2039	73	2.40	0.0189
season	12	0	.	.	.	.
date1		-0.08998	0.04538	6.3	-1.98	0.0924
temp_dev		-0.00207	0.04037	132	-0.05	0.9592

Mixed Model With Local Nugget

The Mixed Procedure

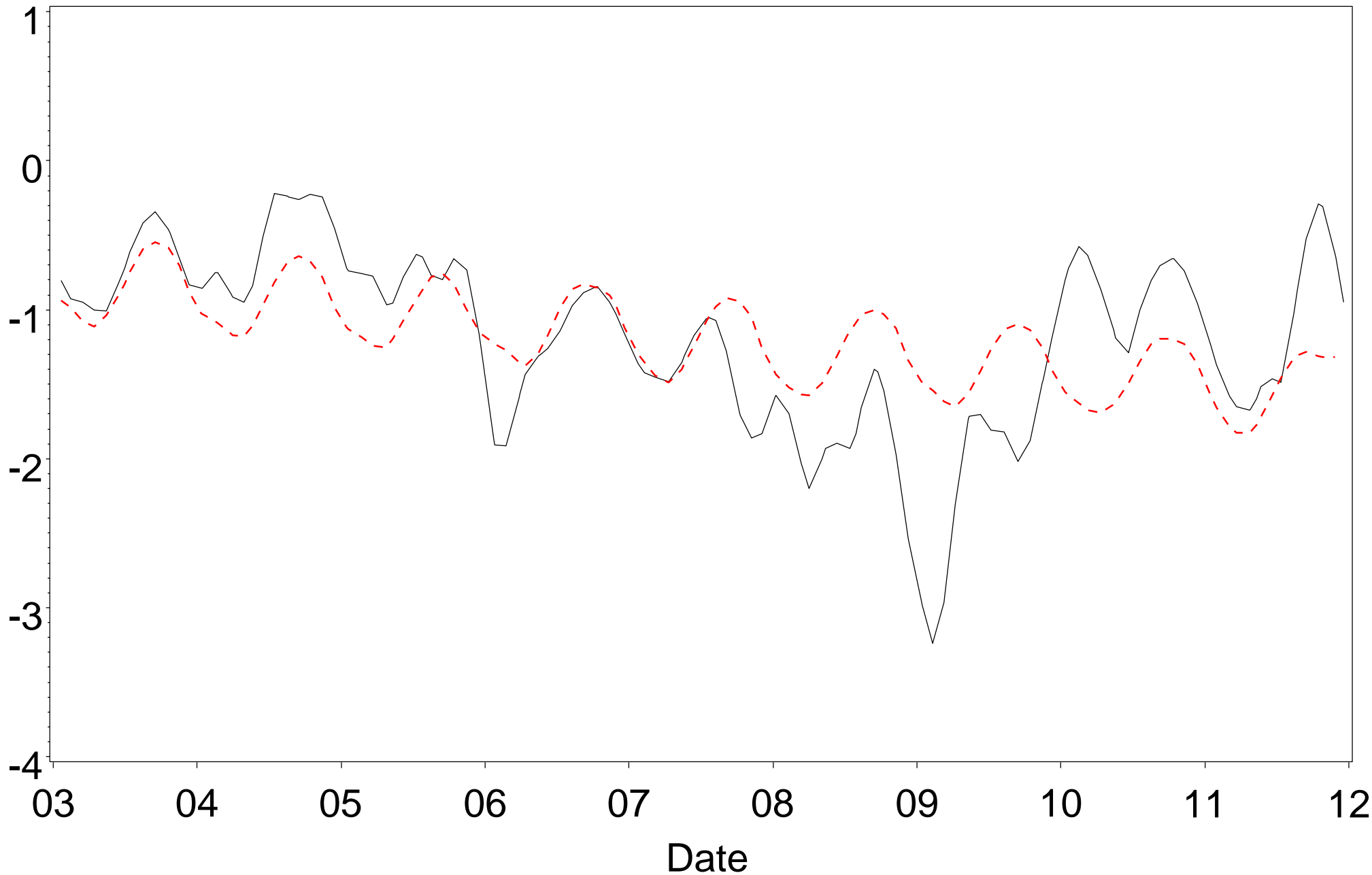
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.9	1.11	0.3707
date1	1	6.3	3.93	0.0924
temp_dev	1	132	0.00	0.9592

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1036.93173316	
1	2	850.49278895	0.29853060
2	2	849.44826034	0.04837619
3	1	849.26616783	0.00088460
4	1	849.26295937	0.00000033
5	1	849.26295817	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04670	0.02094	2.23	0.0129
Variance	Intercept	0.2694	0.08521	3.16	0.0008
SP(POW)	Intercept	0.7421	0.09889	7.50	<.0001
Residual		0.2242	0.01787	12.54	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	849.3
AIC (smaller is better)	857.3
AICC (smaller is better)	857.3
BIC (smaller is better)	864.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		177.99	88.9697	5.68	2.00	0.0951
season	1	0.04711	0.1864	75.6	0.25	0.8012
season	2	0.06959	0.2371	63.3	0.29	0.7701
season	3	-0.08233	0.2343	57.2	-0.35	0.7266
season	4	-0.2110	0.2517	59	-0.84	0.4054
season	5	-0.01688	0.2522	57	-0.07	0.9469
season	6	0.1275	0.2545	57.2	0.50	0.6182
season	7	0.2813	0.2560	57.2	1.10	0.2763
season	8	0.4353	0.2472	57.9	1.76	0.0836
season	9	0.4831	0.2339	56.4	2.07	0.0434
season	10	0.4057	0.2166	60.2	1.87	0.0660
season	11	0.5035	0.1929	72.6	2.61	0.0110
season	12	0	.	.	.	.
date1		-0.08932	0.04432	5.68	-2.02	0.0932
temp_dev		-0.00200	0.03865	122	-0.05	0.9587

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.8	1.27	0.2602
date1	1	5.68	4.06	0.0932
temp_dev	1	122	0.00	0.9587

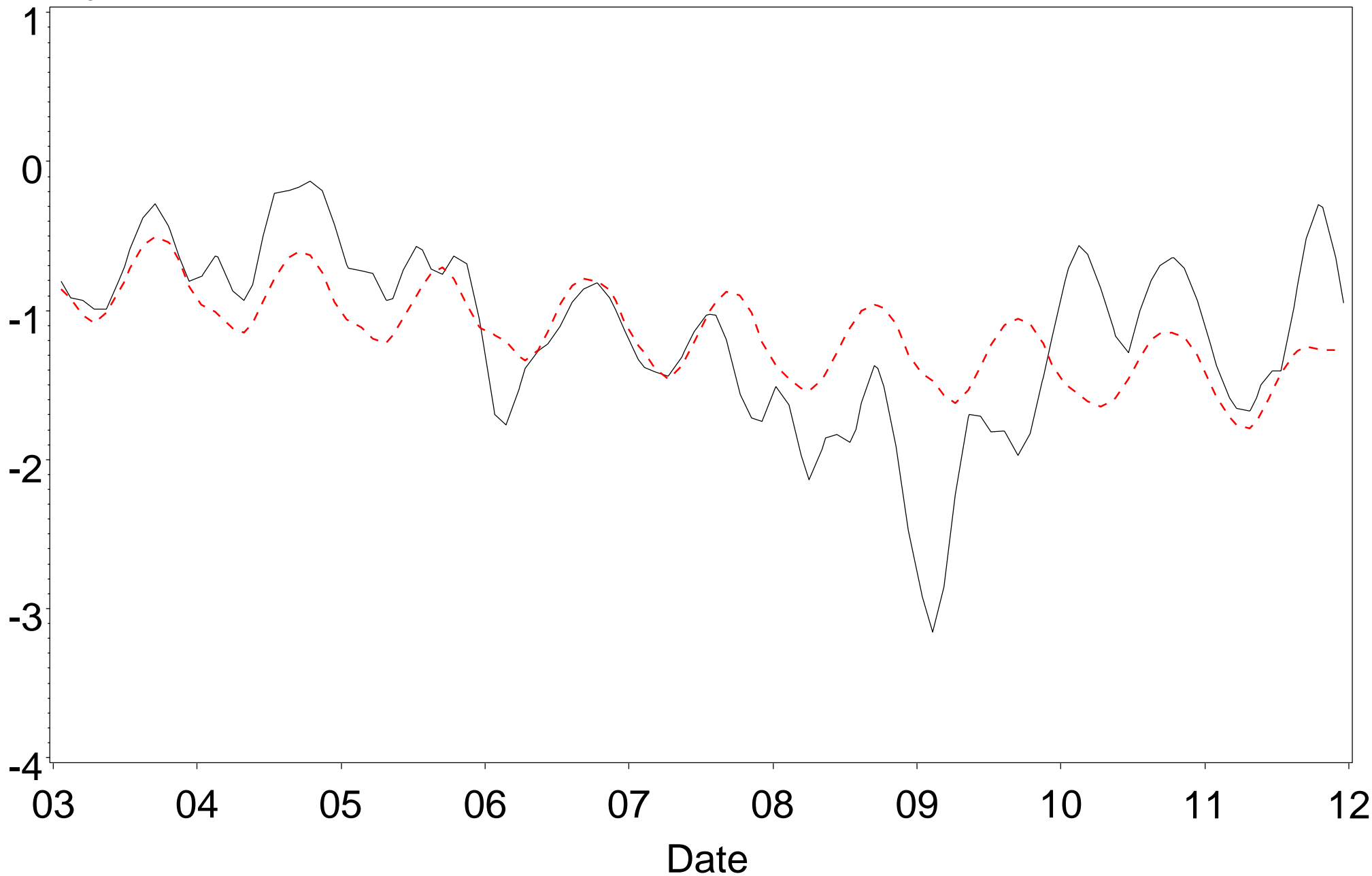
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	866.48025546	
1	2	437.11320239	0.03288035
2	1	428.96448465	0.00783700
3	2	426.96955428	0.00178909
4	1	426.54783840	0.00005140
5	1	426.53659963	0.00000004
6	1	426.53659100	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05035	0.01270	3.97	<.0001
Variance	Intercept	0.2607	0.06303	4.14	<.0001
SP(POW)	Intercept	0.6411	0.08955	7.16	<.0001
Residual		0.06691	0.005217	12.83	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	426.5
AIC (smaller is better)	434.5
AICC (smaller is better)	434.6
BIC (smaller is better)	442.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-264.17	76.2520	9.65	-3.46	0.0064
season	1	-0.1526	0.1747	76.8	-0.87	0.3852
season	2	-0.3372	0.2288	80.2	-1.47	0.1444
season	3	-0.3282	0.2292	80	-1.43	0.1560
season	4	-0.3243	0.2445	79.2	-1.33	0.1885
season	5	-0.1870	0.2452	74.9	-0.76	0.4482
season	6	-0.09038	0.2470	74	-0.37	0.7155
season	7	0.05426	0.2488	75.6	0.22	0.8280
season	8	0.3637	0.2405	78.1	1.51	0.1344
season	9	0.5719	0.2289	79.3	2.50	0.0146
season	10	0.4610	0.2104	79.5	2.19	0.0314
season	11	0.07602	0.1814	75.3	0.42	0.6764
season	12	0	.	.	.	.
date1		0.1322	0.03799	9.65	3.48	0.0063
temp_dev		-0.00178	0.02991	257	-0.06	0.9526

Mixed Model With Local Nugget

The Mixed Procedure

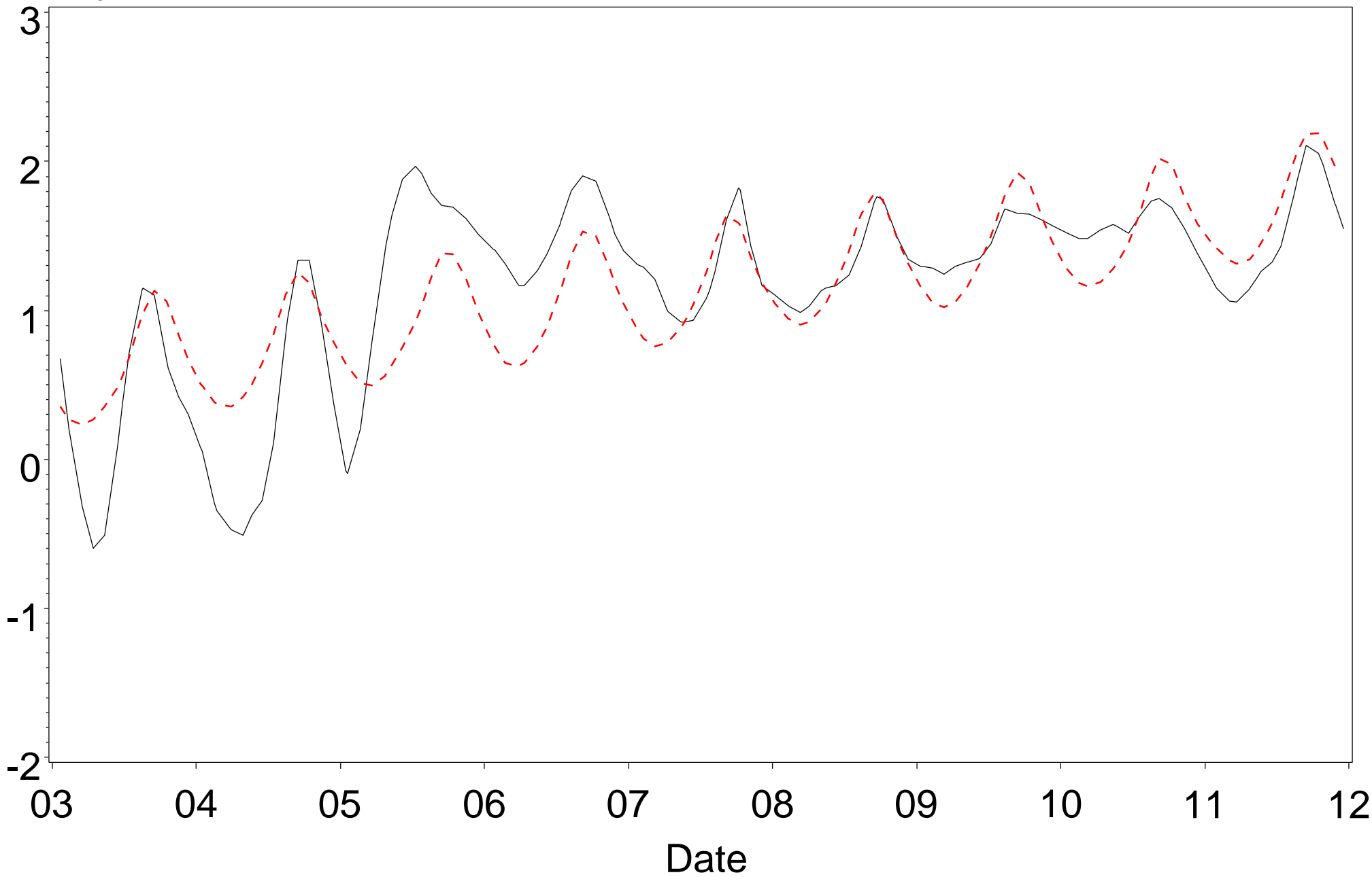
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.4	1.83	0.0632
date1	1	9.65	12.10	0.0063
temp_dev	1	257	0.00	0.9526

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

Log Scale
TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	990.09742052	
1	2	684.52305819	0.02971154
2	1	681.37254000	0.01072055
3	2	680.50661743	0.00232196
4	1	680.29332016	0.00001253
5	1	680.29220956	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.09235	0.02370	3.90	<.0001
Variance	Intercept	0.2662	0.07188	3.70	0.0001
SP(POW)	Intercept	0.6799	0.09728	6.99	<.0001
Residual		0.1297	0.01008	12.87	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	680.3
AIC (smaller is better)	688.3
AICC (smaller is better)	688.4
BIC (smaller is better)	695.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		285.87	80.9922	7.56	3.53	0.0085
season	1	-0.00354	0.1815	74.5	-0.02	0.9845
season	2	-0.4156	0.2354	73	-1.77	0.0816
season	3	-0.4351	0.2342	72	-1.86	0.0673
season	4	-0.4012	0.2508	73.8	-1.60	0.1139
season	5	-0.2139	0.2514	71.2	-0.85	0.3975
season	6	-0.1210	0.2534	71	-0.48	0.6345
season	7	-0.1374	0.2549	71.3	-0.54	0.5916
season	8	0.2952	0.2464	72.8	1.20	0.2349
season	9	0.6585	0.2336	71	2.82	0.0062
season	10	0.5810	0.2154	71.3	2.70	0.0087
season	11	0.2722	0.1880	72	1.45	0.1520
season	12	0	.	.	.	.
date1		-0.1439	0.04035	7.56	-3.57	0.0081
temp_dev		-0.00760	0.03528	162	-0.22	0.8298

Mixed Model With Local Nugget

The Mixed Procedure

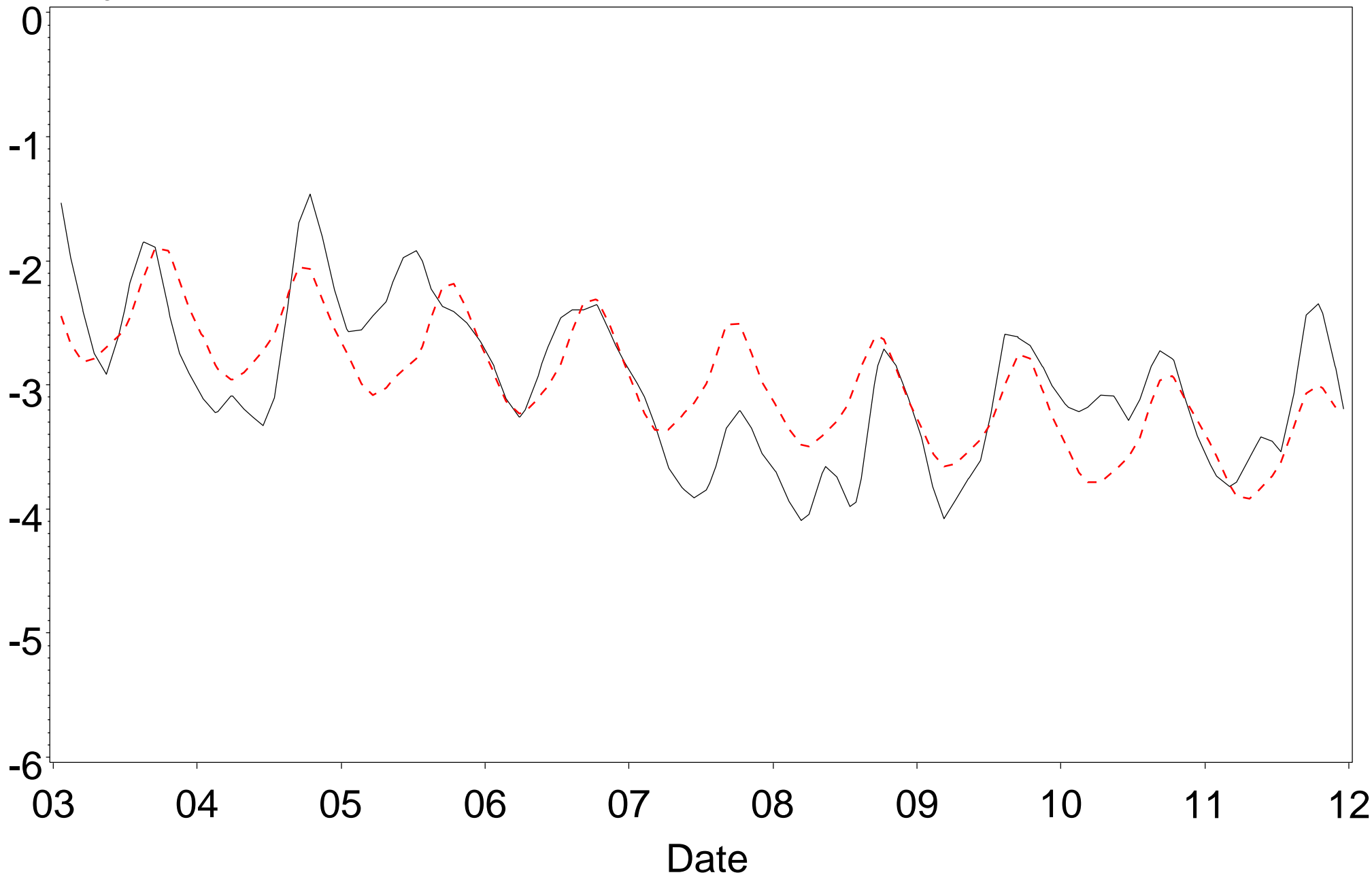
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.6	2.73	0.0054
date1	1	7.56	12.72	0.0081
temp_dev	1	162	0.05	0.8298

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface

Log Scale
TPO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1085.39205656	
1	3	872.48997747	0.61471571
2	1	866.13257511	0.84290434
3	2	864.57123557	0.69570945
4	1	861.38652740	0.06753182
5	1	861.21013329	0.00076916
6	1	861.20828158	0.00000026
7	1	861.20828095	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.005525	0.005688	0.97	0.1657
Variance	Intercept	0.3337	0.07166	4.66	<.0001
SP(POW)	Intercept	0.5007	0.1123	4.46	<.0001
Residual		0.2282	0.01724	13.24	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	861.2
AIC (smaller is better)	869.2
AICC (smaller is better)	869.3
BIC (smaller is better)	876.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-131.02	74.0518	12.8	-1.77	0.1006
season	1	0.1161	0.2420	72.3	0.48	0.6329
season	2	-0.01462	0.3052	79	-0.05	0.9619
season	3	-0.1104	0.2947	80.9	-0.37	0.7090
season	4	-0.04735	0.3093	80.1	-0.15	0.8787
season	5	-0.6678	0.3053	75.1	-2.19	0.0318
season	6	-0.1390	0.3062	73.9	-0.45	0.6512
season	7	-0.08034	0.3114	76.5	-0.26	0.7971
season	8	-0.07119	0.3030	78.6	-0.23	0.8149
season	9	-0.07290	0.2952	81.1	-0.25	0.8055
season	10	-0.1349	0.2793	79.7	-0.48	0.6304
season	11	-0.1250	0.2526	72	-0.49	0.6221
season	12	0	.	.	.	.
date1		0.06651	0.03689	12.9	1.80	0.0949
temp_dev		-0.03523	0.04538	213	-0.78	0.4384

Mixed Model With Local Nugget

The Mixed Procedure

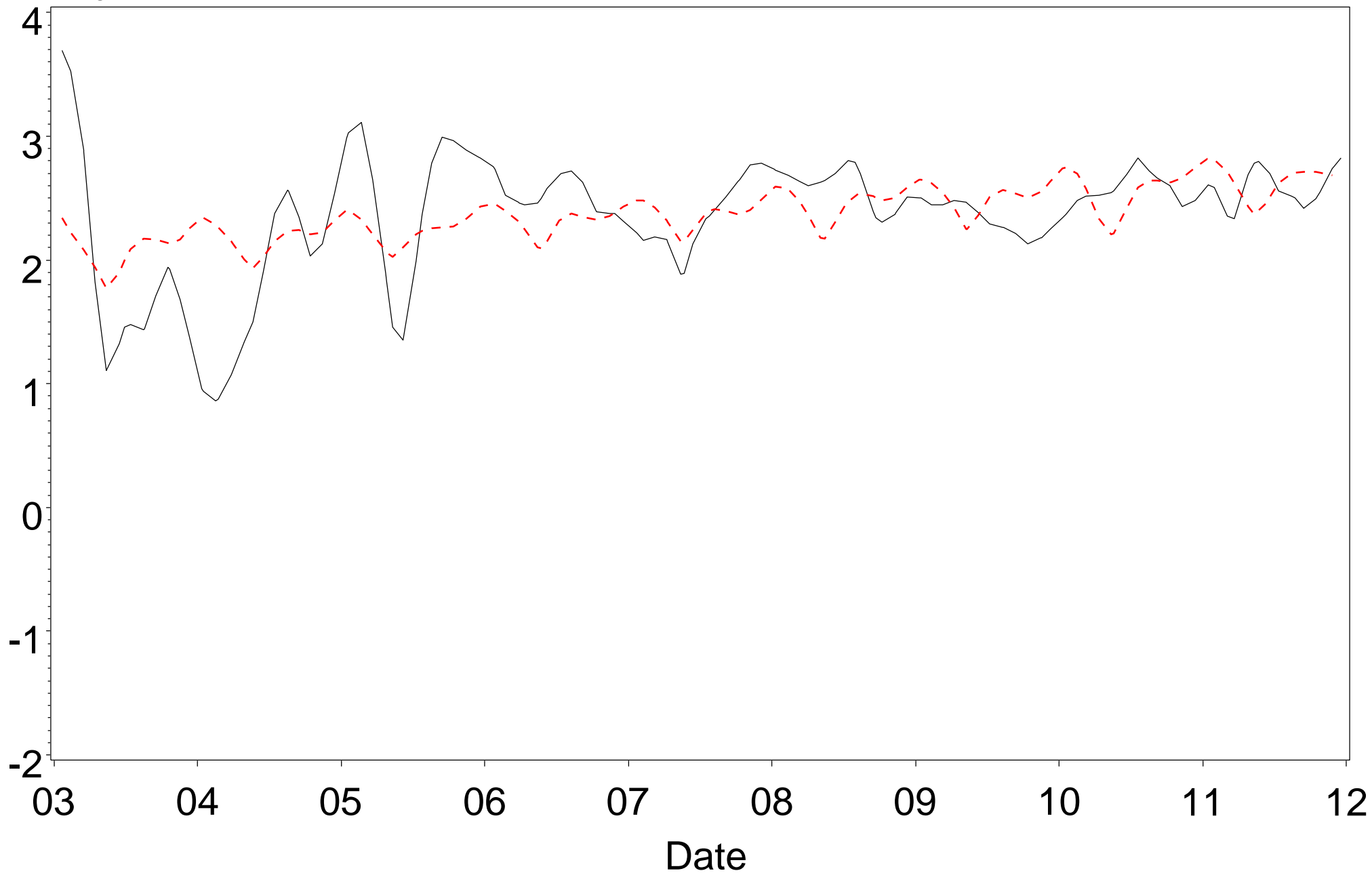
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.6	1.11	0.3686
date1	1	12.9	3.25	0.0949
temp_dev	1	213	0.60	0.4384

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Log Scale
TSS_mgl

Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	50	139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	50
Subjects	1
Max Obs Per Subject	518

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	518
Number of Observations Used	480
Number of Observations Not Used	38

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	904.50831771	
1	2	643.74175696	0.04382408
2	1	637.63159272	0.03399648
3	2	636.48573739	0.02517394
4	1	633.34209817	0.00188650
5	1	633.11400619	0.00004407
6	1	633.10898158	0.00000005
7	1	633.10897631	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02191	0.008096	2.71	0.0034
Variance	Intercept	0.2375	0.05032	4.72	<.0001
SP(POW)	Intercept	0.5115	0.1089	4.70	<.0001
Residual		0.1259	0.009728	12.94	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	633.1
AIC (smaller is better)	641.1
AICC (smaller is better)	641.2
BIC (smaller is better)	648.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-3.0257	62.9621	12.9	-0.05	0.9624
season	1	0.2577	0.1989	70.9	1.30	0.1994
season	2	-0.1881	0.2528	78.6	-0.74	0.4591
season	3	0.04333	0.2446	80.8	0.18	0.8598
season	4	0.1751	0.2570	80.1	0.68	0.4977
season	5	-0.5319	0.2539	75.1	-2.09	0.0396
season	6	-0.1161	0.2548	74	-0.46	0.6501
season	7	-0.1807	0.2586	76.1	-0.70	0.4869
season	8	-0.1180	0.2519	78.7	-0.47	0.6409
season	9	-0.03783	0.2444	80.3	-0.15	0.8774
season	10	-0.3079	0.2309	78.8	-1.33	0.1863
season	11	-0.2668	0.2071	69.9	-1.29	0.2019
season	12	0	.	.	.	.
date1		0.001589	0.03137	12.9	0.05	0.9604
temp_dev		-0.03056	0.03654	218	-0.84	0.4039

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.7	2.33	0.0167
date1	1	12.9	0.00	0.9604
temp_dev	1	218	0.70	0.4039

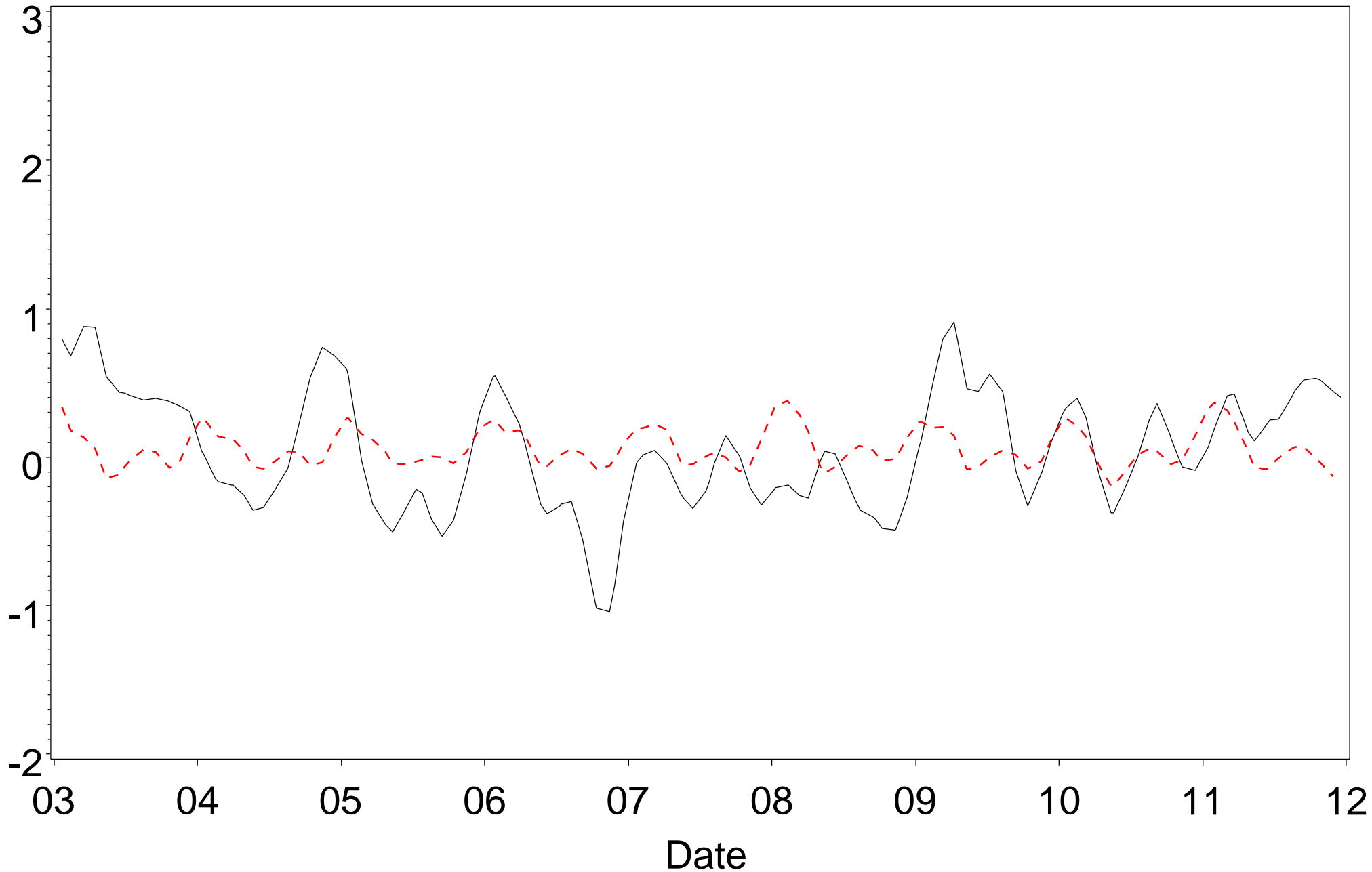
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Bokeelia

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	518
Number of Observations Not Used	22

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1122.48791727	
1	2	1032.50404761	0.08035211
2	2	1028.30297959	0.04532699
3	1	1025.72262292	0.00189612
4	1	1025.62547650	0.00000489
5	1	1025.62523325	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08911	0.03116	2.86	0.0021
Variance	Intercept	0.1186	0.03070	3.86	<.0001
SP(POW)	Intercept	0.4275	0.1739	2.46	0.0139
Residual		0.3055	0.02223	13.75	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1025.6
AIC (smaller is better)	1033.6
AICC (smaller is better)	1033.7
BIC (smaller is better)	1039.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-108.13	43.0955	12.9	-2.51	0.0263
season	1	-0.2385	0.1775	65.3	-1.34	0.1836
season	2	-0.2275	0.1950	71.7	-1.17	0.2471
season	3	-0.3330	0.2056	76.3	-1.62	0.1094
season	4	-0.1201	0.2054	81.3	-0.58	0.5604
season	5	0.1241	0.2048	79.1	0.61	0.5462
season	6	0.2132	0.2065	81.4	1.03	0.3050
season	7	0.6267	0.2050	79.9	3.06	0.0030
season	8	0.7298	0.2079	84.2	3.51	0.0007
season	9	0.8853	0.2076	80.1	4.26	<.0001
season	10	1.1557	0.1942	71.1	5.95	<.0001
season	11	0.5762	0.1739	61.7	3.31	0.0015
season	12	0	.	.	.	.
date1		0.05447	0.02146	12.9	2.54	0.0249
temp_dev		0.1461	0.03955	119	3.70	0.0003

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.4	7.83	<.0001
date1	1	12.9	6.44	0.0249
temp_dev	1	119	13.66	0.0003

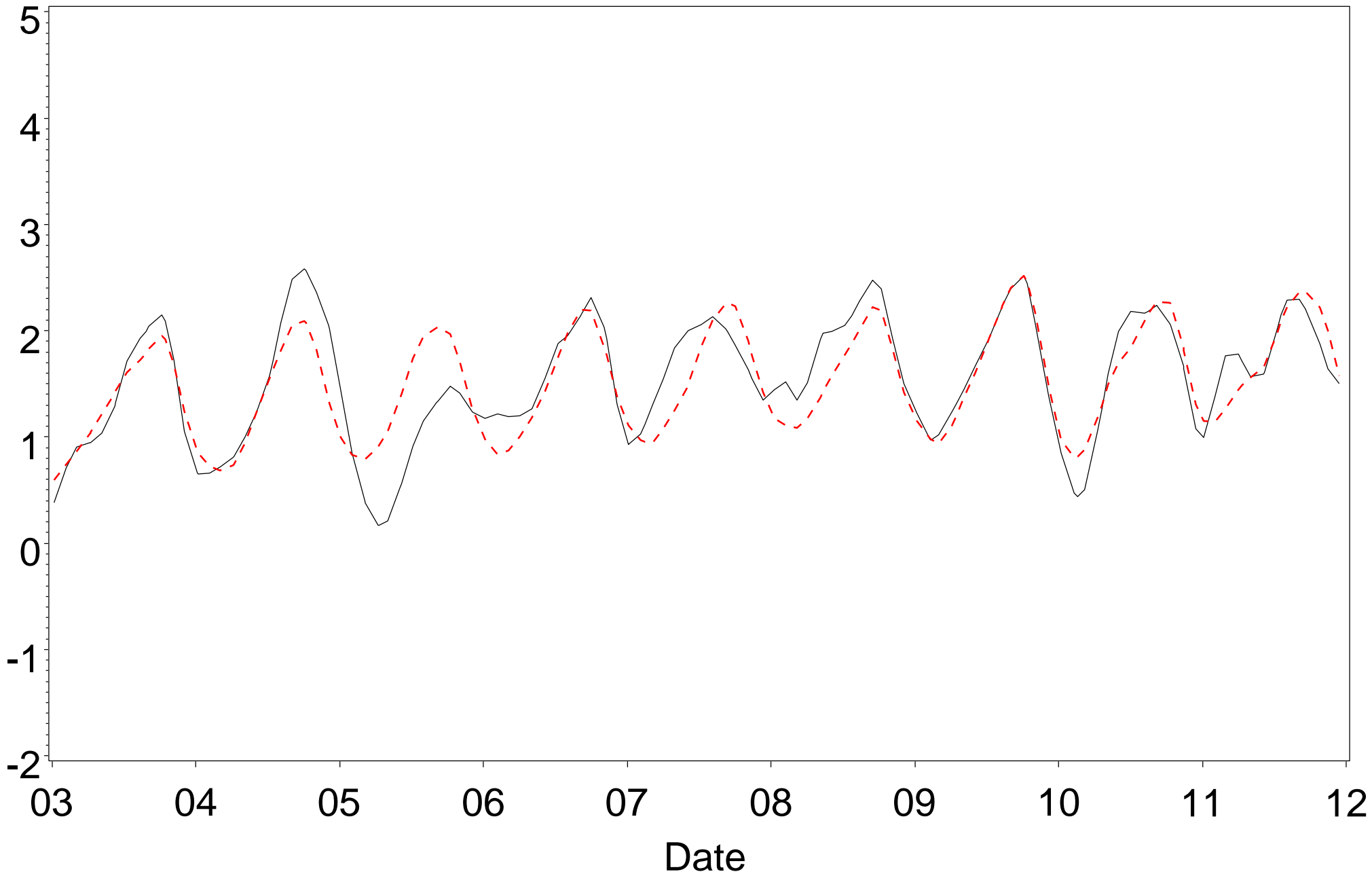
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	522
Number of Observations Not Used	18

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1233.25442762	
1	2	780.72473789	0.11799057
2	1	769.95604062	0.02152670
3	1	767.94800477	0.00185800
4	1	767.78129439	0.00004278
5	1	767.77767658	0.00000004
6	1	767.77767326	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.4309	0.1184	3.64	0.0001
Variance	Intercept	0.2416	0.05180	4.66	<.0001
SP(POW)	Intercept	0.5310	0.1041	5.10	<.0001
Residual		0.1326	0.009583	13.83	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	767.8
AIC (smaller is better)	775.8
AICC (smaller is better)	775.9
BIC (smaller is better)	781.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		117.12	63.4692	12.3	1.85	0.0891
season	1	-0.1720	0.1860	81.2	-0.92	0.3579
season	2	-0.2583	0.2182	86	-1.18	0.2398
season	3	-0.3214	0.2374	83.8	-1.35	0.1795
season	4	-0.2514	0.2402	78.6	-1.05	0.2985
season	5	-0.05388	0.2426	73.6	-0.22	0.8248
season	6	-0.2966	0.2439	73	-1.22	0.2278
season	7	0.3754	0.2423	74.4	1.55	0.1256
season	8	0.5008	0.2408	81.2	2.08	0.0407
season	9	0.8501	0.2315	85.3	3.67	0.0004
season	10	0.8693	0.2151	85.5	4.04	0.0001
season	11	0.09002	0.1797	76.9	0.50	0.6177
season	12	0	.	.	.	.
date1		-0.05700	0.03161	12.3	-1.80	0.0958
temp_dev		0.07811	0.03662	192	2.13	0.0342

Mixed Model With Local Nugget

The Mixed Procedure

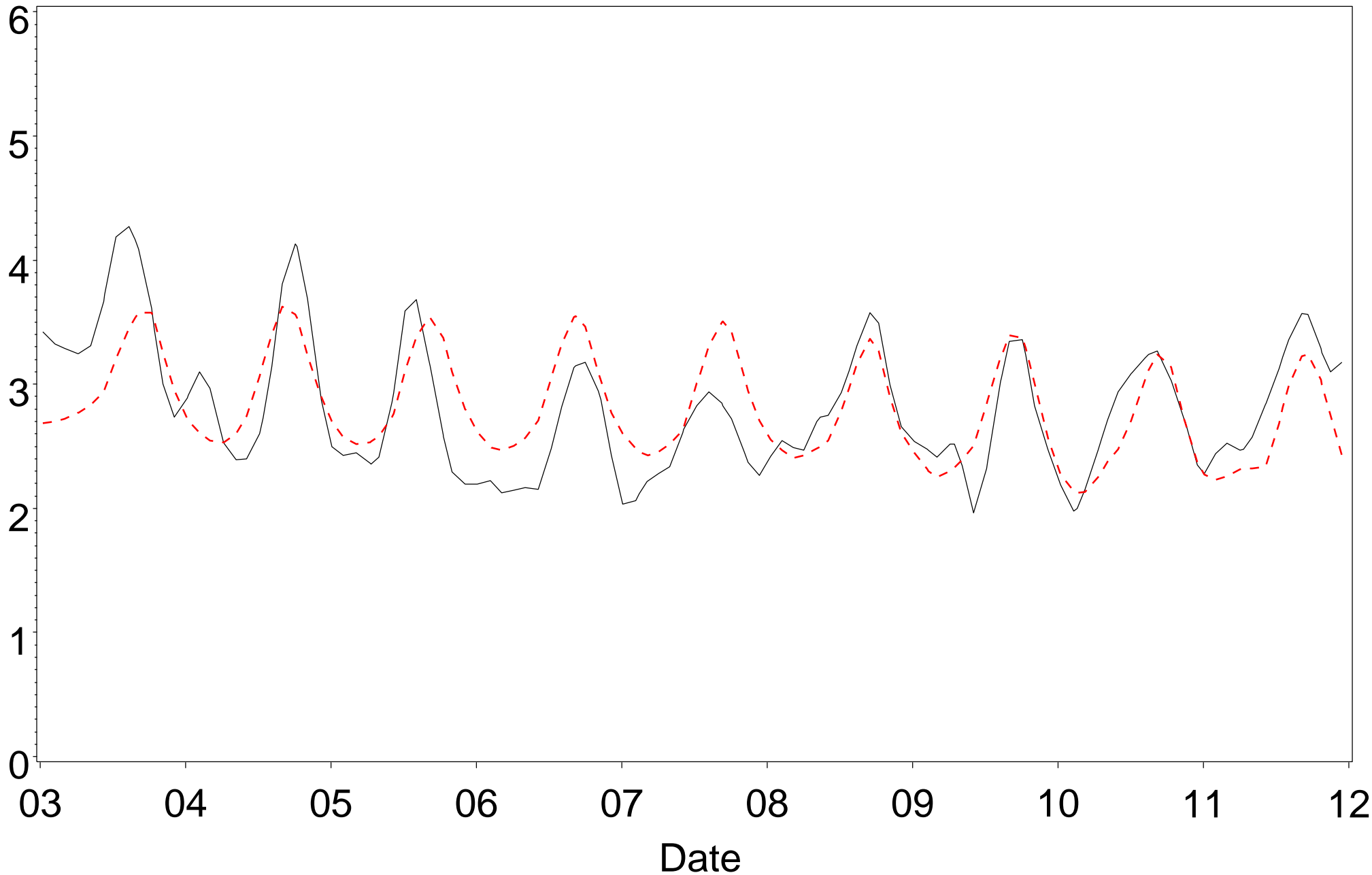
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.5	4.58	<.0001
date1	1	12.3	3.25	0.0958
temp_dev	1	192	4.55	0.0342

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Parameter = Color (PCU) and Sample Level = Surface

Log Scale
COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	527
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-459.68687495	
1	2	-866.08263712	0.00979900
2	1	-876.49247839	0.00123766
3	1	-877.76048489	0.00007638
4	1	-877.83240488	0.00000036
5	1	-877.83273437	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007888	0.002254	3.50	0.0002
Variance	Intercept	0.01219	0.003235	3.77	<.0001
SP(POW)	Intercept	0.6985	0.08419	8.30	<.0001
Residual		0.005668	0.000406	13.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-877.8
AIC (smaller is better)	-869.8
AICC (smaller is better)	-869.8
BIC (smaller is better)	-864.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-26.4396	17.6052	8.25	-1.50	0.1704
season	1	-0.00377	0.03515	88.8	-0.11	0.9149
season	2	0.04197	0.04243	82.3	0.99	0.3255
season	3	0.03235	0.04649	79.9	0.70	0.4885
season	4	0.02449	0.04914	79.3	0.50	0.6196
season	5	0.06098	0.05027	76.6	1.21	0.2288
season	6	0.06088	0.05072	76.8	1.20	0.2337
season	7	-0.02554	0.05012	77	-0.51	0.6119
season	8	-0.04766	0.04907	81	-0.97	0.3343
season	9	-0.1589	0.04610	81.5	-3.45	0.0009
season	10	-0.1159	0.04155	81.9	-2.79	0.0066
season	11	-0.02278	0.03365	86.8	-0.68	0.5002
season	12	0	.	.	.	.
date1		0.01855	0.008769	8.25	2.12	0.0663
temp_dev		-0.00104	0.007033	178	-0.15	0.8821

Mixed Model With Local Nugget

The Mixed Procedure

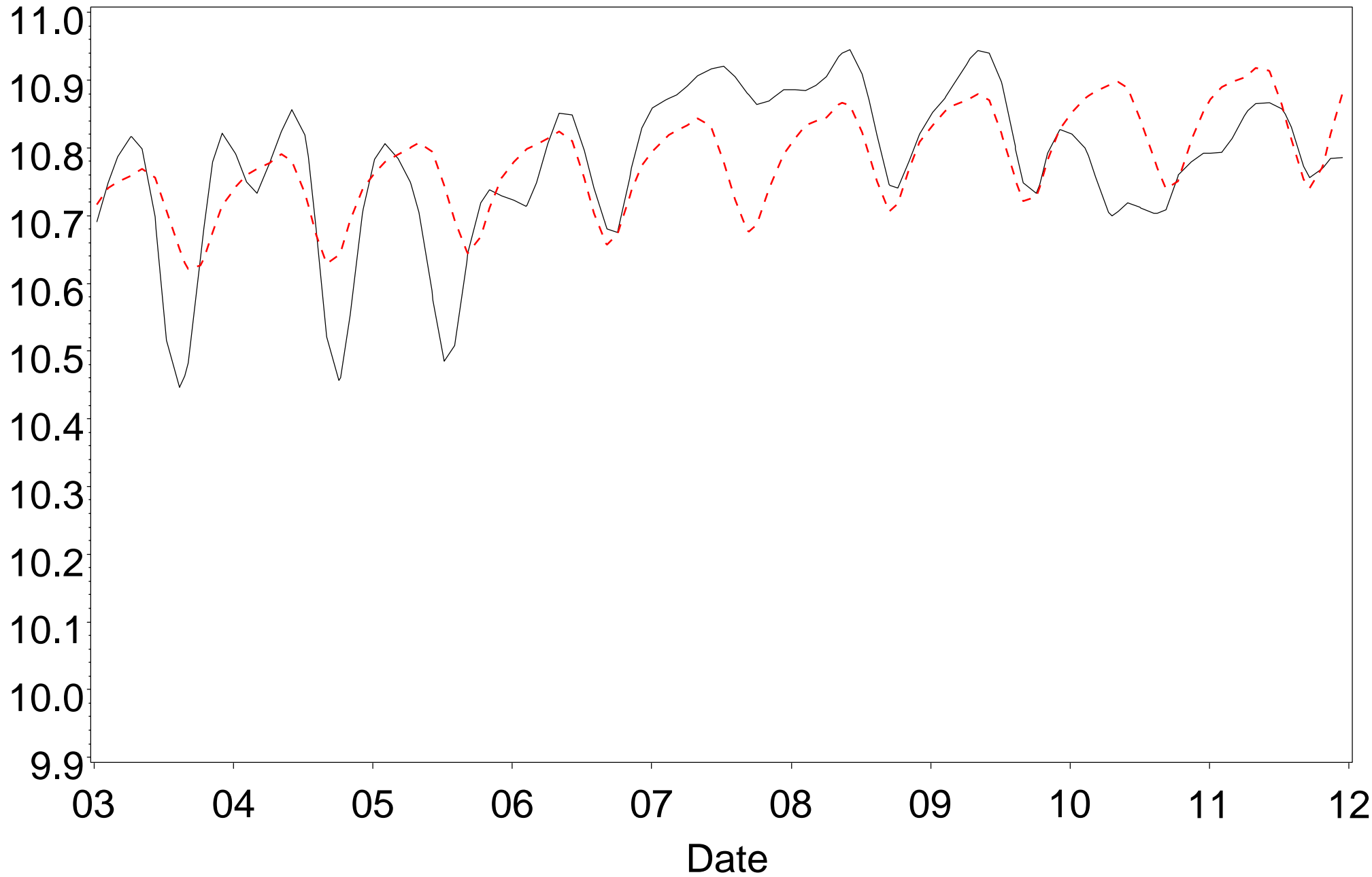
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	83.1	2.94	0.0025
date1	1	8.25	4.47	0.0663
temp_dev	1	178	0.02	0.8821

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale
COND

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	527
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1621.09190851	
1	2	1532.19859125	0.04542414
2	2	1527.43922276	0.02089853
3	2	1520.11017414	0.00327732
4	1	1519.11620045	0.00004487
5	1	1519.10312679	0.00000001
6	1	1519.10312267	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01758	0.02090	0.84	0.2002
Variance	Intercept	0.5050	0.1105	4.57	<.0001
SP(POW)	Intercept	0.3062	0.1368	2.24	0.0252
Residual		0.7738	0.05641	13.72	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1519.1
AIC (smaller is better)	1527.1
AICC (smaller is better)	1527.2
BIC (smaller is better)	1532.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-54.0854	76.5868	17.7	-0.71	0.4893
season	1	0.3566	0.3468	72.2	1.03	0.3073
season	2	0.6404	0.3778	81.8	1.70	0.0938
season	3	0.1804	0.3842	79.6	0.47	0.6400
season	4	-0.4313	0.3890	79.4	-1.11	0.2709
season	5	-0.6310	0.3879	77.5	-1.63	0.1079
season	6	-1.0610	0.3904	79.2	-2.72	0.0081
season	7	-1.5145	0.3882	78	-3.90	0.0002
season	8	-1.4571	0.3932	82.2	-3.71	0.0004
season	9	-1.1681	0.3869	83.3	-3.02	0.0034
season	10	-1.0359	0.3766	82.5	-2.75	0.0073
season	11	-0.8524	0.3408	68.1	-2.50	0.0148
season	12	0	.	.	.	.
date1		0.03089	0.03814	17.7	0.81	0.4288
temp_dev		-0.09679	0.07131	156	-1.36	0.1766

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.6	4.96	<.0001
date1	1	17.7	0.66	0.4288
temp_dev	1	156	1.84	0.1766

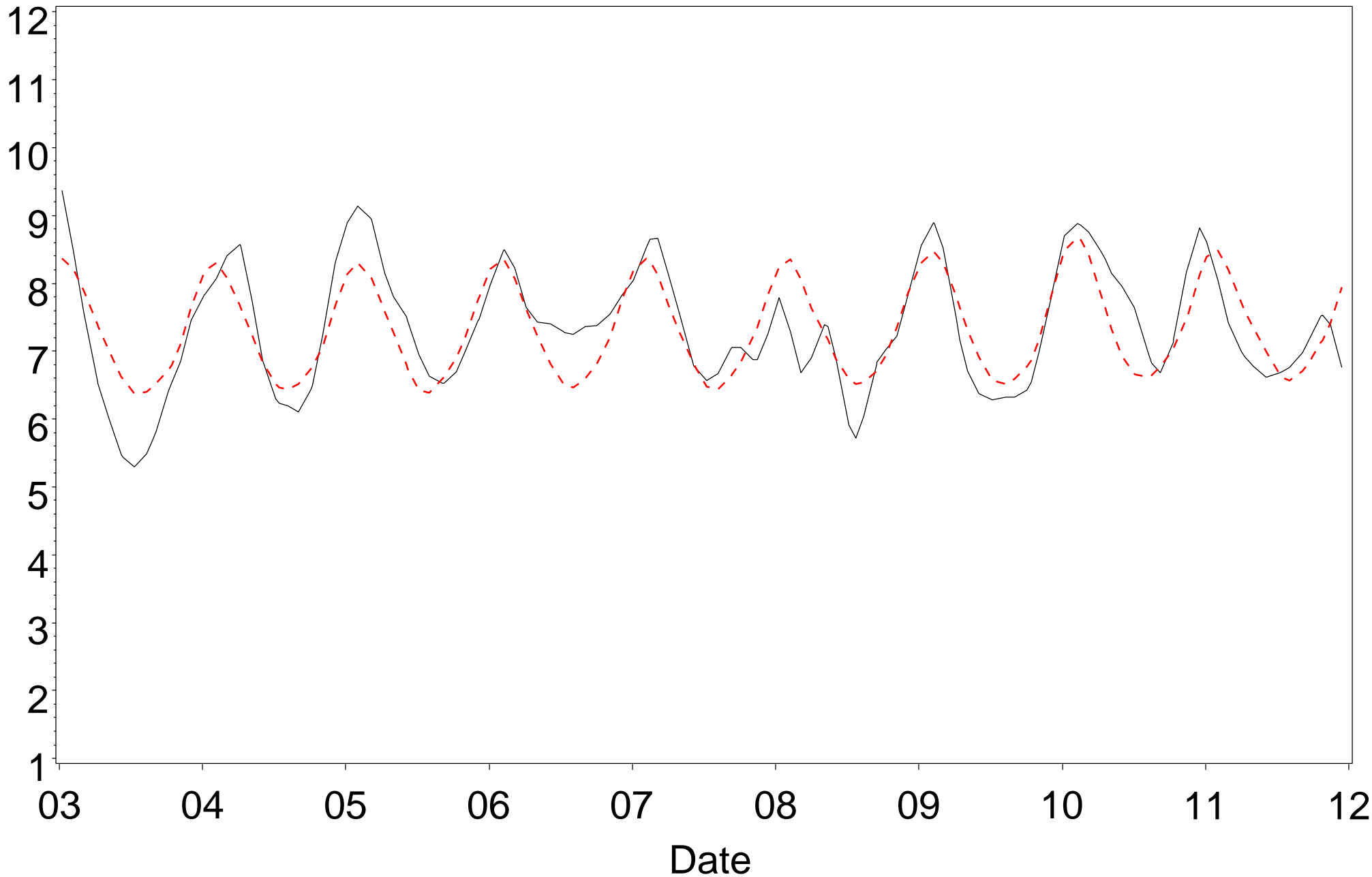
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	260
Number of Observations Not Used	280

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	541.06303578	
1	3	526.54373959	0.03054780
2	2	525.10173288	0.00940547
3	2	524.74519926	0.00002568
4	1	524.74426673	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03155	0.02033	1.55	0.0604
Variance	Intercept	0.07686	0.03542	2.17	0.0150
SP(POW)	Intercept	0.3931	0.3509	1.12	0.2627
Residual		0.3400	0.03611	9.42	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	524.7
AIC (smaller is better)	532.7
AICC (smaller is better)	532.9
BIC (smaller is better)	538.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		190.13	70.6228	6.61	2.69	0.0327
season	1	0.07150	0.2369	33.6	0.30	0.7647
season	2	0.2549	0.2524	34.1	1.01	0.3196
season	3	0.05426	0.2542	37.2	0.21	0.8321
season	4	0.1392	0.2510	42.7	0.55	0.5820
season	5	-0.1991	0.2559	45.8	-0.78	0.4406
season	6	-0.1681	0.2542	47.4	-0.66	0.5117
season	7	0.3115	0.2553	46.8	1.22	0.2285
season	8	0.1043	0.2788	45.9	0.37	0.7100
season	9	0.9721	0.2600	38.8	3.74	0.0006
season	10	0.6176	0.2621	36.1	2.36	0.0240
season	11	0.08430	0.2248	27	0.37	0.7107
season	12	0	.	.	.	.
date1		-0.09440	0.03521	6.61	-2.68	0.0332
temp_dev		0.01173	0.05906	78.8	0.20	0.8431

Mixed Model With Local Nugget

The Mixed Procedure

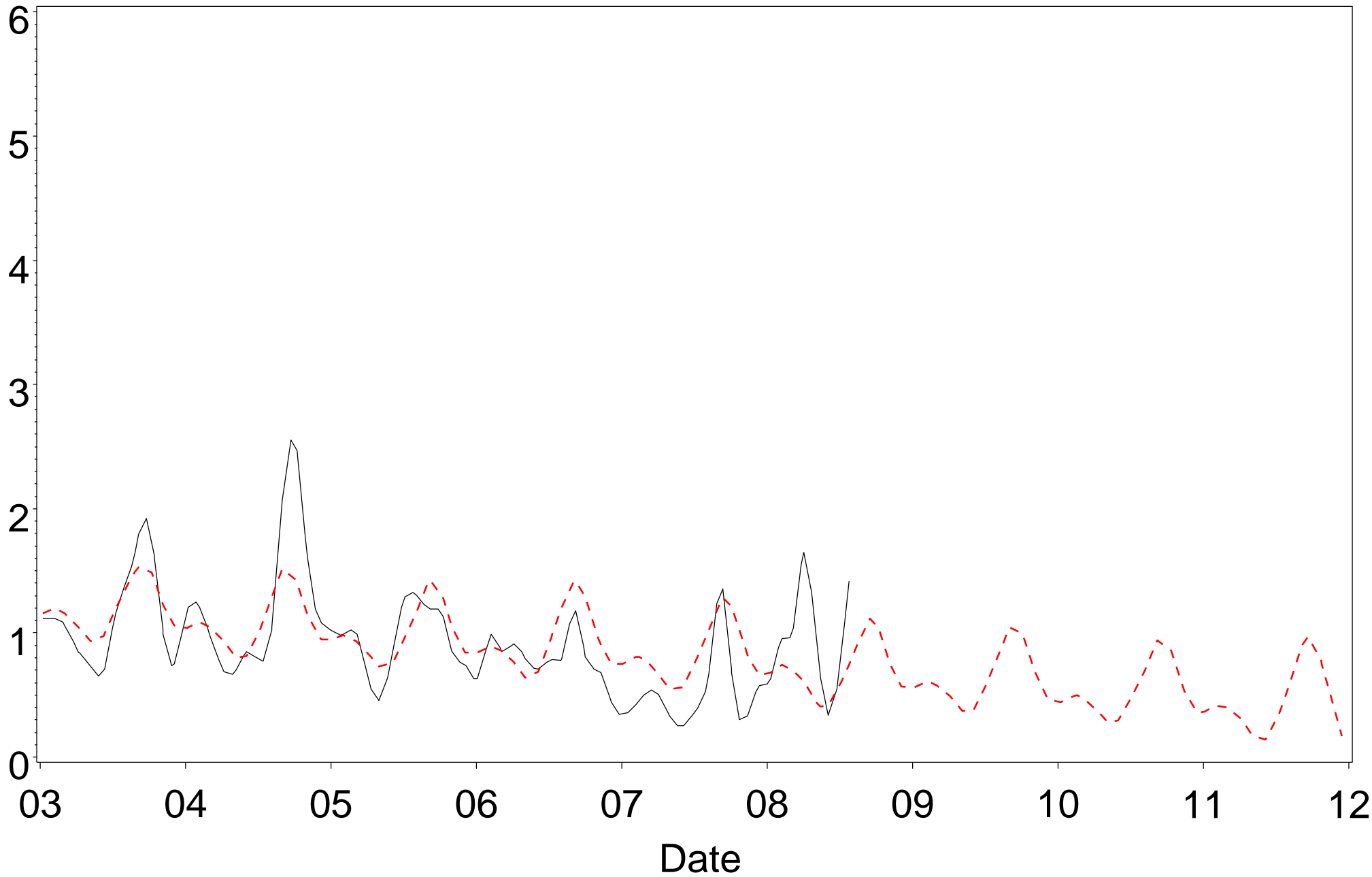
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	32.8	2.98	0.0075
date1	1	6.61	7.19	0.0332
temp_dev	1	78.8	0.04	0.8431

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	509
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1330.64862744	
1	4	997.84082814	1.00480124
2	1	945.99529773	0.36959325
3	1	937.79545850	0.23477426
4	2	935.49981732	0.13119336
5	1	933.62560657	0.00556457
6	1	933.55675450	0.00002249
7	1	933.55648563	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.6545	0.1345	4.87	<.0001
SP(POW)	Intercept	0.5224	0.1002	5.21	<.0001
Residual		0.2178	0.01539	14.15	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	933.6
AIC (smaller is better)	939.6
AICC (smaller is better)	939.6
BIC (smaller is better)	943.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-212.47	102.27	12.7	-2.08	0.0586
season	1	-0.00508	0.2953	78.5	-0.02	0.9863
season	2	0.1148	0.3495	86.1	0.33	0.7433
season	3	-0.1653	0.3815	83.8	-0.43	0.6660
season	4	0.1849	0.3852	77.1	0.48	0.6326
season	5	0.001493	0.3896	72.2	0.00	0.9970
season	6	-0.2416	0.3919	71.8	-0.62	0.5395
season	7	0.1951	0.3895	73.3	0.50	0.6181
season	8	-0.1408	0.3855	79.3	-0.37	0.7159
season	9	0.1357	0.3713	84.7	0.37	0.7157
season	10	-0.2830	0.3443	85.5	-0.82	0.4133
season	11	-0.09643	0.2962	74.3	-0.33	0.7457
season	12	0	.	.	.	.
date1		0.1041	0.05094	12.7	2.04	0.0623
temp_dev		0.04448	0.05071	280	0.88	0.3812

Mixed Model With Local Nugget

The Mixed Procedure

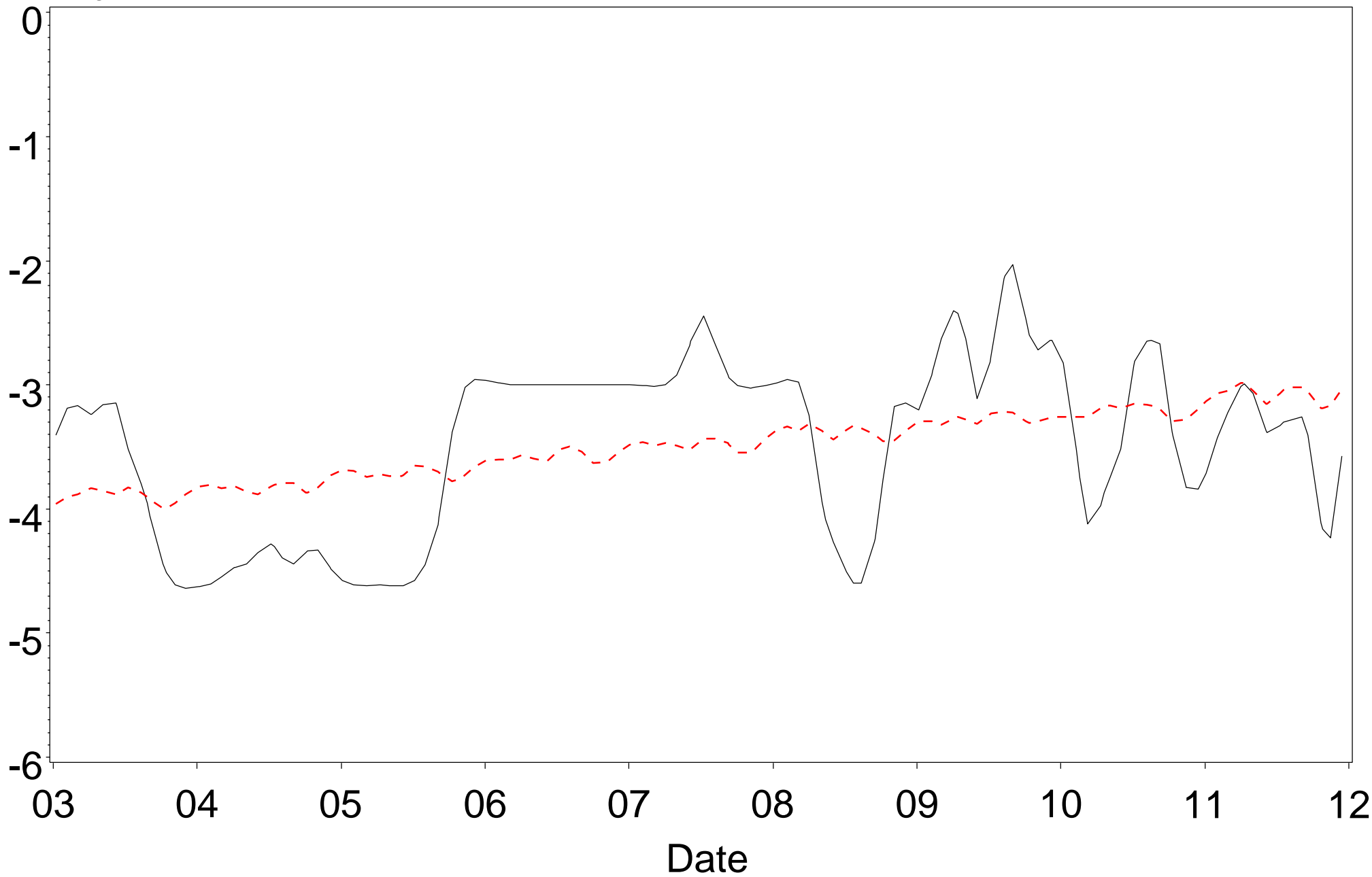
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.4	0.74	0.7013
date1	1	12.7	4.18	0.0623
temp_dev	1	280	0.77	0.3812

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	370
Number of Observations Not Used	170

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	658.80495618	
1	4	309.59817018	.
2	1	297.14817727	0.01632539
3	2	293.15029751	0.01513468
4	2	291.34241411	0.01027389
5	1	289.22437609	0.00063139
6	1	289.10367414	0.00000365
7	1	289.10300512	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.001719	0.001801	0.95	0.1699
Variance	Intercept	0.2894	0.07095	4.08	<.0001
SP(POW)	Intercept	0.4977	0.1212	4.11	<.0001
Residual		0.07010	0.005929	11.82	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	289.1
AIC (smaller is better)	297.1
AICC (smaller is better)	297.2
BIC (smaller is better)	302.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		428.66	112.20	9.82	3.82	0.0035
season	1	-0.1657	0.2305	49	-0.72	0.4758
season	2	-0.04206	0.2763	55.6	-0.15	0.8795
season	3	0.1954	0.3059	53.8	0.64	0.5257
season	4	-0.06318	0.3032	48.2	-0.21	0.8358
season	5	-0.2218	0.3066	45.2	-0.72	0.4732
season	6	0.04764	0.3077	44.5	0.15	0.8777
season	7	-0.00876	0.3064	45.4	-0.03	0.9773
season	8	0.1808	0.3054	50.4	0.59	0.5564
season	9	0.4263	0.2931	54.4	1.45	0.1516
season	10	0.1864	0.2633	55.8	0.71	0.4819
season	11	0.02913	0.2284	47.8	0.13	0.8991
season	12	0	.	.	.	.
date1		-0.2157	0.05585	9.82	-3.86	0.0033
temp_dev		-0.00911	0.03726	245	-0.24	0.8070

Mixed Model With Local Nugget

The Mixed Procedure

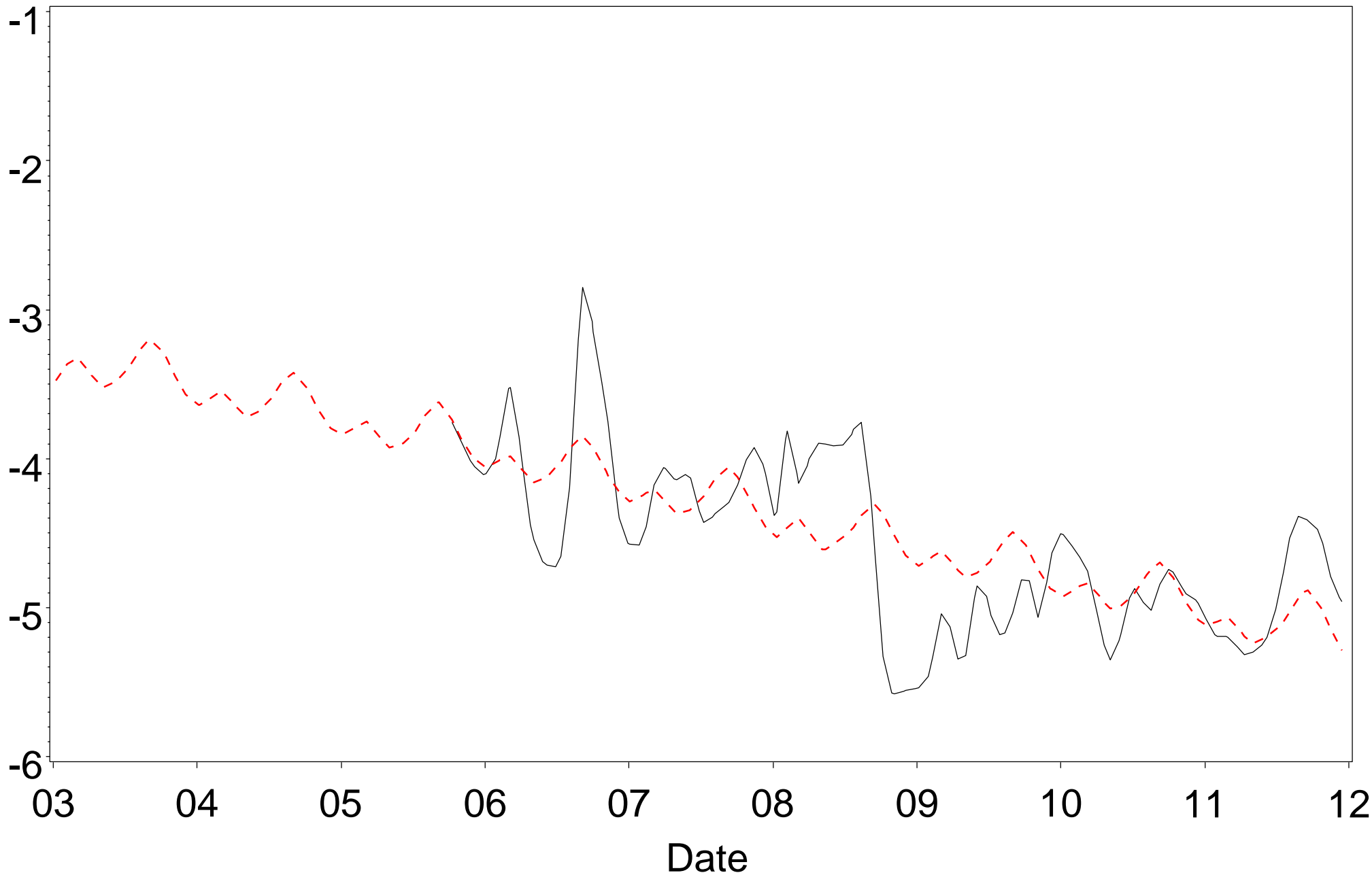
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.2	0.67	0.7617
date1	1	9.82	14.91	0.0033
temp_dev	1	245	0.06	0.8070

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	527
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-50.08466042	
1	3	-115.97935608	0.43169939
2	2	-123.70917137	0.45942510
3	2	-135.73802415	0.00208478
4	2	-136.87238356	0.00001650
5	1	-136.88143486	0.00000001
6	1	-136.88144038	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002793	0.001521	1.84	0.0332
Variance	Intercept	0.01720	0.003520	4.89	<.0001
SP(POW)	Intercept	-0.05067	0.1683	-0.30	0.7633
Residual		0.02995	0.002169	13.81	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-136.9
AIC (smaller is better)	-128.9
AICC (smaller is better)	-128.8
BIC (smaller is better)	-123.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-17.4804	11.2149	29.6	-1.56	0.1297
season	1	0.06075	0.07415	60.2	0.82	0.4159
season	2	0.1002	0.07346	91.7	1.36	0.1759
season	3	0.05119	0.07241	90.7	0.71	0.4814
season	4	0.09493	0.07326	94.1	1.30	0.1982
season	5	0.1153	0.07293	93	1.58	0.1174
season	6	0.1958	0.07344	95.5	2.67	0.0090
season	7	0.1128	0.07301	93.6	1.54	0.1258
season	8	0.1454	0.07415	97	1.96	0.0527
season	9	0.06103	0.07306	94.8	0.84	0.4057
season	10	0.05702	0.07360	93.3	0.77	0.4404
season	11	-0.08710	0.07411	55.2	-1.18	0.2449
season	12	0	.	.	.	.
date1		0.01268	0.005585	29.6	2.27	0.0306
temp_dev		0.02984	0.01393	148	2.14	0.0339

Mixed Model With Local Nugget

The Mixed Procedure

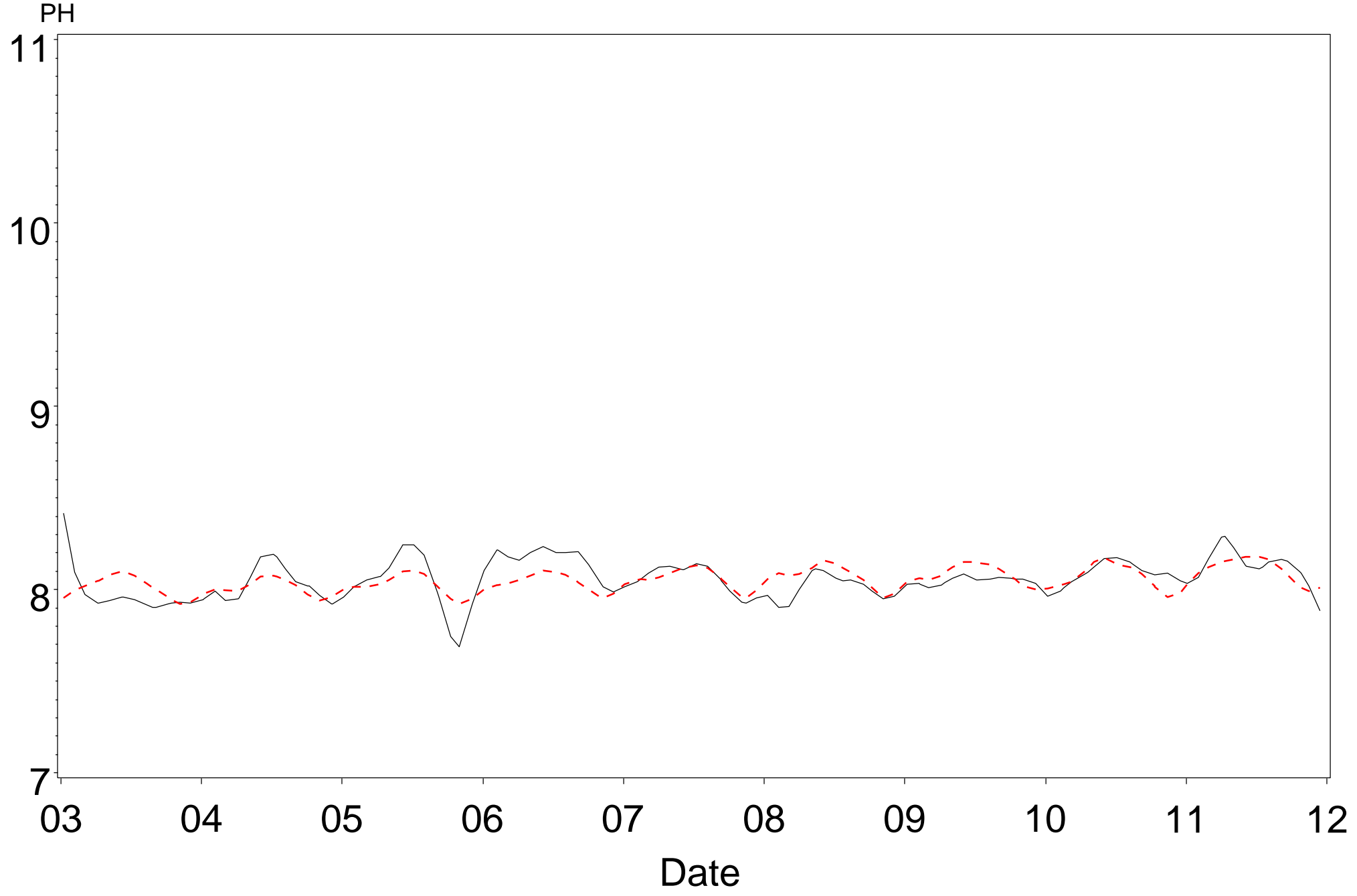
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.8	1.98	0.0429
date1	1	29.6	5.15	0.0306
temp_dev	1	148	4.58	0.0339

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = pH (SU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	527
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-395.50344931	
1	2	-877.48237300	0.01165122
2	1	-890.01885560	0.00162590
3	1	-891.71604987	0.00013629
4	1	-891.84695558	0.00000138
5	1	-891.84822346	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01032	0.002890	3.57	0.0002
Variance	Intercept	0.01367	0.003497	3.91	<.0001
SP(POW)	Intercept	0.6826	0.08488	8.04	<.0001
Residual		0.005229	0.000375	13.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-891.8
AIC (smaller is better)	-883.8
AICC (smaller is better)	-883.8
BIC (smaller is better)	-878.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-41.3089	18.1896	8.71	-2.27	0.0502
season	1	0.000049	0.03710	86.7	0.00	0.9989
season	2	0.04244	0.04503	83.6	0.94	0.3487
season	3	0.03994	0.04937	81.7	0.81	0.4209
season	4	0.05326	0.05211	80.3	1.02	0.3099
season	5	0.06851	0.05329	77.2	1.29	0.2025
season	6	0.06636	0.05374	77.1	1.23	0.2206
season	7	-0.04390	0.05314	77.7	-0.83	0.4112
season	8	-0.05702	0.05201	82	-1.10	0.2761
season	9	-0.1806	0.04893	83.1	-3.69	0.0004
season	10	-0.1298	0.04410	83.1	-2.94	0.0042
season	11	-0.02503	0.03552	84.1	-0.70	0.4829
season	12	0	.	.	.	.
date1		0.02230	0.009060	8.71	2.46	0.0369
temp_dev		-0.00389	0.007188	192	-0.54	0.5886

Mixed Model With Local Nugget

The Mixed Procedure

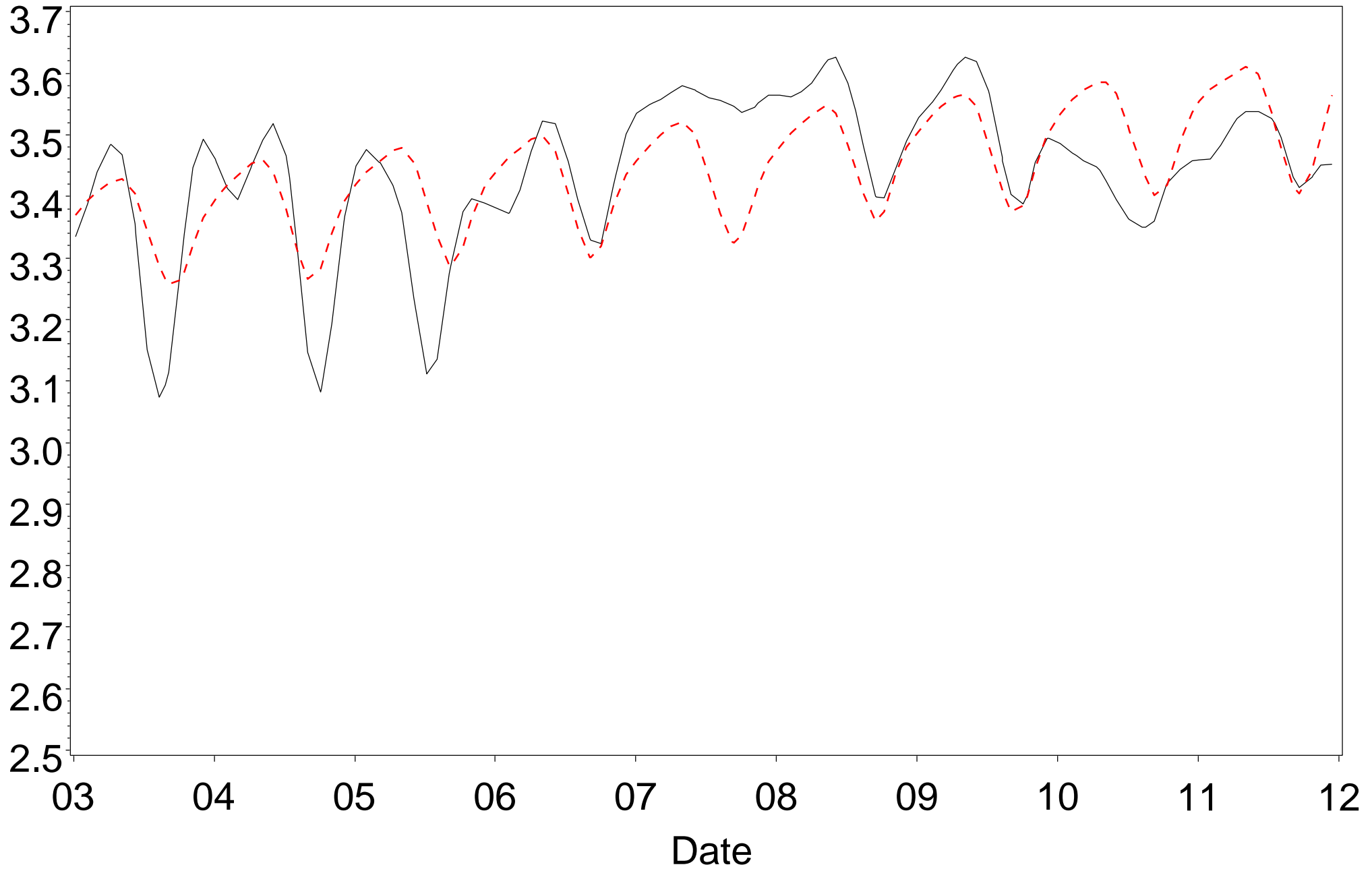
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	81.7	3.32	0.0008
date1	1	8.71	6.06	0.0369
temp_dev	1	192	0.29	0.5886

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	527
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1285.69842265	
1	2	-1815.84914131	0.01781093
2	1	-1846.21016357	0.00702933
3	2	-1860.23259370	0.00900227
4	2	-1870.25567338	0.00462671
5	2	-1877.91228308	0.00056773
6	1	-1878.79479162	0.00001847
7	1	-1878.82152921	0.00000003
8	1	-1878.82157178	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.003880	0.000590	6.58	<.0001
SP(POW)	Intercept	0.07195	0.1114	0.65	0.5183
Residual		0.000737	0.000051	14.47	<.0001

Fit Statistics	
-2 Res Log Likelihood	-1878.8
AIC (smaller is better)	-1872.8
AICC (smaller is better)	-1872.8
BIC (smaller is better)	-1868.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		9.5061	5.0224	27.7	1.89	0.0689
season	1	-0.05744	0.02916	70.7	-1.97	0.0528
season	2	-0.01877	0.03013	94.9	-0.62	0.5347
season	3	0.05012	0.03003	93.7	1.67	0.0985
season	4	0.2547	0.03003	94	8.48	<.0001
season	5	0.3395	0.03001	93.9	11.31	<.0001
season	6	0.4459	0.03004	94.3	14.85	<.0001
season	7	0.4520	0.03000	94	15.07	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.4766	0.03010	95.1	15.83	<.0001
season	9	0.4529	0.03003	94.3	15.08	<.0001
season	10	0.3626	0.03008	95	12.05	<.0001
season	11	0.2114	0.02894	65.1	7.30	<.0001
season	12	0	.	.	.	.
date1		-0.00326	0.002501	27.7	-1.30	0.2035
temp_dev		0.09173	0.003443	487	26.64	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.4	83.33	<.0001
date1	1	27.7	1.70	0.2035
temp_dev	1	487	709.74	<.0001

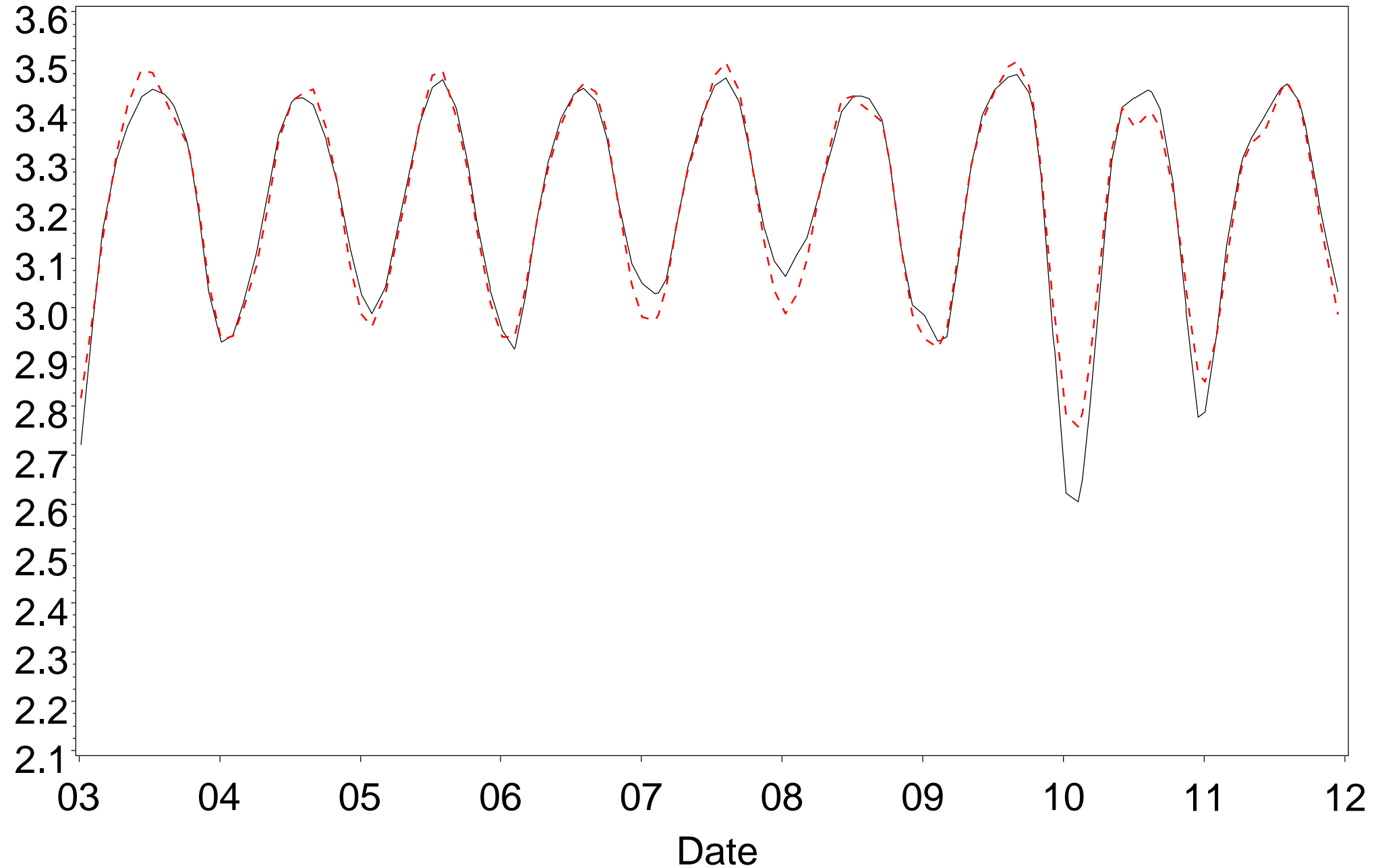
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = Temperature (Degree C) and Sample Level = Surface

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	520
Number of Observations Not Used	20

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1249.26506648	
1	3	982.24991223	0.30154163
2	1	972.18435389	0.38965533
3	2	968.12614851	0.26269570
4	1	962.27194728	0.03469261
5	1	961.67020131	0.00053597
6	1	961.66161674	0.00000013
7	1	961.66161461	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05189	0.01961	2.65	0.0041
Variance	Intercept	0.3794	0.07166	5.29	<.0001
SP(POW)	Intercept	0.3921	0.1092	3.59	0.0003
Residual		0.2197	0.01583	13.88	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	961.7
AIC (smaller is better)	969.7
AICC (smaller is better)	969.7
BIC (smaller is better)	975.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-3.2738	68.9716	17.2	-0.05	0.9627
season	1	0.1655	0.2569	81	0.64	0.5213
season	2	0.06761	0.2917	90.9	0.23	0.8172
season	3	-0.1740	0.3103	87.1	-0.56	0.5766
season	4	0.04064	0.3079	81.8	0.13	0.8953
season	5	0.4355	0.3083	77.8	1.41	0.1618
season	6	0.2980	0.3093	77.8	0.96	0.3384
season	7	0.4353	0.3083	78.3	1.41	0.1619
season	8	0.08563	0.3094	84.2	0.28	0.7826
season	9	0.2557	0.3027	88.6	0.84	0.4005
season	10	-0.09434	0.2897	91.6	-0.33	0.7455
season	11	-0.09665	0.2502	75.8	-0.39	0.7004
season	12	0	.	.	.	.
date1		0.001201	0.03435	17.2	0.03	0.9725
temp_dev		0.04863	0.04866	231	1.00	0.3186

Mixed Model With Local Nugget

The Mixed Procedure

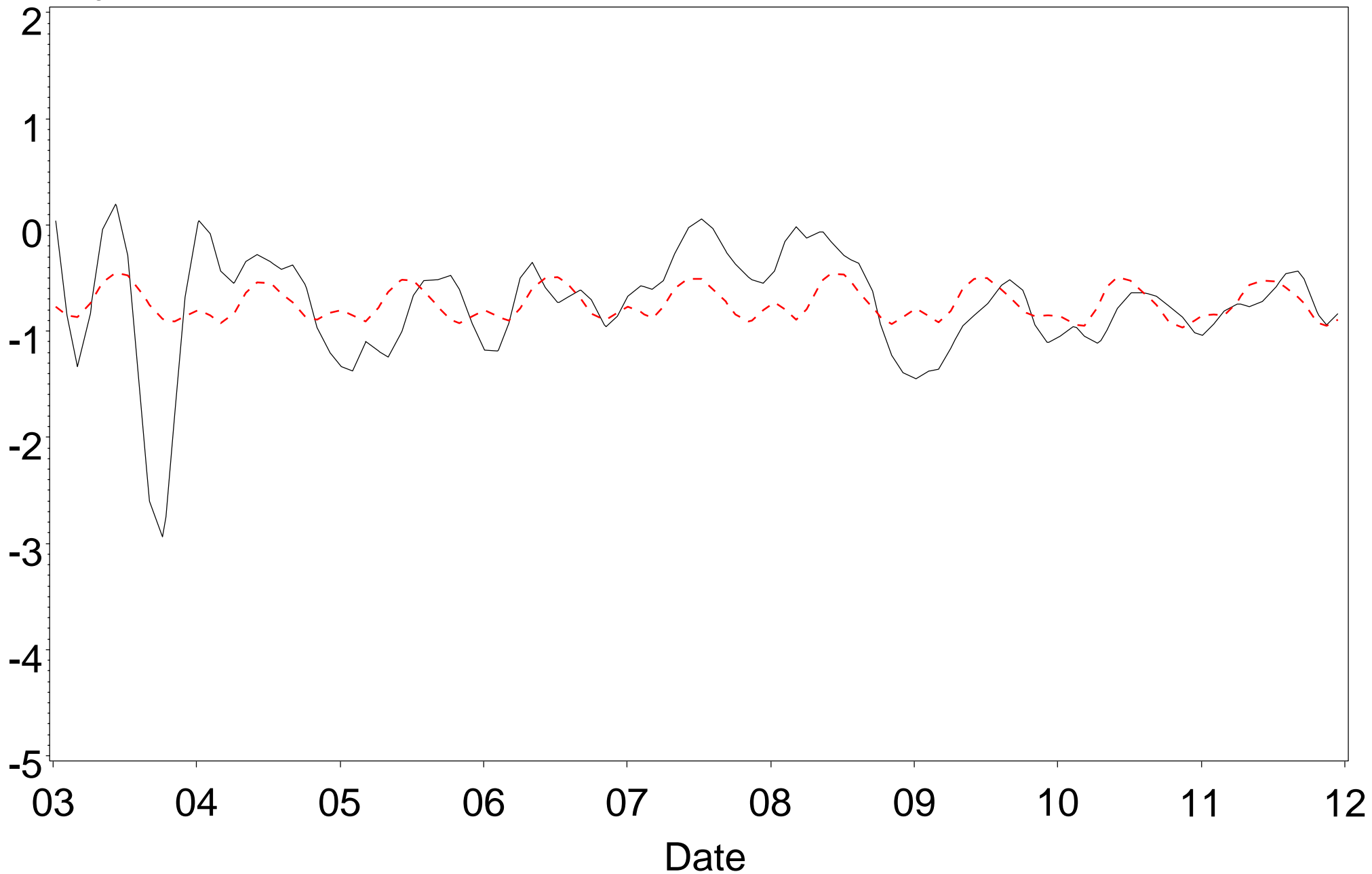
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	79.3	0.85	0.5904
date1	1	17.2	0.00	0.9725
temp_dev	1	231	1.00	0.3186

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	511
Number of Observations Not Used	29

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	883.61006737	
1	3	625.49712674	0.10187025
2	1	608.20376936	0.03649145
3	2	603.20662087	0.03474691
4	1	596.71613217	0.00655539
5	1	595.60675497	0.00019517
6	1	595.57515124	0.00000017
7	1	595.57512463	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03881	0.01346	2.88	0.0020
Variance	Intercept	0.1854	0.03686	5.03	<.0001
SP(POW)	Intercept	0.4295	0.1087	3.95	<.0001
Residual		0.1069	0.007836	13.64	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	595.6
AIC (smaller is better)	603.6
AICC (smaller is better)	603.7
BIC (smaller is better)	609.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		63.2428	50.1464	15.8	1.26	0.2255
season	1	0.1141	0.1755	76.1	0.65	0.5176
season	2	0.03406	0.2011	84	0.17	0.8659
season	3	-0.1145	0.2157	81.9	-0.53	0.5970
season	4	0.01056	0.2145	76.5	0.05	0.9609
season	5	0.3988	0.2152	72.5	1.85	0.0680
season	6	0.2892	0.2167	73.2	1.33	0.1861
season	7	0.4005	0.2151	73	1.86	0.0667
season	8	0.3385	0.2164	80.1	1.56	0.1217
season	9	0.3180	0.2099	82.7	1.52	0.1335
season	10	0.09846	0.2008	85.8	0.49	0.6252
season	11	-0.1083	0.1705	71.5	-0.63	0.5275
season	12	0	.	.	.	.
date1		-0.03191	0.02498	15.8	-1.28	0.2199
temp_dev		0.06709	0.03393	202	1.98	0.0494

Mixed Model With Local Nugget

The Mixed Procedure

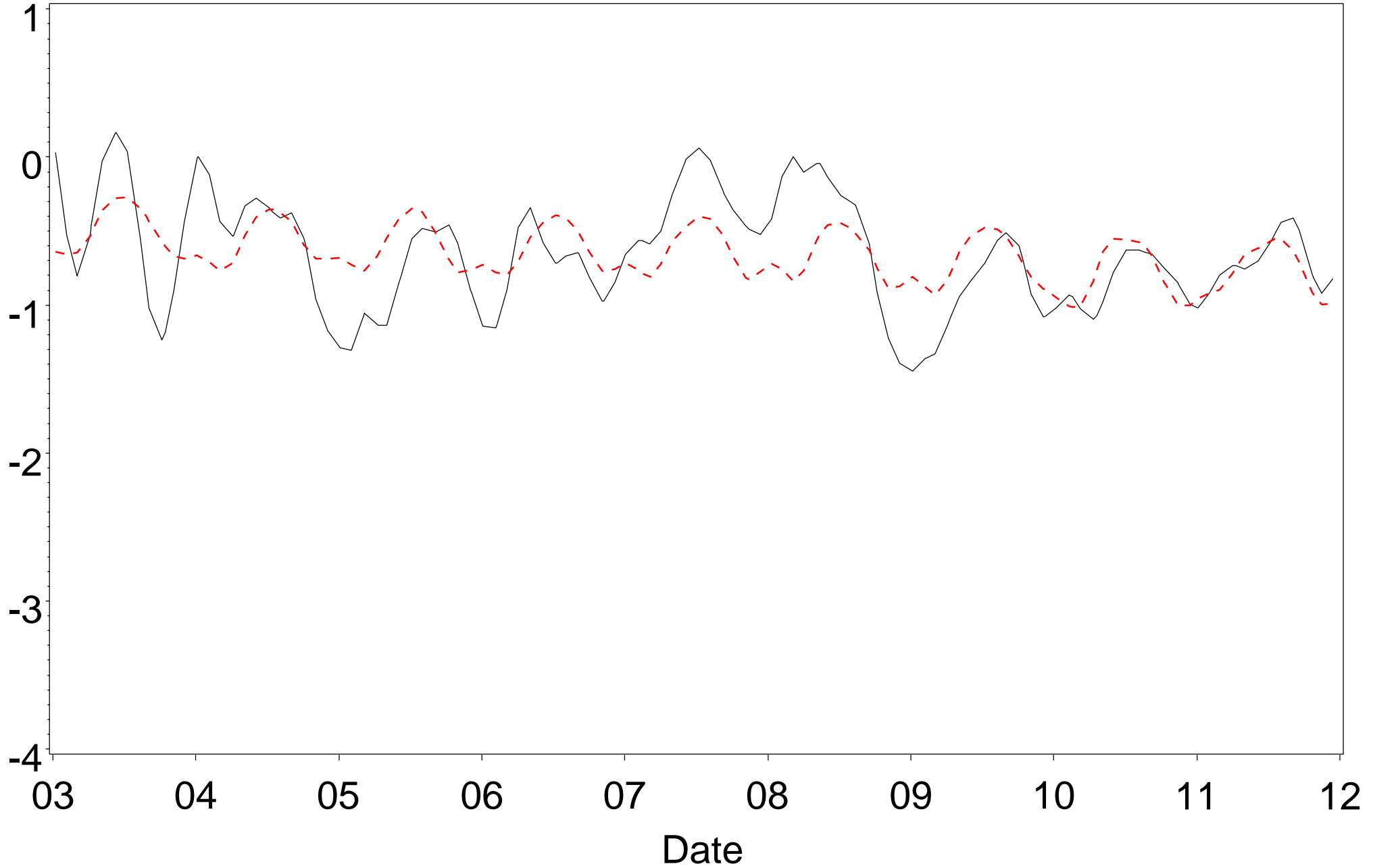
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.9	1.26	0.2630
date1	1	15.8	1.63	0.2199
temp_dev	1	202	3.91	0.0494

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	521
Number of Observations Not Used	19

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1071.02325471	
1	3	721.41709204	0.05883259
2	2	713.19005958	0.12225629
3	2	708.88996983	0.07055198
4	2	698.61789409	0.03204303
5	2	694.69140031	0.00382404
6	1	694.20530804	0.00005710
7	1	694.19844390	0.00000002
8	1	694.19844152	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1069	0.03195	3.34	0.0004
Variance	Intercept	0.2211	0.03920	5.64	<.0001
SP(POW)	Intercept	0.3102	0.1144	2.71	0.0067
Residual		0.1191	0.008603	13.84	<.0001

Fit Statistics	
-2 Res Log Likelihood	694.2
AIC (smaller is better)	702.2
AICC (smaller is better)	702.3
BIC (smaller is better)	707.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		91.4789	48.7356	20.3	1.88	0.0749
season	1	0.09271	0.2044	73.6	0.45	0.6515
season	2	0.02918	0.2275	90	0.13	0.8982
season	3	0.01861	0.2392	88	0.08	0.9382
season	4	-0.02534	0.2353	85.2	-0.11	0.9145
season	5	0.1864	0.2349	82.7	0.79	0.4297
season	6	0.1194	0.2355	83.1	0.51	0.6135
season	7	0.6635	0.2349	83.1	2.82	0.0059

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.6789	0.2412	86.8	2.81	0.0060
season	9	0.8419	0.2332	89.4	3.61	0.0005
season	10	0.7330	0.2261	89.7	3.24	0.0017
season	11	0.3666	0.2000	68.1	1.83	0.0711
season	12	0	.	.	.	.
date1		-0.04495	0.02427	20.3	-1.85	0.0786
temp_dev		0.09480	0.03755	246	2.52	0.0122

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.2	2.84	0.0037
date1	1	20.3	3.43	0.0786
temp_dev	1	246	6.37	0.0122

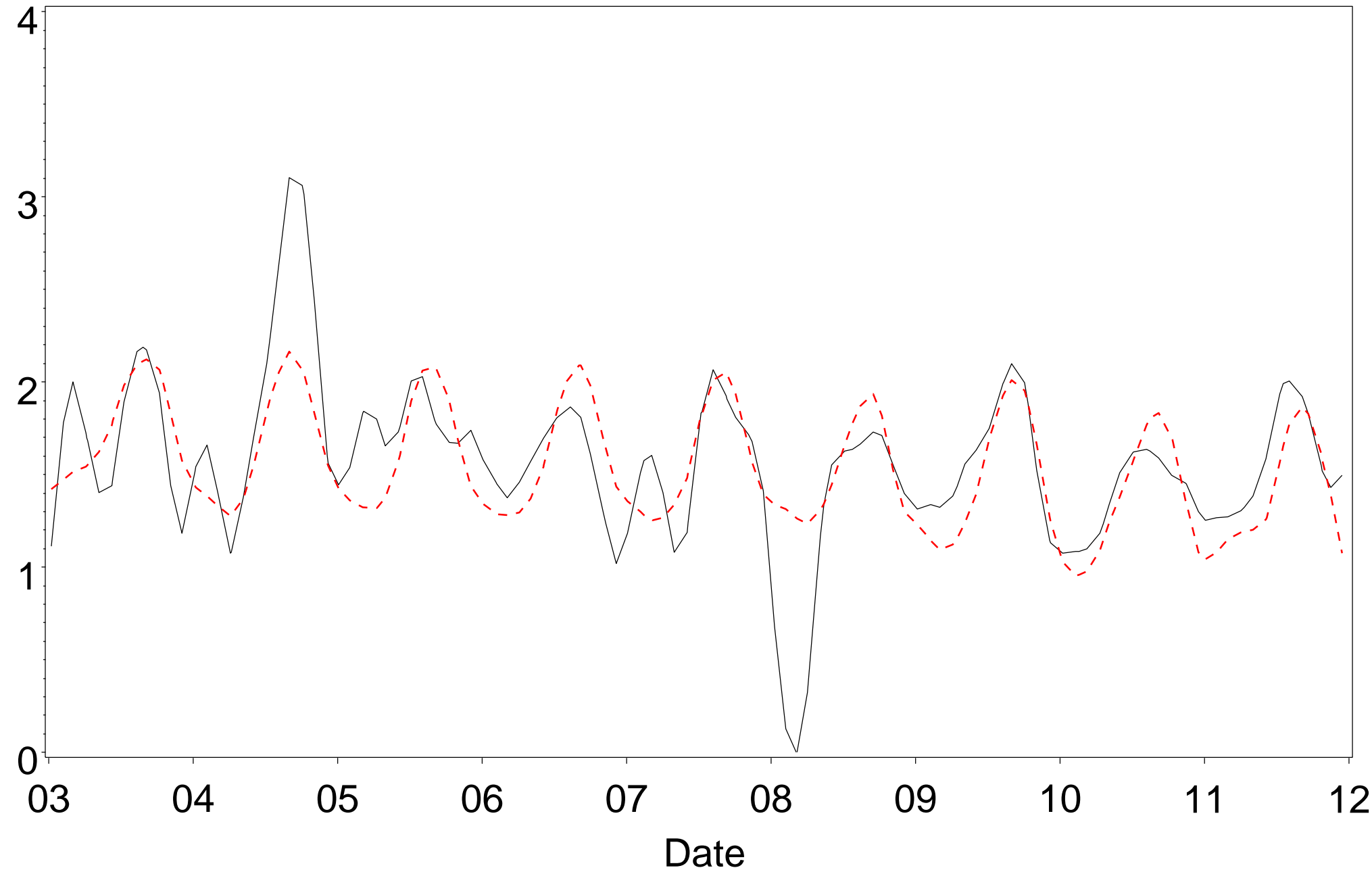
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	522
Number of Observations Not Used	18

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1311.90091720	
1	2	955.14083420	0.27895563
2	1	951.50071804	0.12129350
3	2	950.53694194	0.02838628
4	1	950.28569102	0.00021934
5	1	950.28384326	0.00000010
6	1	950.28384243	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1936	0.06079	3.18	0.0007
Variance	Intercept	0.3846	0.09872	3.90	<.0001
SP(POW)	Intercept	0.6732	0.09192	7.32	<.0001
Residual		0.2109	0.01534	13.74	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	950.3
AIC (smaller is better)	958.3
AICC (smaller is better)	958.4
BIC (smaller is better)	964.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		199.63	95.3433	8.65	2.09	0.0670
season	1	-0.00887	0.2070	76.9	-0.04	0.9659
season	2	-0.5466	0.2480	72.9	-2.20	0.0307
season	3	-0.4098	0.2756	72.9	-1.49	0.1414
season	4	-0.3556	0.2848	73	-1.25	0.2158
season	5	-0.5557	0.2907	71	-1.91	0.0600
season	6	-0.3925	0.2932	71.3	-1.34	0.1850
season	7	-0.3406	0.2899	71.3	-1.17	0.2440
season	8	-0.2539	0.2847	74.5	-0.89	0.3754
season	9	0.1403	0.2683	73.7	0.52	0.6026
season	10	-0.1555	0.2431	72.2	-0.64	0.5245
season	11	-0.4108	0.1986	74.6	-2.07	0.0420
season	12	0	.	.	.	.
date1		-0.1006	0.04749	8.65	-2.12	0.0644
temp_dev		0.06605	0.04224	154	1.56	0.1199

Mixed Model With Local Nugget

The Mixed Procedure

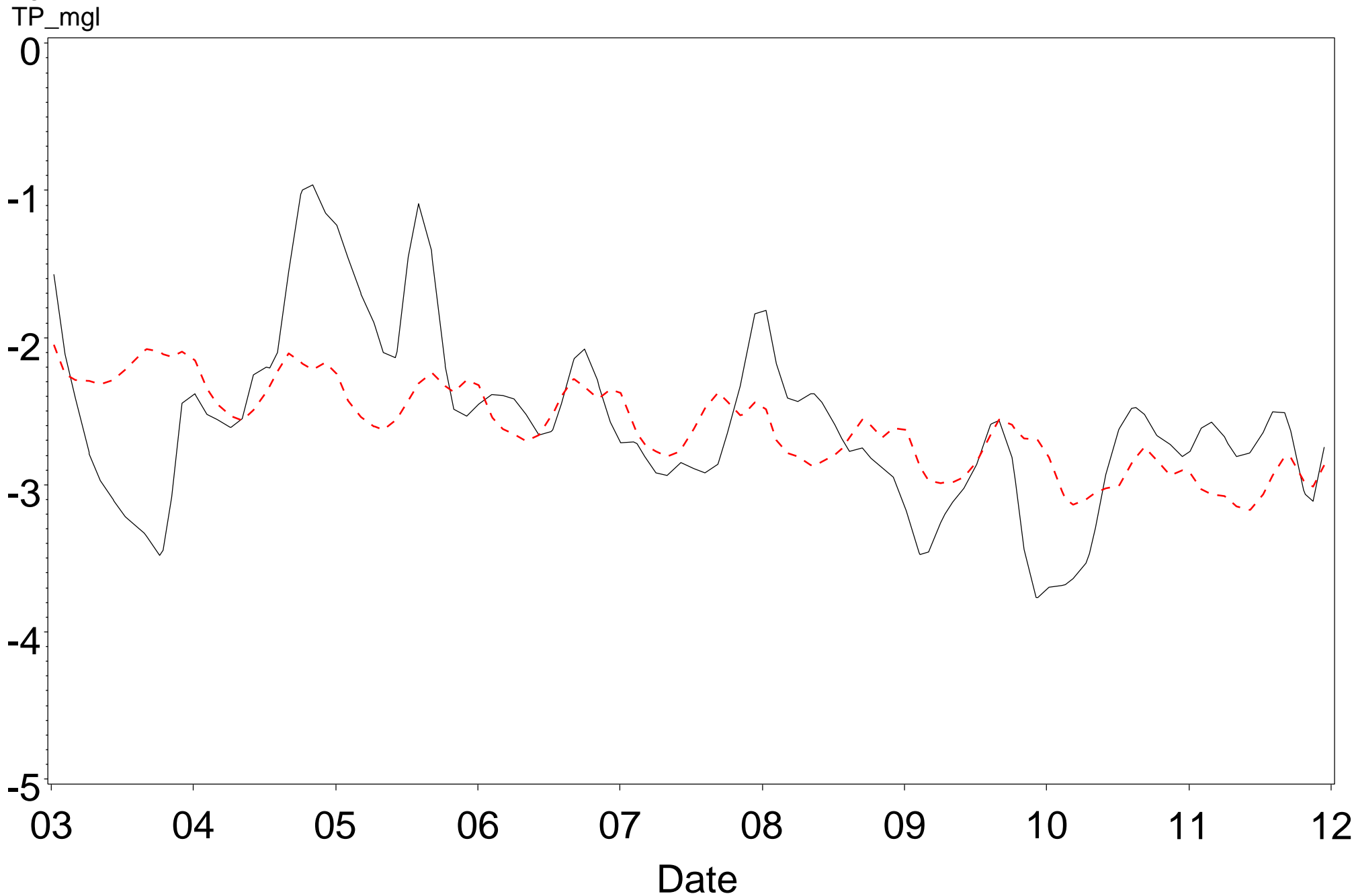
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72	1.76	0.0781
date1	1	8.65	4.49	0.0644
temp_dev	1	154	2.45	0.1199

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	513
Number of Observations Not Used	27

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1334.51959109	
1	2	1115.25406645	0.07156729
2	1	1106.78334841	0.02489477
3	2	1104.20233013	0.01069818
4	1	1103.09106761	0.00048100
5	1	1103.04492941	0.00000126
6	1	1103.04481252	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01212	0.009433	1.28	0.0995
Variance	Intercept	0.5030	0.1173	4.29	<.0001
SP(POW)	Intercept	0.5619	0.1121	5.02	<.0001
Residual		0.3307	0.02389	13.84	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1103.0
AIC (smaller is better)	1111.0
AICC (smaller is better)	1111.1
BIC (smaller is better)	1116.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		45.6415	93.9104	9.63	0.49	0.6378
season	1	0.2397	0.2679	82.7	0.89	0.3735
season	2	0.5100	0.3138	85.2	1.63	0.1078
season	3	0.3975	0.3428	83.1	1.16	0.2496
season	4	0.02976	0.3487	78.2	0.09	0.9322
season	5	-0.01510	0.3523	72.4	-0.04	0.9659
season	6	0.03038	0.3547	71.9	0.09	0.9320
season	7	-0.1969	0.3518	73.2	-0.56	0.5774
season	8	-0.05046	0.3489	80.3	-0.14	0.8854
season	9	-0.1159	0.3341	84.7	-0.35	0.7296
season	10	0.1249	0.3089	84.3	0.40	0.6870
season	11	-0.1045	0.2581	77.5	-0.40	0.6866
season	12	0	.	.	.	.
date1		-0.02165	0.04677	9.63	-0.46	0.6537
temp_dev		0.02325	0.05357	177	0.43	0.6648

Mixed Model With Local Nugget

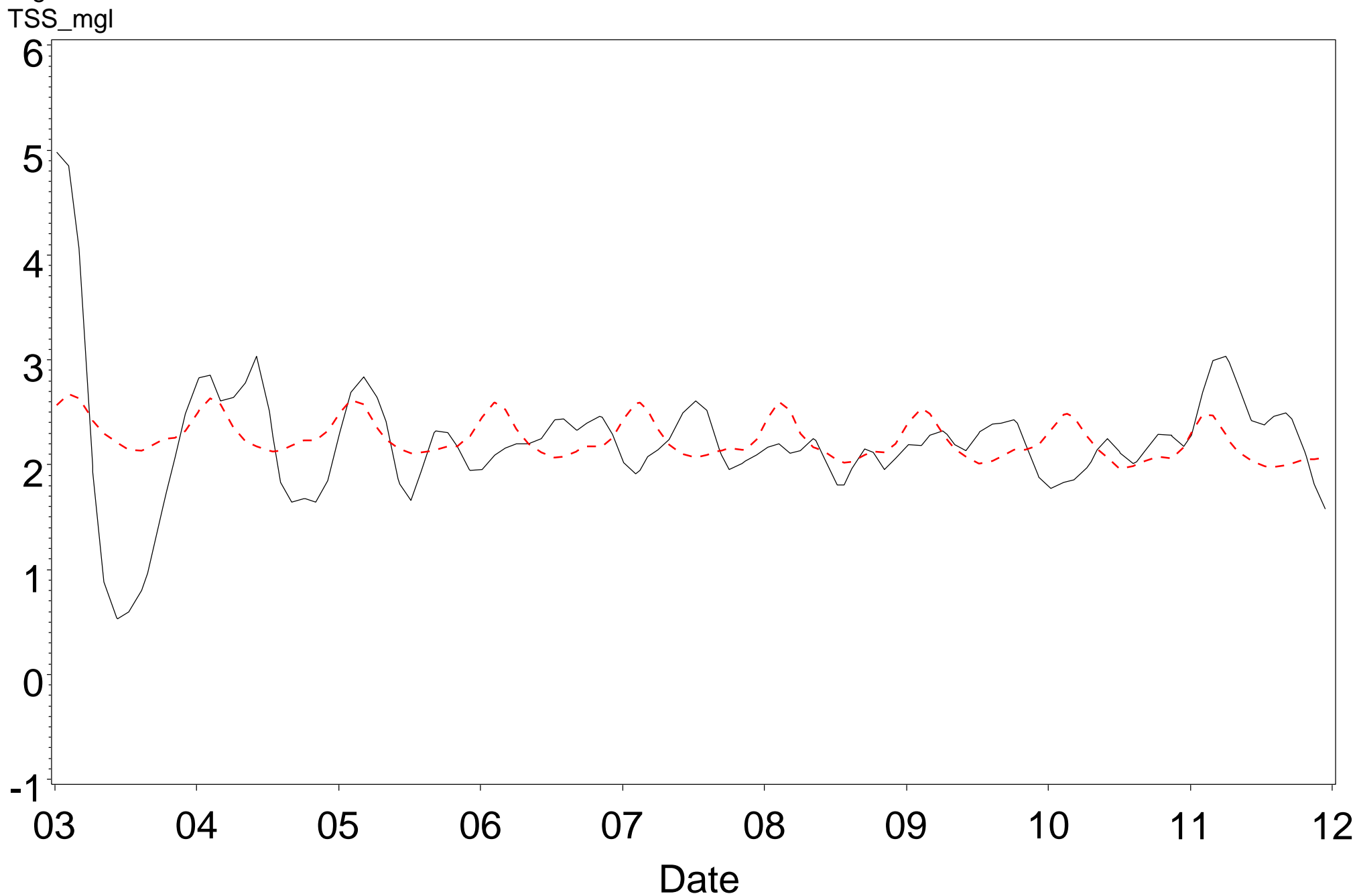
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.3	0.66	0.7709
date1	1	9.63	0.21	0.6537
temp_dev	1	177	0.19	0.6648

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	31	086 087 088 089 097 098 099 100 103 104 112 113 114 115 116 117 118 126 127 128 129 130 131 132 133 86 87 88 97 98 99

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	31
Subjects	1
Max Obs Per Subject	540

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	540
Number of Observations Used	522
Number of Observations Not Used	18

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	991.83041031	
1	2	910.03833662	0.10722537
2	1	908.47322609	0.02950607
3	2	908.06386122	0.00196585
4	1	908.03805288	0.00000417
5	1	908.03799938	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01336	0.008543	1.56	0.0589
Variance	Intercept	0.1236	0.03992	3.10	0.0010
SP(POW)	Intercept	0.7250	0.1155	6.28	<.0001
Residual		0.2575	0.01849	13.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	908.0
AIC (smaller is better)	916.0
AICC (smaller is better)	916.1
BIC (smaller is better)	921.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-132.93	58.3785	5.87	-2.28	0.0640
season	1	0.1378	0.1476	95.9	0.93	0.3529
season	2	0.4087	0.1651	66	2.48	0.0158
season	3	0.3984	0.1795	60	2.22	0.0303
season	4	0.2335	0.1846	60.3	1.26	0.2110
season	5	0.1731	0.1875	59.2	0.92	0.3597
season	6	0.1988	0.1900	61.1	1.05	0.2997
season	7	0.1996	0.1871	59.3	1.07	0.2905
season	8	0.3650	0.1857	62.2	1.97	0.0538
season	9	0.2618	0.1758	62.3	1.49	0.1415
season	10	0.2507	0.1627	67.2	1.54	0.1281
season	11	-0.09658	0.1433	100	-0.67	0.5017
season	12	0	.	.	.	.
date1		0.06662	0.02908	5.87	2.29	0.0628
temp_dev		0.002038	0.03297	124	0.06	0.9508

Mixed Model With Local Nugget

The Mixed Procedure

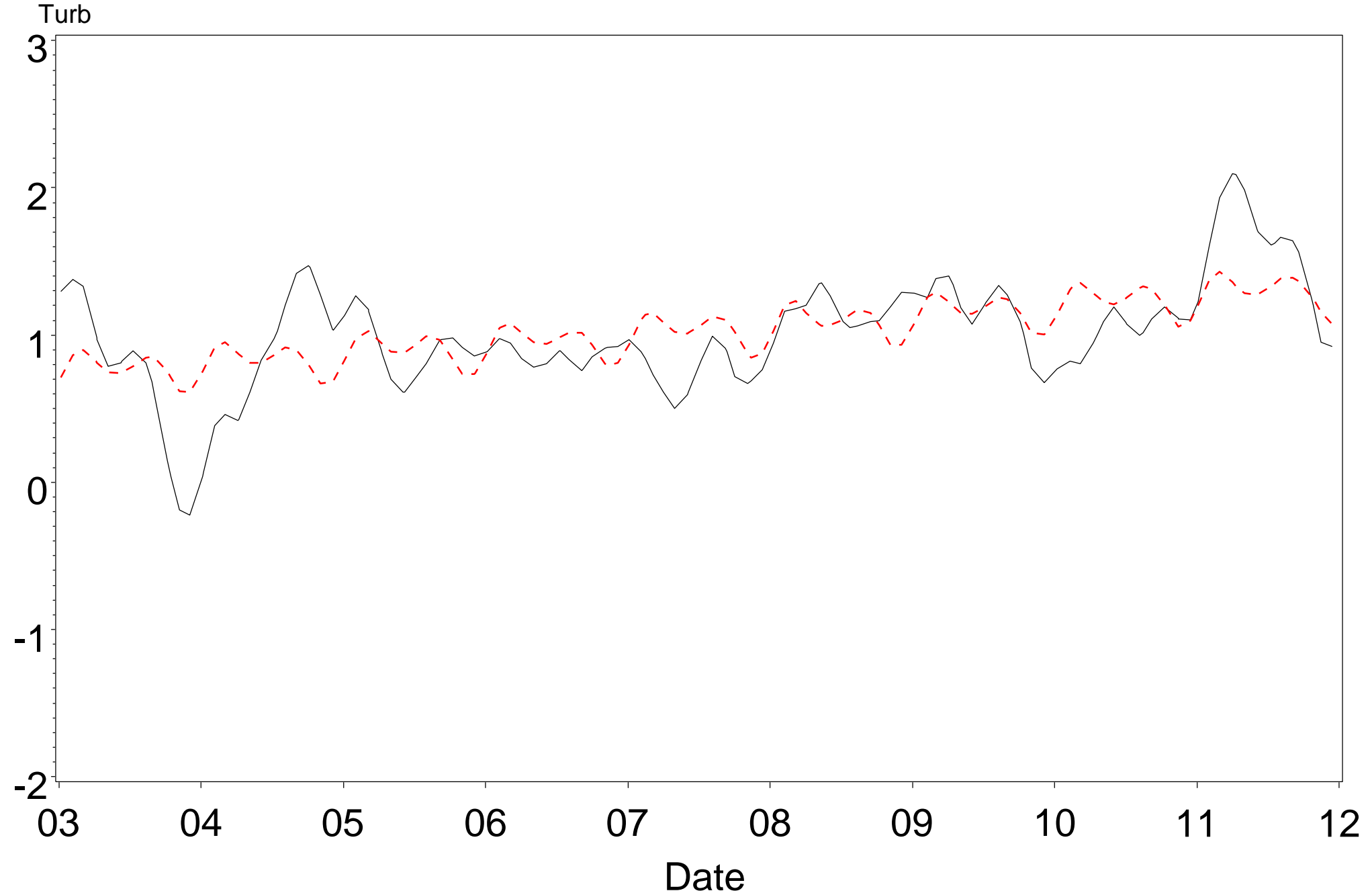
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.5	1.45	0.1676
date1	1	5.87	5.25	0.0628
temp_dev	1	124	0.00	0.9508

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Cape Haze

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	399
Number of Observations Not Used	151

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	512.46851584	
1	3	355.88686301	0.03077512
2	2	348.44655327	0.02432453
3	2	344.31228391	0.00713684
4	1	342.86315776	0.00034374
5	1	342.79769348	0.00000187
6	1	342.79735097	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004457	0.003980	1.12	0.1314
Variance	Intercept	0.1249	0.02787	4.48	<.0001
SP(POW)	Intercept	0.3259	0.1363	2.39	0.0168
Residual		0.08561	0.006895	12.41	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	342.8
AIC (smaller is better)	350.8
AICC (smaller is better)	350.9
BIC (smaller is better)	349.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		42.0845	39.9551	14.4	1.05	0.3095
season	1	-0.05116	0.1804	46.6	-0.28	0.7780
season	2	0.2460	0.2026	57.2	1.21	0.2297
season	3	0.05959	0.2015	56.4	0.30	0.7686
season	4	0.1401	0.2026	54.3	0.69	0.4921
season	5	0.2647	0.2026	53.2	1.31	0.1970
season	6	0.4981	0.2026	53	2.46	0.0172
season	7	0.6371	0.2024	53.4	3.15	0.0027
season	8	0.6849	0.2022	54.6	3.39	0.0013
season	9	0.6436	0.2088	57.4	3.08	0.0032
season	10	0.6842	0.2032	57.7	3.37	0.0014
season	11	0.1051	0.1709	44.5	0.61	0.5417
season	12	0	.	.	.	.
date1		-0.02119	0.01990	14.4	-1.06	0.3045
temp_dev		0.1455	0.03144	207	4.63	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

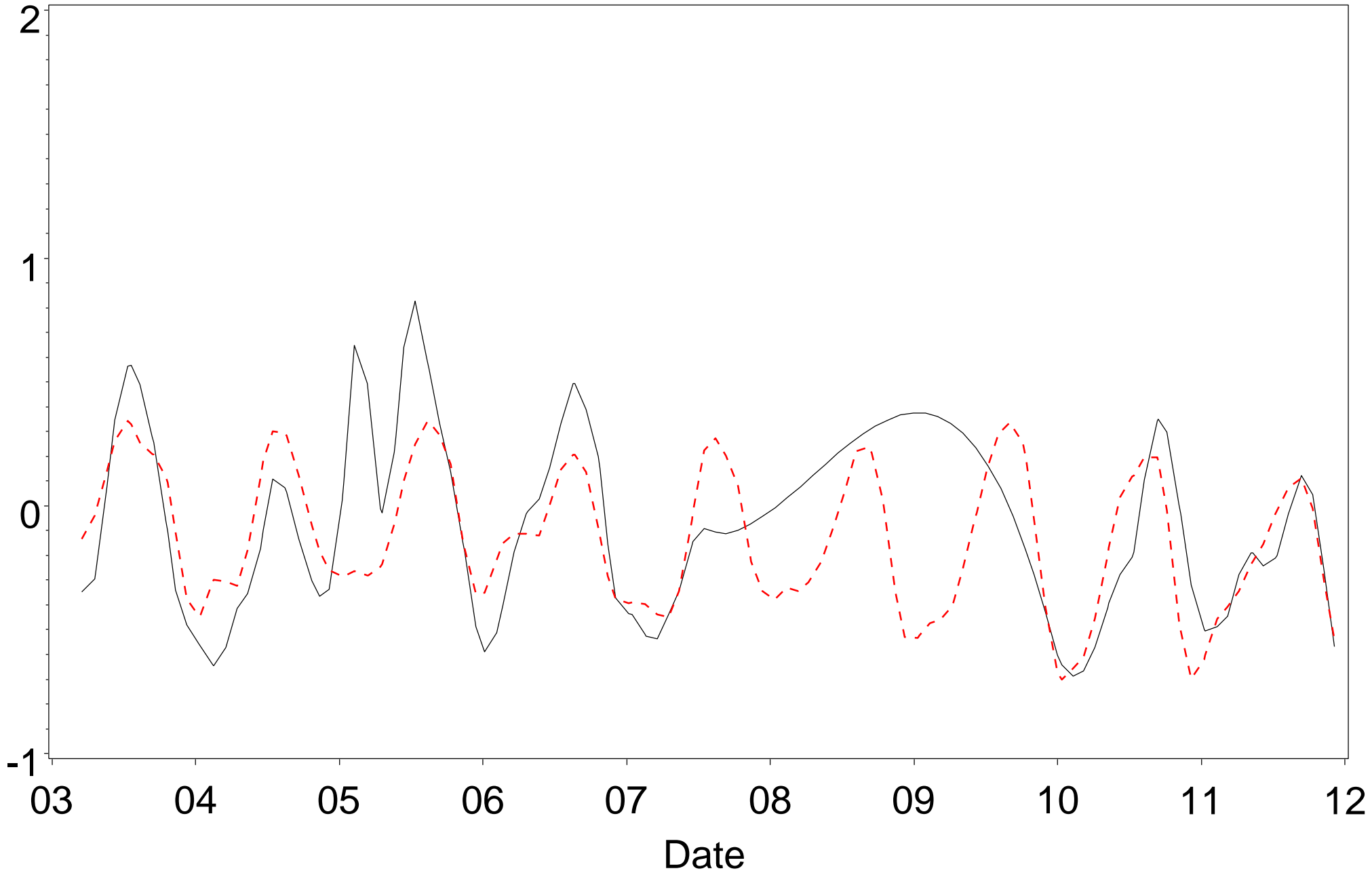
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.8	2.75	0.0077
date1	1	14.4	1.13	0.3045
temp_dev	1	207	21.42	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale
BOD_mgl

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1075.84926446	
1	2	916.77570576	3.09162600
2	2	911.20305693	0.83052539
3	2	902.76502162	0.08092175
4	1	901.68456188	0.00104833
5	1	901.67051844	0.00000045
6	1	901.67051249	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01573	0.01265	1.24	0.1068
Variance	Intercept	0.2386	0.04584	5.20	<.0001
SP(POW)	Intercept	0.2635	0.1241	2.12	0.0337
Residual		0.2213	0.01556	14.22	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	901.7
AIC (smaller is better)	909.7
AICC (smaller is better)	909.8
BIC (smaller is better)	908.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-160.24	51.1469	20.8	-3.13	0.0051
season	1	0.1570	0.2304	65.8	0.68	0.4979
season	2	0.1801	0.2533	82.5	0.71	0.4790
season	3	-0.1635	0.2510	80.6	-0.65	0.5166
season	4	0.3131	0.2515	78.2	1.24	0.2169
season	5	0.3468	0.2514	77.2	1.38	0.1717
season	6	1.0590	0.2512	77	4.22	<.0001
season	7	1.4232	0.2511	77.3	5.67	<.0001
season	8	1.2061	0.2511	78.5	4.80	<.0001
season	9	1.1714	0.2581	81.9	4.54	<.0001
season	10	1.0254	0.2530	82.3	4.05	0.0001
season	11	0.3635	0.2218	63.7	1.64	0.1061
season	12	0	.	.	.	.
date1		0.08014	0.02547	20.8	3.15	0.0049
temp_dev		0.2404	0.04338	251	5.54	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.8	6.91	<.0001
date1	1	20.8	9.90	0.0049
temp_dev	1	251	30.71	<.0001

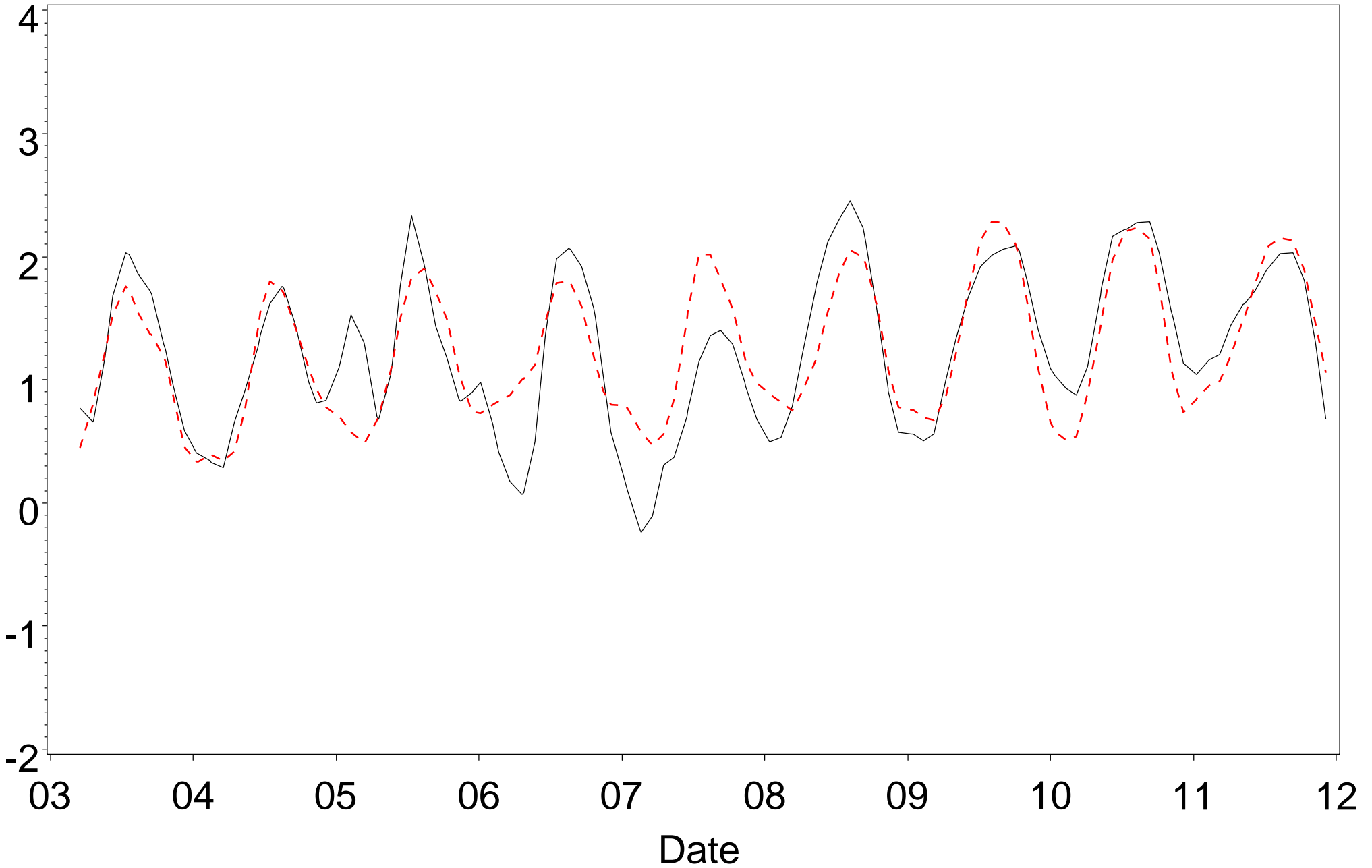
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1200.18012234	
1	2	885.88438244	0.37109757
2	1	875.86798222	0.22613209
3	2	872.43587342	0.11119110
4	1	868.92037425	0.00690066
5	1	868.70380979	0.00007423
6	1	868.70158217	0.00000002
7	1	868.70158160	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.1458	0.1045	1.40	0.0814
Variance	Intercept	0.2917	0.05919	4.93	<.0001
SP(POW)	Intercept	0.4142	0.1062	3.90	<.0001
Residual		0.1973	0.01389	14.21	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	868.7
AIC (smaller is better)	876.7
AICC (smaller is better)	876.8
BIC (smaller is better)	875.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		42.5308	64.1263	16.6	0.66	0.5163
season	1	0.1462	0.2269	73.4	0.64	0.5214
season	2	0.2494	0.2610	80.6	0.96	0.3420
season	3	-0.02752	0.2668	75.7	-0.10	0.9181
season	4	0.2082	0.2706	70.6	0.77	0.4443
season	5	0.1222	0.2718	67.6	0.45	0.6545
season	6	0.8442	0.2719	66.9	3.11	0.0028
season	7	1.0131	0.2714	68.1	3.73	0.0004
season	8	1.3368	0.2698	71.5	4.96	<.0001
season	9	1.4078	0.2728	77.9	5.16	<.0001
season	10	0.8599	0.2603	80.3	3.30	0.0014
season	11	0.3611	0.2176	71.7	1.66	0.1014
season	12	0	.	.	.	.
date1		-0.01997	0.03194	16.6	-0.63	0.5402
temp_dev		0.1958	0.04254	268	4.60	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.2	4.79	<.0001
date1	1	16.6	0.39	0.5402
temp_dev	1	268	21.19	<.0001

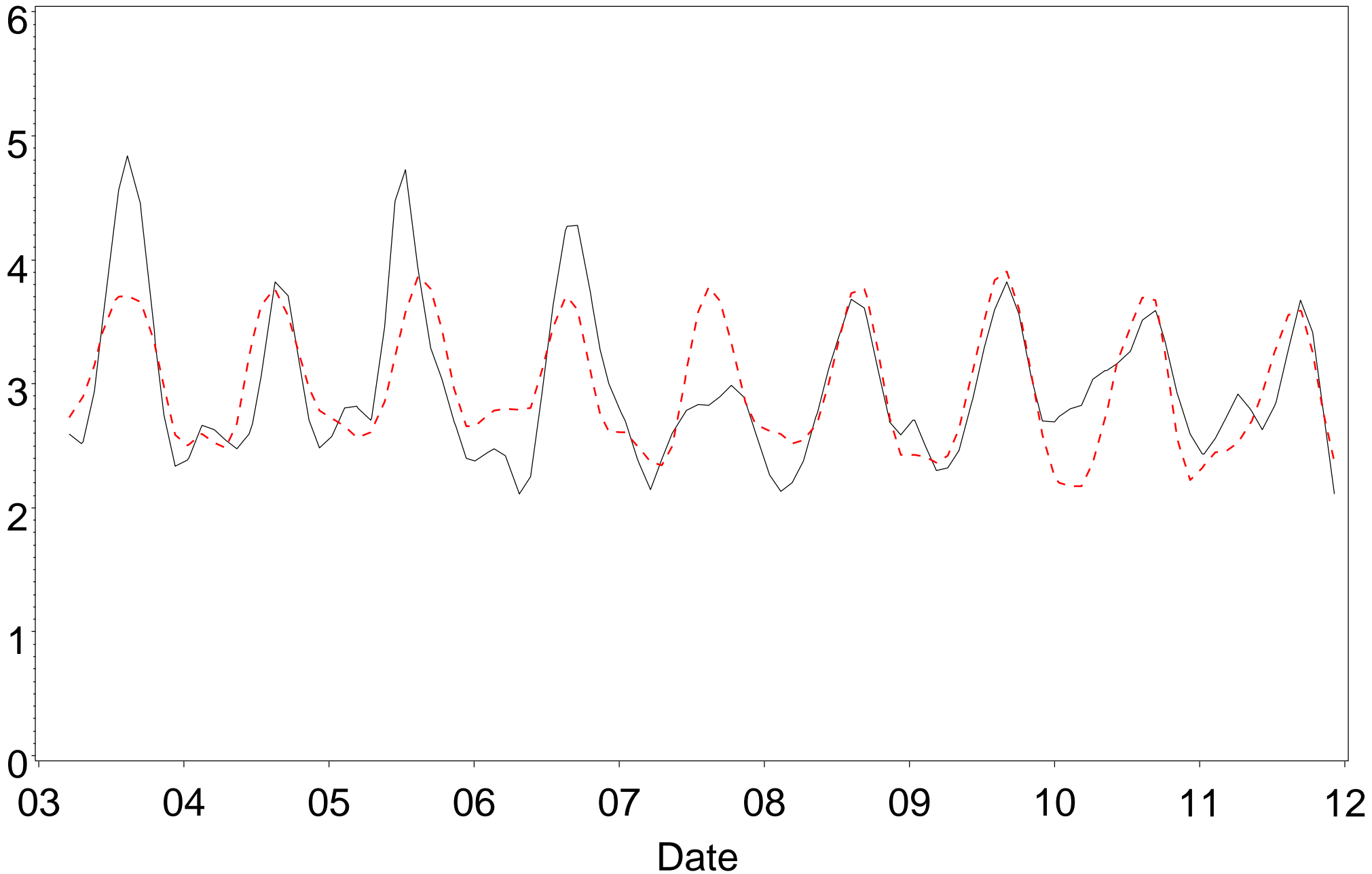
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Parameter = Color (PCU) and Sample Level = Surface

Log Scale

COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	544
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	944.04658084	
1	2	757.85263095	0.06315179
2	2	748.95673515	0.04069927
3	1	743.47477526	0.00512315
4	1	742.84807067	0.00005731
5	1	742.84138920	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03060	0.02266	1.35	0.0884
Variance	Intercept	0.1531	0.03011	5.09	<.0001
SP(POW)	Intercept	0.3768	0.1081	3.48	0.0005
Residual		0.1533	0.01046	14.65	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	742.8
AIC (smaller is better)	750.8
AICC (smaller is better)	750.9
BIC (smaller is better)	749.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-89.8054	41.8123	19.3	-2.15	0.0446
season	1	-0.02832	0.1682	80.2	-0.17	0.8667
season	2	-0.08879	0.1910	90.3	-0.46	0.6431
season	3	0.01690	0.1942	86.7	0.09	0.9309
season	4	0.01349	0.1964	81.6	0.07	0.9454
season	5	0.03880	0.1970	78.7	0.20	0.8444
season	6	-0.3271	0.1971	77.8	-1.66	0.1011
season	7	-0.3210	0.2070	82	-1.55	0.1250
season	8	-0.5913	0.2015	82.1	-2.93	0.0043
season	9	-0.4654	0.2051	88.3	-2.27	0.0257
season	10	-0.07538	0.1974	90.5	-0.38	0.7034
season	11	-0.00696	0.1682	80.3	-0.04	0.9671
season	12	0	.	.	.	.
date1		0.05012	0.02082	19.3	2.41	0.0262
temp_dev		0.1250	0.03381	244	3.70	0.0003

Mixed Model With Local Nugget

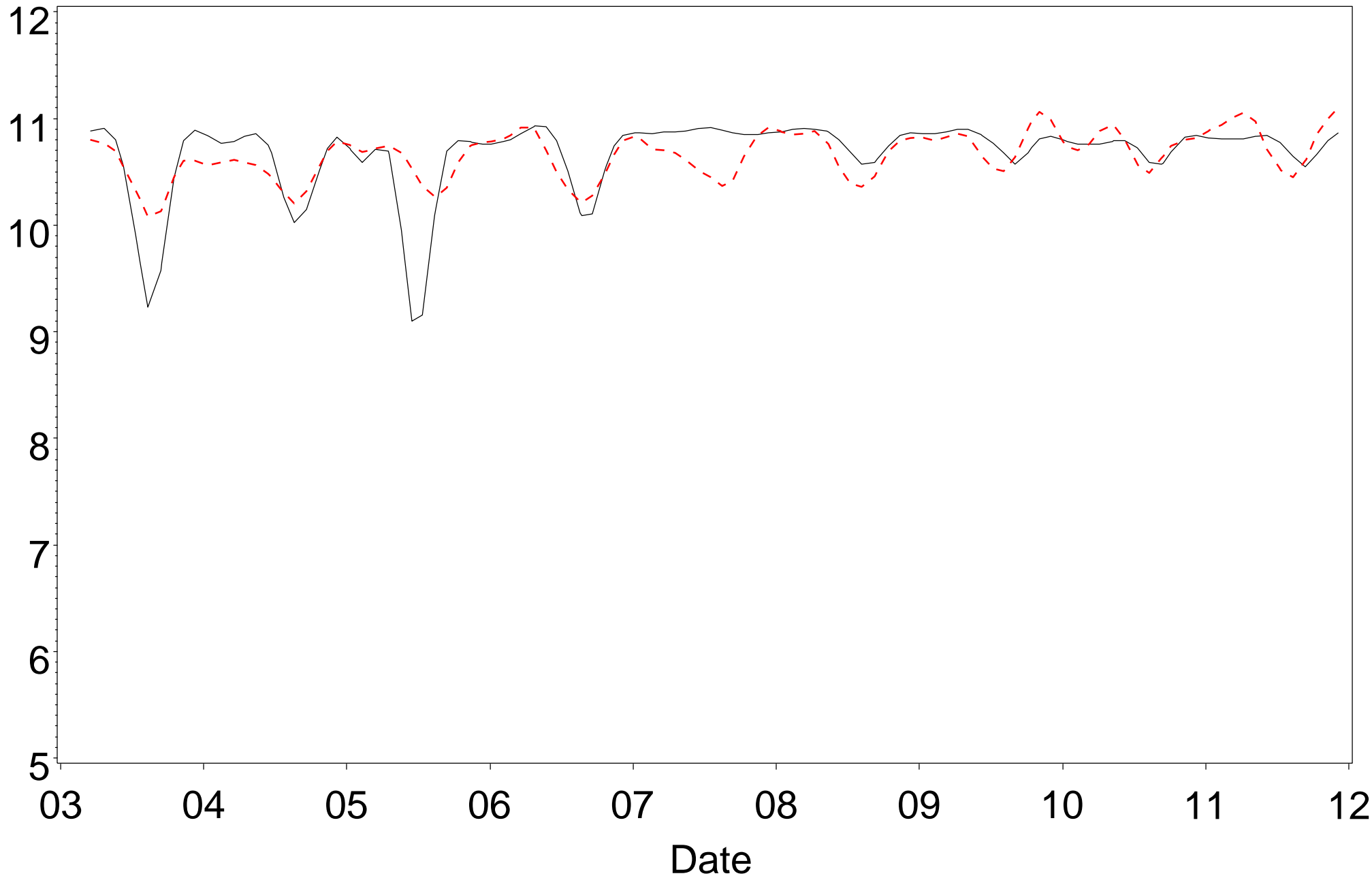
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82	1.81	0.0648
date1	1	19.3	5.79	0.0262
temp_dev	1	244	13.67	0.0003

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale Parameter = Specific Conductance (uS/cm) and Sample Level = Surface
COND



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	544
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1274.26557659	
1	3	1160.36405808	4.86277852
2	2	1153.45266473	1.44430225
3	2	1150.90449039	0.48495923
4	2	1132.16811492	4.68196519
5	2	1119.86436929	0.01499009
6	2	1118.77338068	0.00032796
7	1	1118.74790291	0.00000663
8	1	1118.74741420	0.00000001

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08068	0.05914	1.36	0.0863
Variance	Intercept	0.2098	0.04026	5.21	<.0001
SP(POW)	Intercept	0.003931	0.1355	0.03	0.9769
Residual		0.3248	0.02215	14.66	<.0001

Fit Statistics	
-2 Res Log Likelihood	1118.7
AIC (smaller is better)	1126.7
AICC (smaller is better)	1126.8
BIC (smaller is better)	1125.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-5.7872	37.6353	33	-0.15	0.8787
season	1	0.06480	0.2468	64.8	0.26	0.7937
season	2	0.3332	0.2490	94.4	1.34	0.1841
season	3	-0.2232	0.2409	94.4	-0.93	0.3566
season	4	-0.4289	0.2409	94.4	-1.78	0.0782
season	5	-1.0112	0.2409	94.4	-4.20	<.0001
season	6	-1.4630	0.2408	94.4	-6.07	<.0001
season	7	-1.3859	0.2552	94.4	-5.43	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-1.7774	0.2472	94.4	-7.19	<.0001
season	9	-1.9066	0.2554	95.1	-7.47	<.0001
season	10	-1.5368	0.2566	94.4	-5.99	<.0001
season	11	-0.8437	0.2468	64.8	-3.42	0.0011
season	12	0	.	.	.	.
date1		0.006378	0.01874	33	0.34	0.7358
temp_dev		-0.2340	0.04527	190	-5.17	<.0001

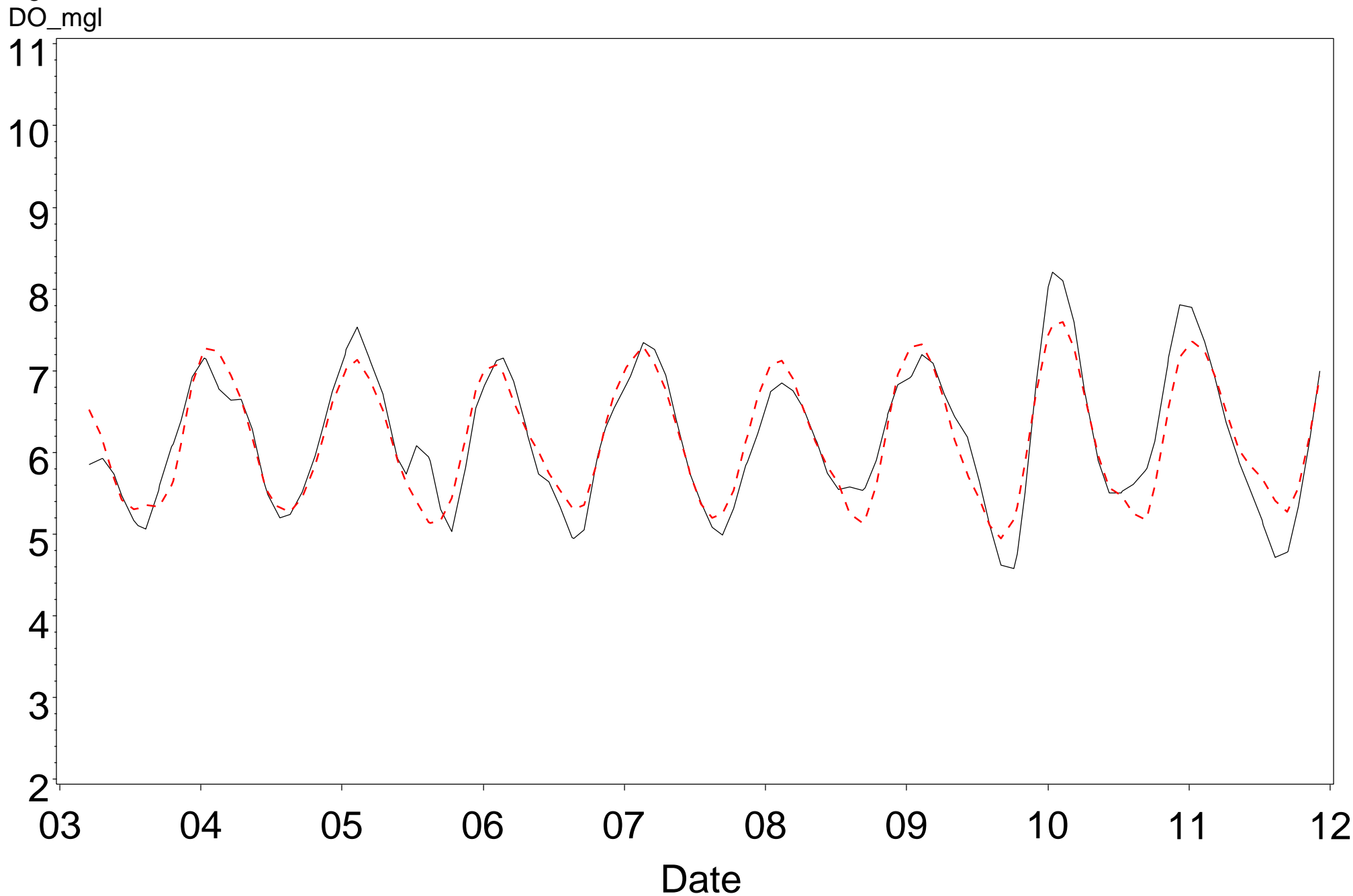
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	78.3	19.36	<.0001
date1	1	33	0.12	0.7358
temp_dev	1	190	26.71	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	538
Number of Observations Not Used	12

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1128.29436361	
1	2	901.51913682	0.26513622
2	2	890.37007817	0.19452500
3	2	881.72510021	0.03641572
4	1	880.09838139	0.00102257
5	1	880.05508232	0.00000111
6	1	880.05503640	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.06525	0.04746	1.37	0.0846
Variance	Intercept	0.2258	0.04077	5.54	<.0001
SP(POW)	Intercept	0.2606	0.1149	2.27	0.0233
Residual		0.1946	0.01334	14.59	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	880.1
AIC (smaller is better)	888.1
AICC (smaller is better)	888.1
BIC (smaller is better)	886.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		38.1301	45.5167	22.9	0.84	0.4108
season	1	0.3227	0.2156	76.4	1.50	0.1385
season	2	-0.01381	0.2376	94.9	-0.06	0.9538
season	3	0.01473	0.2365	91.1	0.06	0.9505
season	4	0.03588	0.2372	87.7	0.15	0.8801
season	5	0.02563	0.2372	86.3	0.11	0.9142
season	6	0.4806	0.2372	86	2.03	0.0458
season	7	0.5256	0.2507	89.1	2.10	0.0388
season	8	0.8213	0.2439	88.6	3.37	0.0011
season	9	0.9583	0.2501	92.3	3.83	0.0002
season	10	0.4366	0.2452	95	1.78	0.0782
season	11	0.3066	0.2153	76.2	1.42	0.1586
season	12	0	.	.	.	.
date1		-0.01862	0.02267	22.9	-0.82	0.4198
temp_dev		0.03556	0.04112	276	0.86	0.3879

Mixed Model With Local Nugget

The Mixed Procedure

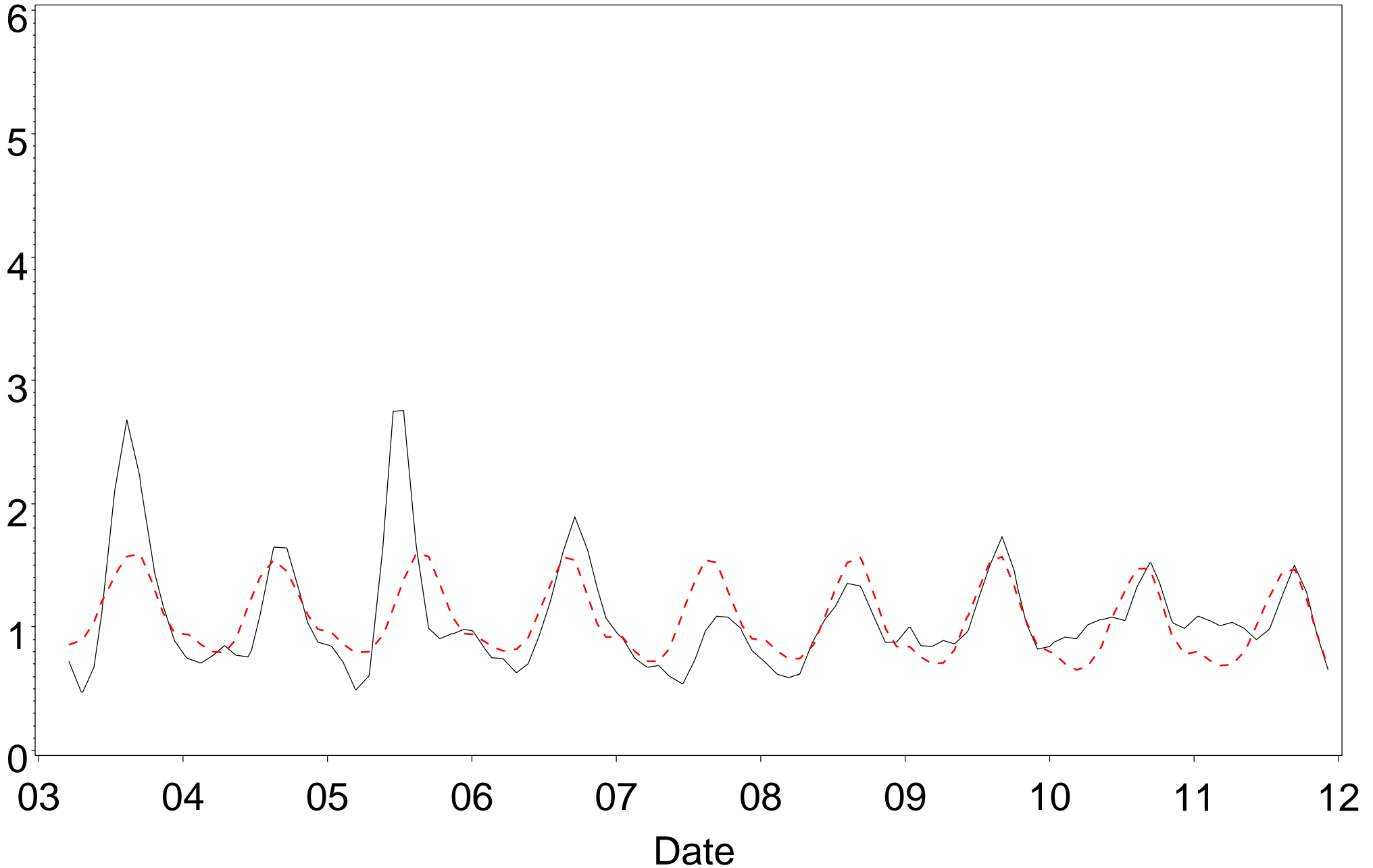
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	81.4	2.98	0.0022
date1	1	22.9	0.67	0.4198
temp_dev	1	276	0.75	0.3879

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	430
Number of Observations Not Used	120

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1128.94692708	
1	3	949.53550122	1.67972530
2	2	947.72860658	1.72151914
3	1	945.46457513	0.51479418
4	2	931.21665254	0.96121600
5	2	923.86333928	0.02846393
6	2	922.16914619	0.00657586
7	1	921.59224817	0.00048905
8	1	921.54934396	0.00002323
9	1	921.54745269	0.00000008
10	1	921.54744642	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2183	0.1571	1.39	0.0824
Variance	Intercept	0.2917	0.06007	4.86	<.0001
SP(POW)	Intercept	-0.01574	0.1474	-0.11	0.9149
Residual		0.3371	0.02588	13.02	<.0001

Fit Statistics	
-2 Res Log Likelihood	921.5
AIC (smaller is better)	929.5
AICC (smaller is better)	929.6
BIC (smaller is better)	928.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-37.5332	62.2880	25.4	-0.60	0.5521
season	1	-0.08371	0.3127	51.2	-0.27	0.7900
season	2	-0.3933	0.3138	72.3	-1.25	0.2142
season	3	-0.4012	0.3109	72.3	-1.29	0.2011
season	4	-0.2452	0.3103	72.1	-0.79	0.4320
season	5	-0.5361	0.3107	72.2	-1.73	0.0887
season	6	-0.08455	0.3105	72.1	-0.27	0.7861
season	7	-0.2295	0.3111	72.4	-0.74	0.4630

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.1474	0.3103	72.1	0.48	0.6362
season	9	0.5722	0.3101	72	1.85	0.0691
season	10	-0.4981	0.3131	71.9	-1.59	0.1161
season	11	-0.03415	0.3020	49.2	-0.11	0.9104
season	12	0	.	.	.	.
date1		0.01672	0.03101	25.4	0.54	0.5944
temp_dev		-0.01744	0.05888	173	-0.30	0.7675

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	58.2	1.84	0.0682
date1	1	25.4	0.29	0.5944
temp_dev	1	173	0.09	0.7675

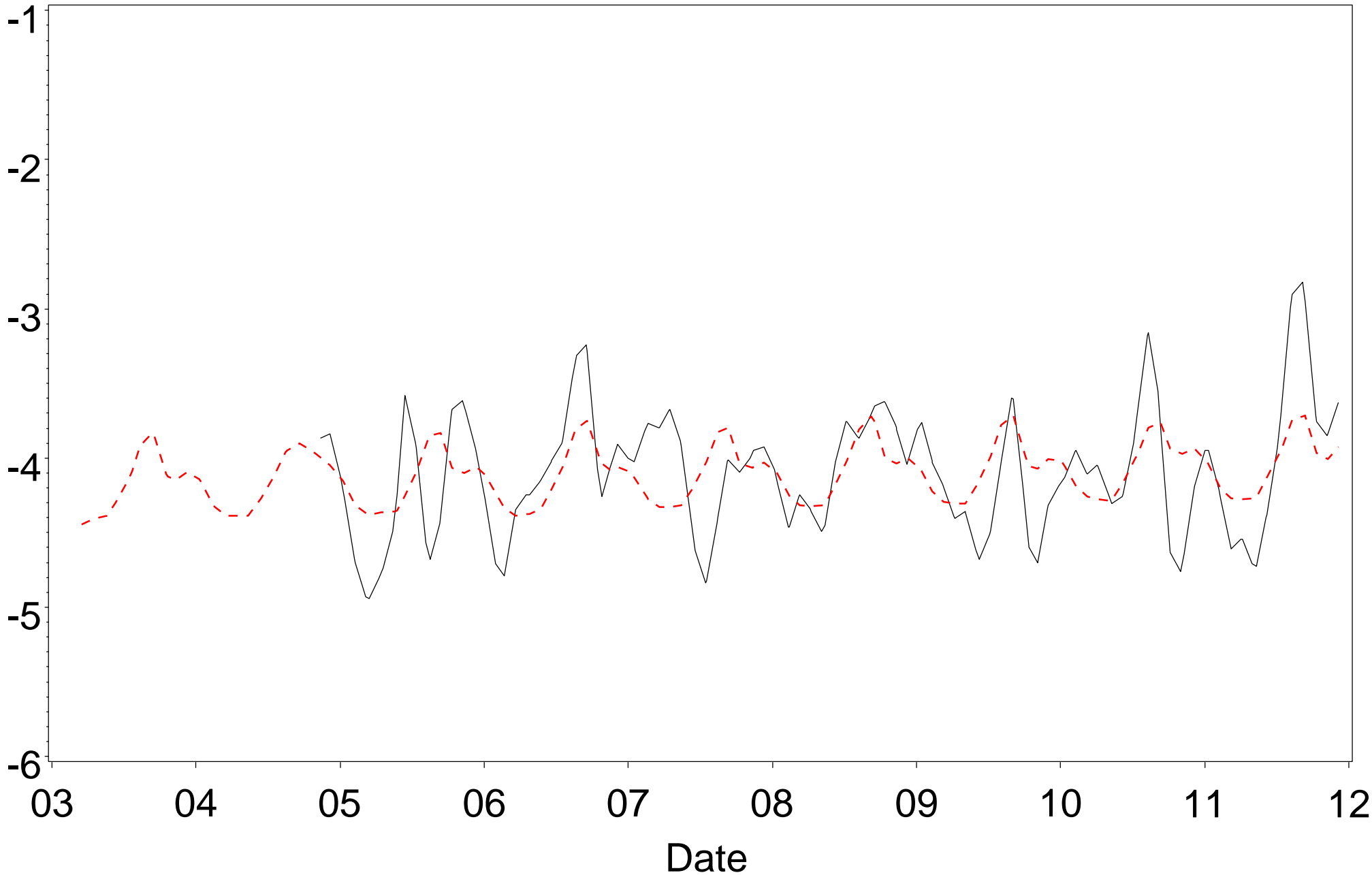
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface

NH3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1115.98986093	
1	3	945.87108507	12.69422760
2	2	930.04312020	7.53275406
3	2	928.21433418	32.48504505
4	1	926.59705587	0.15221002
5	1	926.47335267	0.00141753
6	1	926.47217172	0.00000016
7	1	926.47217159	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1300	0.09368	1.39	0.0825
Variance	Intercept	0.1316	0.02767	4.76	<.0001
SP(POW)	Intercept	0.1413	0.1424	0.99	0.3209
Residual		0.2517	0.01756	14.33	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	926.5
AIC (smaller is better)	934.5
AICC (smaller is better)	934.6
BIC (smaller is better)	932.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-17.3359	36.6633	26.4	-0.47	0.6402
season	1	0.1192	0.1975	68.3	0.60	0.5482
season	2	-0.2008	0.2077	89.5	-0.97	0.3363
season	3	-0.3632	0.2019	88.5	-1.80	0.0755
season	4	-0.2443	0.2016	88	-1.21	0.2290
season	5	-0.4435	0.2014	87.9	-2.20	0.0303
season	6	-0.1225	0.2013	87.9	-0.61	0.5444
season	7	-0.1222	0.2013	87.9	-0.61	0.5452
season	8	0.3934	0.2013	88.1	1.95	0.0539
season	9	0.4634	0.2082	89.6	2.23	0.0285
season	10	0.008598	0.2075	89.4	0.04	0.9670
season	11	0.02354	0.1908	65.9	0.12	0.9022
season	12	0	.	.	.	.
date1		0.006270	0.01826	26.4	0.34	0.7340
temp_dev		-0.00958	0.03929	185	-0.24	0.8077

Mixed Model With Local Nugget

The Mixed Procedure

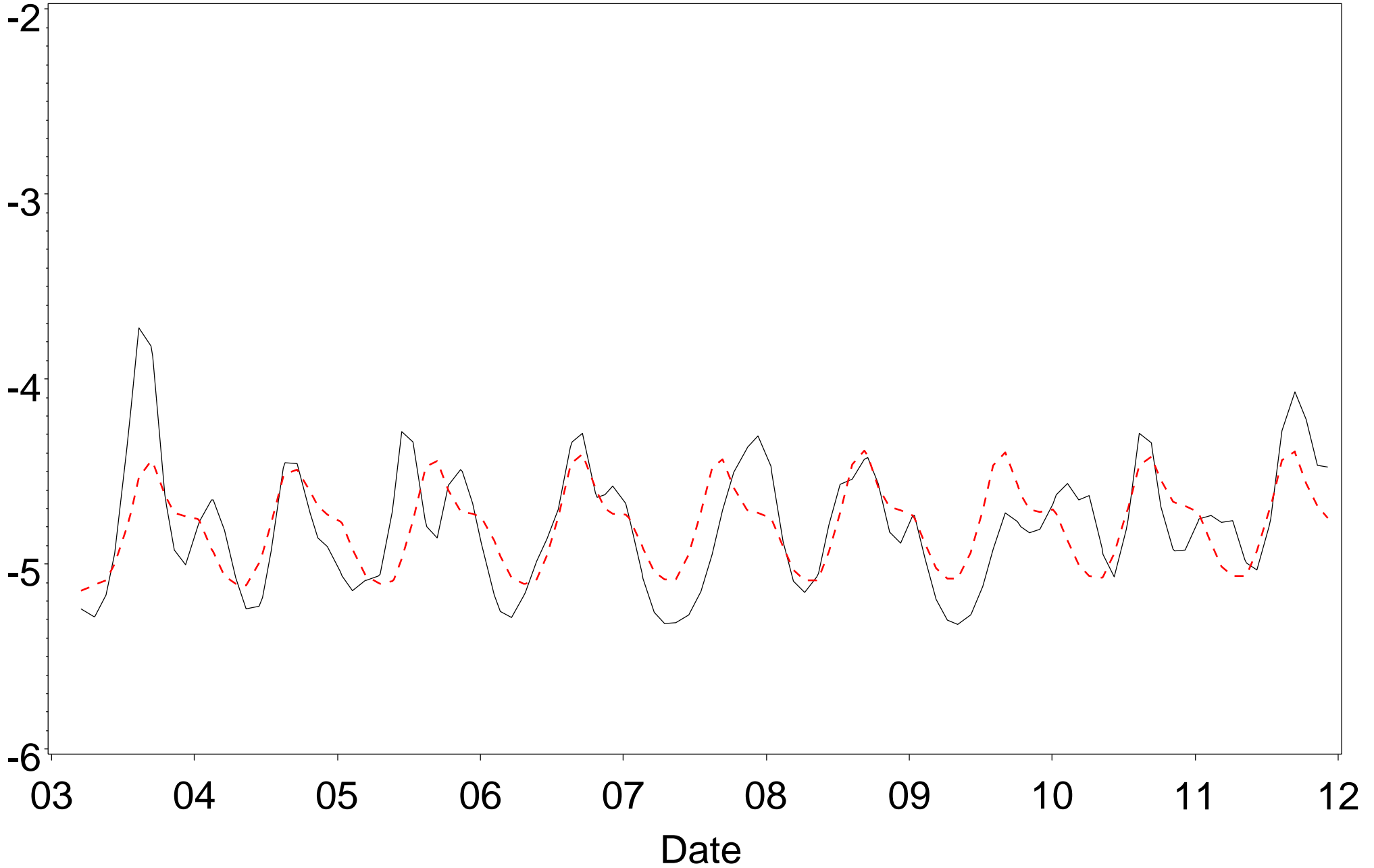
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.3	3.18	0.0014
date1	1	26.4	0.12	0.7340
temp_dev	1	185	0.06	0.8077

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	549
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-26.50534887	
1	2	-364.49510341	0.01218175
2	2	-375.88290246	0.01341967
3	2	-381.91405001	0.00712967
4	1	-387.50270550	0.00056359
5	1	-387.91484101	0.00000707
6	1	-387.91973505	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007577	0.005466	1.39	0.0829
Variance	Intercept	0.03075	0.005226	5.88	<.0001
SP(POW)	Intercept	0.2623	0.1097	2.39	0.0168
Residual		0.01631	0.001107	14.74	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-387.9
AIC (smaller is better)	-379.9
AICC (smaller is better)	-379.8
BIC (smaller is better)	-381.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-42.5040	16.4144	22.5	-2.59	0.0165
season	1	-0.01739	0.07620	74.9	-0.23	0.8201
season	2	-0.06677	0.08472	95.5	-0.79	0.4325
season	3	0.02170	0.08449	91.1	0.26	0.7979
season	4	0.03081	0.08477	87.3	0.36	0.7171
season	5	0.04332	0.08479	85.7	0.51	0.6107
season	6	-0.1374	0.08478	85.4	-1.62	0.1088
season	7	0.01866	0.08695	86.7	0.21	0.8306
season	8	-0.1521	0.08701	87.5	-1.75	0.0839
season	9	-0.1769	0.08932	92.3	-1.98	0.0506
season	10	-0.09648	0.08746	95.6	-1.10	0.2727
season	11	-0.03519	0.07620	75	-0.46	0.6456
season	12	0	.	.	.	.
date1		0.02508	0.008175	22.5	3.07	0.0055
temp_dev		-0.00565	0.01289	365	-0.44	0.6618

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	81	1.64	0.1032
date1	1	22.5	9.42	0.0055
temp_dev	1	365	0.19	0.6618

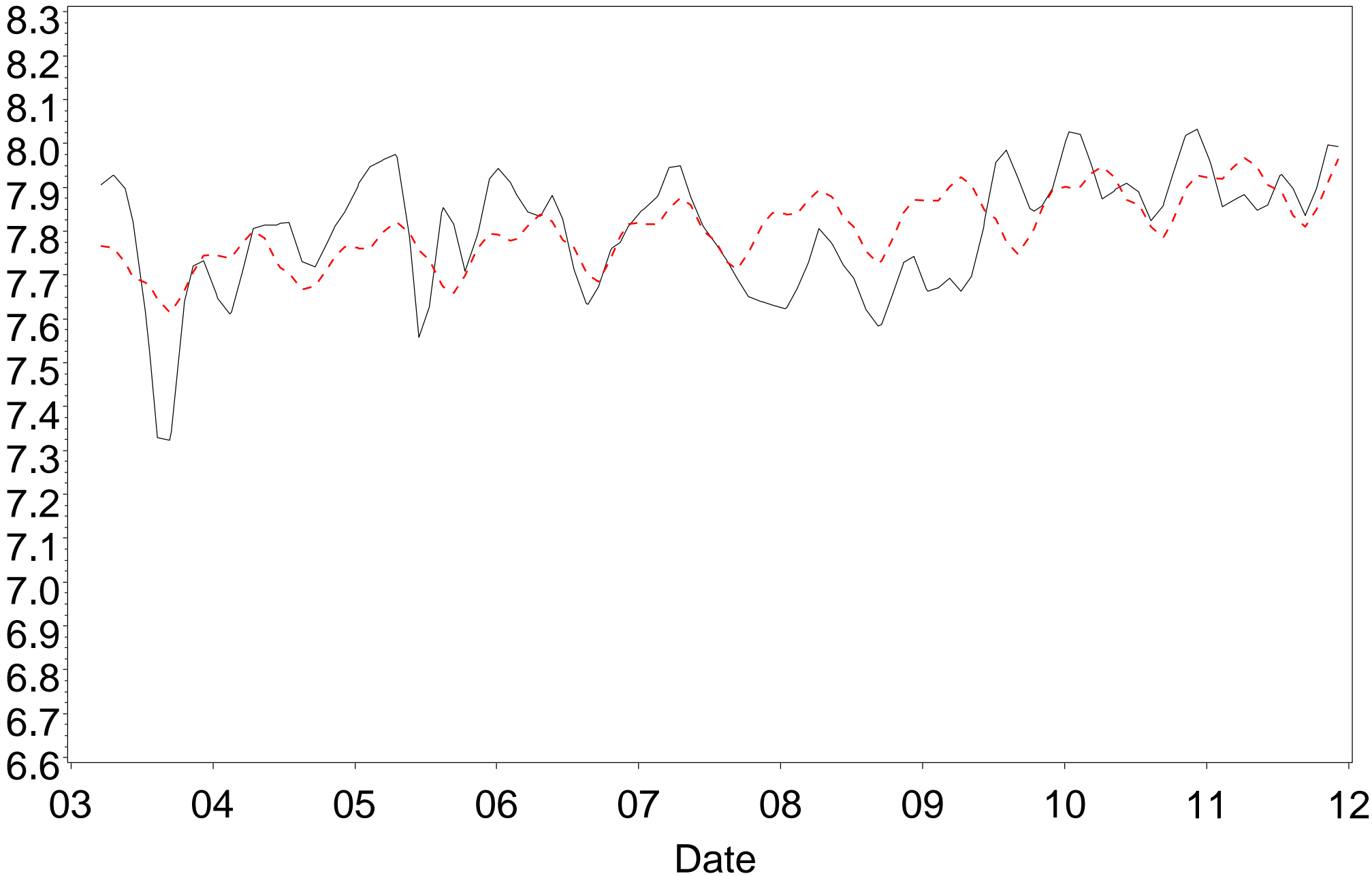
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	310
Number of Observations Not Used	240

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	681.73773816	
1	2	485.25138321	0.10083223
2	2	481.25505221	0.05806991
3	2	479.29688685	0.00961678
4	1	478.96460216	0.00012091
5	1	478.96063208	0.00000003
6	1	478.96063122	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2025	0.1452	1.39	0.0816
Variance	Intercept	0.1844	0.05422	3.40	0.0003
SP(POW)	Intercept	0.4424	0.1500	2.95	0.0032
Residual		0.1784	0.01623	10.99	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	479.0
AIC (smaller is better)	487.0
AICC (smaller is better)	487.1
BIC (smaller is better)	485.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		67.1723	70.9742	8.42	0.95	0.3703
season	1	-0.00718	0.2327	42	-0.03	0.9755
season	2	-0.1128	0.2680	43.8	-0.42	0.6759
season	3	-0.1089	0.2802	41.5	-0.39	0.6996
season	4	-0.06024	0.2841	38.5	-0.21	0.8332
season	5	0.07484	0.2860	36.8	0.26	0.7950
season	6	0.9967	0.2857	36	3.49	0.0013
season	7	0.7132	0.2856	36.5	2.50	0.0172
season	8	0.8332	0.2843	38	2.93	0.0057
season	9	0.9895	0.2807	40.9	3.52	0.0011
season	10	0.7996	0.2686	44.1	2.98	0.0047
season	11	0.1709	0.2171	40.5	0.79	0.4358
season	12	0	.	.	.	.
date1		-0.03536	0.03534	8.42	-1.00	0.3449
temp_dev		0.2537	0.04798	116	5.29	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	38.8	3.39	0.0023
date1	1	8.42	1.00	0.3449
temp_dev	1	116	27.97	<.0001

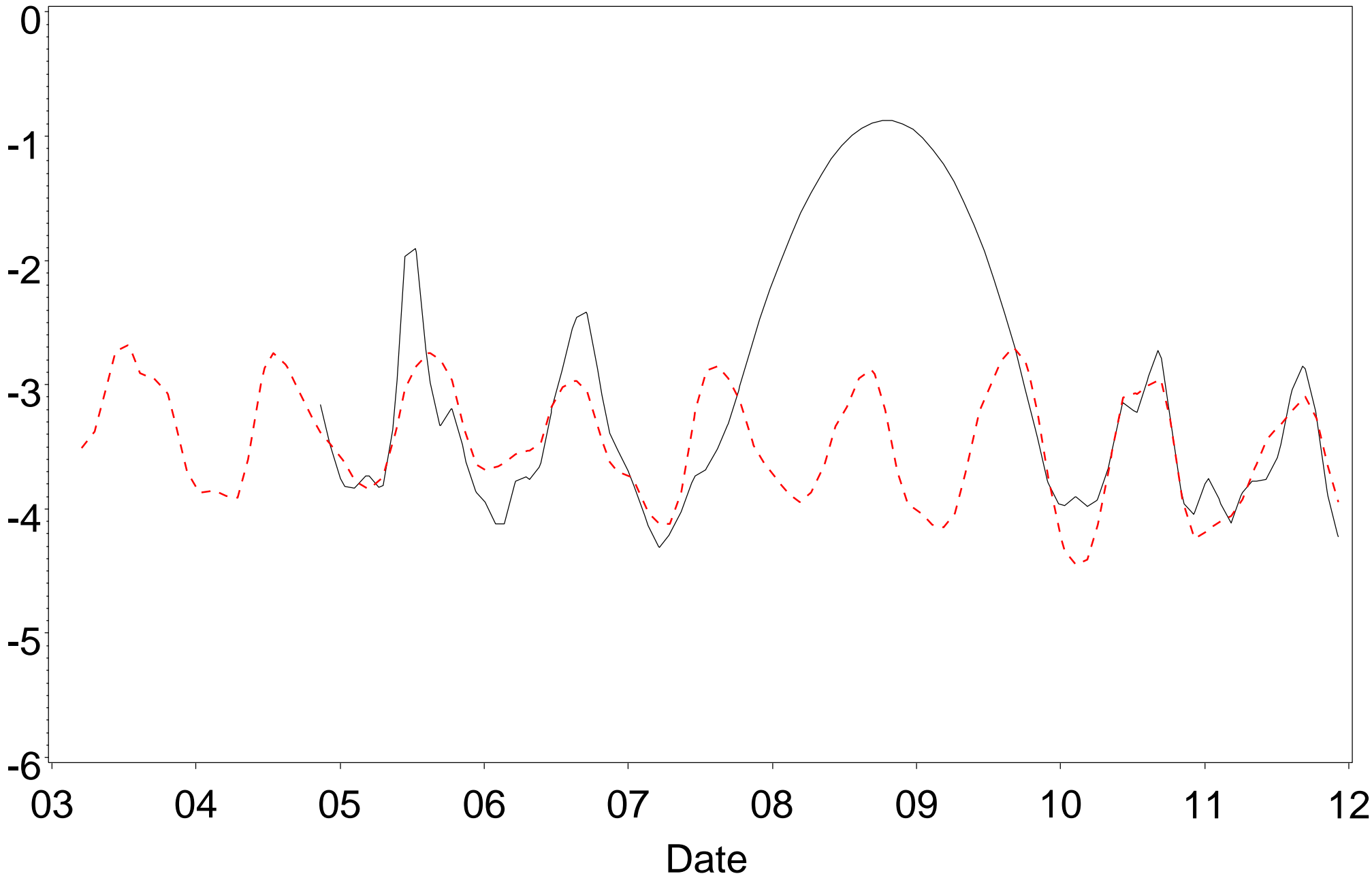
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	544
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1016.78285528	
1	2	822.70128964	0.08966092
2	2	813.51463757	0.05844565
3	2	807.92764658	0.00825576
4	1	807.19185160	0.00011758
5	1	807.18194324	0.00000003
6	1	807.18194098	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03551	0.02626	1.35	0.0881
Variance	Intercept	0.1794	0.03502	5.12	<.0001
SP(POW)	Intercept	0.3764	0.1076	3.50	0.0005
Residual		0.1719	0.01173	14.66	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	807.2
AIC (smaller is better)	815.2
AICC (smaller is better)	815.3
BIC (smaller is better)	813.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-104.70	45.1585	19.3	-2.32	0.0315
season	1	-0.03206	0.1811	80.1	-0.18	0.8599
season	2	-0.09521	0.2059	90.6	-0.46	0.6449
season	3	0.01819	0.2094	86.8	0.09	0.9310
season	4	0.01407	0.2118	81.6	0.07	0.9472
season	5	0.04156	0.2125	78.7	0.20	0.8454
season	6	-0.3592	0.2126	77.8	-1.69	0.0951
season	7	-0.3526	0.2233	82	-1.58	0.1181
season	8	-0.6421	0.2173	82.2	-2.95	0.0041
season	9	-0.5099	0.2212	88.4	-2.31	0.0235
season	10	-0.08819	0.2128	90.8	-0.41	0.6796
season	11	-0.00889	0.1812	80.3	-0.05	0.9610
season	12	0	.	.	.	.
date1		0.05389	0.02249	19.3	2.40	0.0268
temp_dev		0.1313	0.03617	249	3.63	0.0003

Mixed Model With Local Nugget

The Mixed Procedure

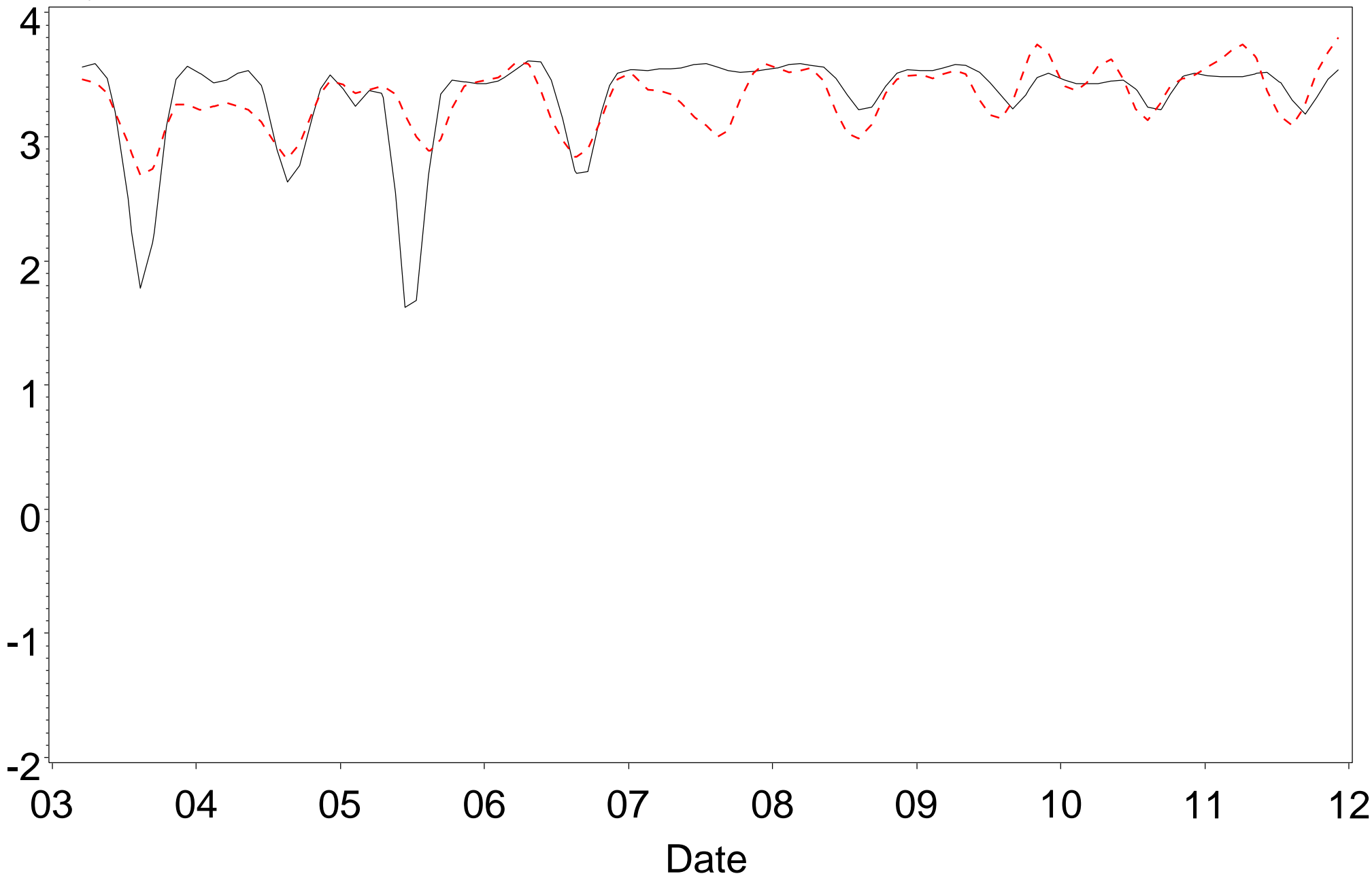
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82	1.84	0.0597
date1	1	19.3	5.74	0.0268
temp_dev	1	249	13.18	0.0003

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale
Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	549
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1698.43152765	
1	4	-2248.49715747	.
2	1	-2442.88317022	0.02573767
3	1	-2497.89221483	0.00847551
4	1	-2516.78660726	0.00431134
5	2	-2524.66480234	0.00076334
6	1	-2526.16441265	0.00003649
7	1	-2526.23086924	0.00000013
8	1	-2526.23110378	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		7.028E-6	6.493E-6	1.08	0.1396
Variance	Intercept	0.002805	0.000434	6.46	<.0001
SP(POW)	Intercept	0.1679	0.1033	1.63	0.1041
Residual		0.000218	0.000015	14.62	<.0001

Fit Statistics	
-2 Res Log Likelihood	-2526.2
AIC (smaller is better)	-2518.2
AICC (smaller is better)	-2518.2
BIC (smaller is better)	-2519.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		6.9709	4.4113	25.8	1.58	0.1263
season	1	-0.1035	0.02304	69.5	-4.49	<.0001
season	2	-0.08048	0.02496	91.9	-3.23	0.0017
season	3	0.05514	0.02454	88.3	2.25	0.0271
season	4	0.1693	0.02454	86.7	6.90	<.0001
season	5	0.3269	0.02453	86.3	13.33	<.0001
season	6	0.4380	0.02453	86.3	17.86	<.0001
season	7	0.4561	0.02517	86.8	18.12	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.4559	0.02519	86.8	18.10	<.0001
season	9	0.4349	0.02595	88.9	16.76	<.0001
season	10	0.3385	0.02574	91.9	13.15	<.0001
season	11	0.1440	0.02304	69.5	6.25	<.0001
season	12	0	.	.	.	.
date1		-0.00198	0.002197	25.8	-0.90	0.3750
temp_dev		0.06518	0.001864	468	34.97	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.7	112.81	<.0001
date1	1	25.8	0.81	0.3750
temp_dev	1	468	1223.01	<.0001

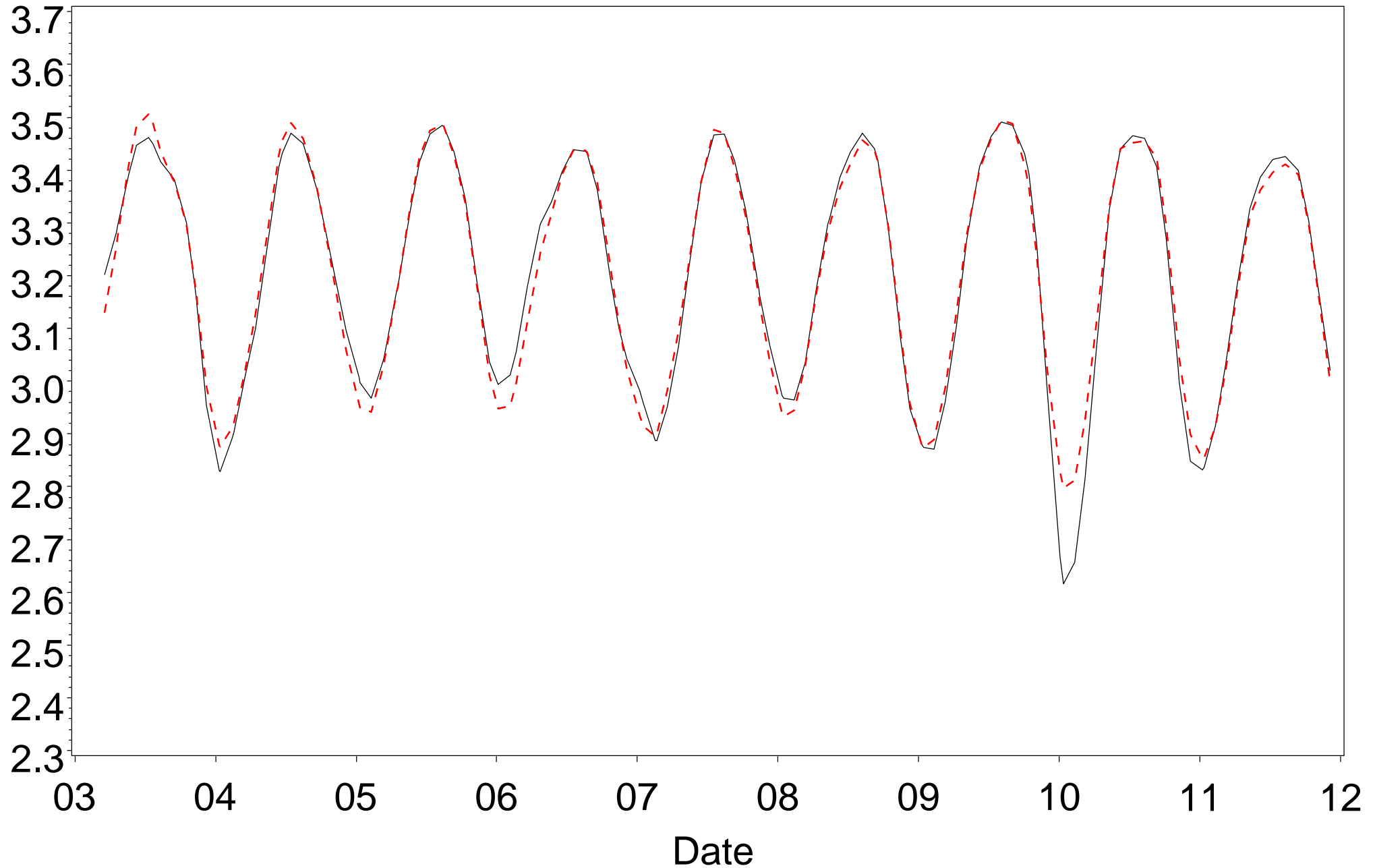
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Temperature (Degree C) and Sample Level = Surface

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	549
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1127.64137805	
1	3	-1415.65108080	0.00586552
2	2	-1425.01343430	0.00504888
3	2	-1428.18101590	0.00280057
4	1	-1432.02812071	0.00021633
5	1	-1432.30971371	0.00000409
6	1	-1432.31473187	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.001077	0.000778	1.39	0.0830
Variance	Intercept	0.003483	0.000662	5.26	<.0001
SP(POW)	Intercept	0.3799	0.1148	3.31	0.0009
Residual		0.002452	0.000168	14.59	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-1432.3
AIC (smaller is better)	-1424.3
AICC (smaller is better)	-1424.2
BIC (smaller is better)	-1425.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-0.6610	6.2024	17.5	-0.11	0.9163
season	1	0.04033	0.02439	66.9	1.65	0.1028
season	2	-0.00941	0.02797	83.4	-0.34	0.7375
season	3	0.008397	0.02854	83.5	0.29	0.7693
season	4	-0.02924	0.02888	79	-1.01	0.3145
season	5	-0.08390	0.02898	76.2	-2.90	0.0049
season	6	-0.01343	0.02900	75.3	-0.46	0.6446
season	7	-0.02758	0.02967	77.5	-0.93	0.3556
season	8	-0.02792	0.02963	79.6	-0.94	0.3489
season	9	-0.02723	0.03012	84.7	-0.90	0.3686
season	10	-0.04063	0.02892	83.7	-1.40	0.1638
season	11	-0.02588	0.02439	67	-1.06	0.2926
season	12	0	.	.	.	.
date1		0.005682	0.003089	17.5	1.84	0.0829
temp_dev		0.02813	0.004632	273	6.07	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.9	2.26	0.0199
date1	1	17.5	3.38	0.0829
temp_dev	1	273	36.87	<.0001

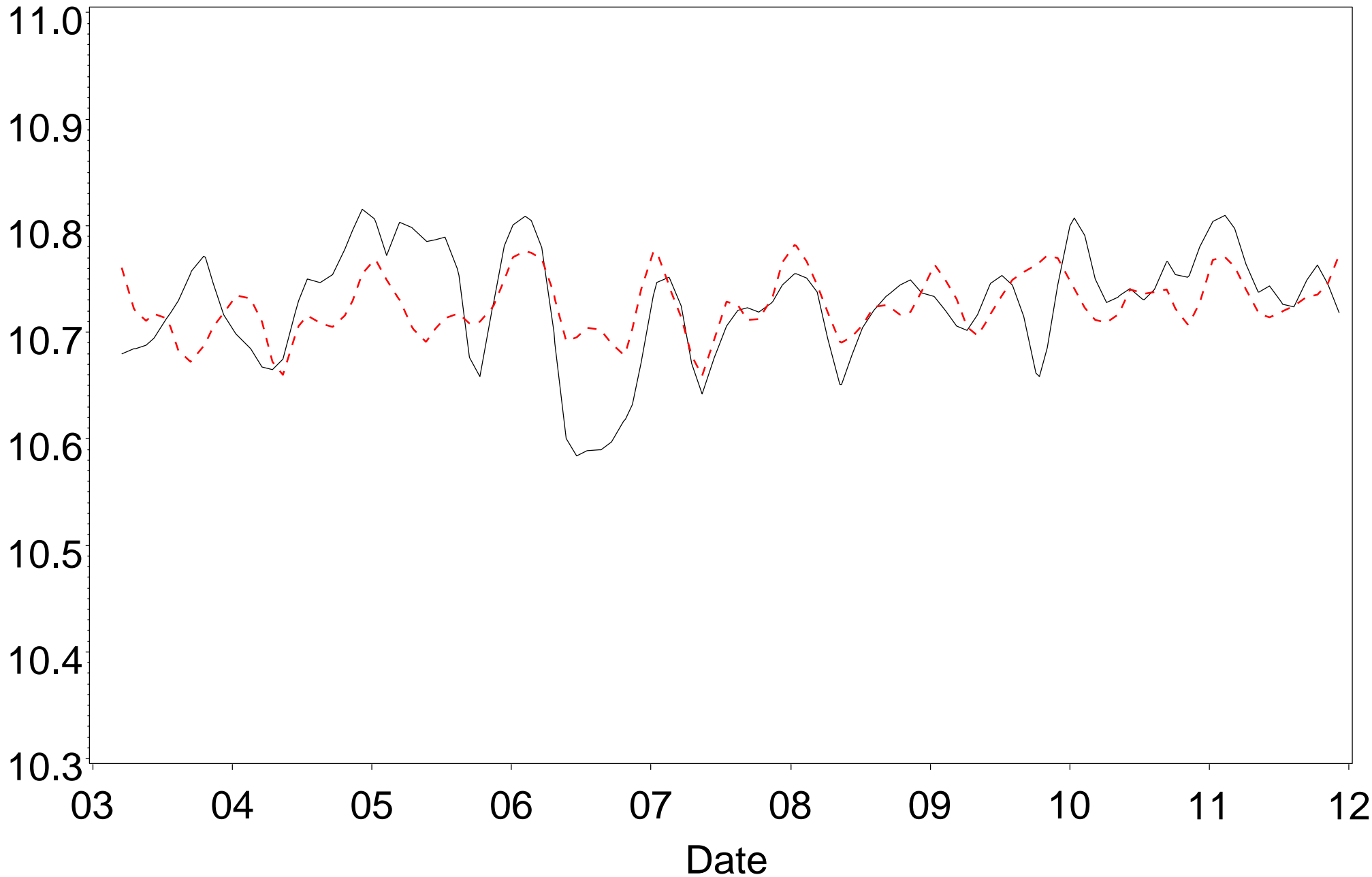
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

TIME



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	627.98178474	
1	2	339.65772704	0.02912376
2	2	328.40057545	0.02122827
3	2	320.74783583	0.00287367
4	1	319.81639890	0.00004055
5	1	319.80391519	0.00000001
6	1	319.80391072	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04097	0.02942	1.39	0.0819
Variance	Intercept	0.09834	0.01844	5.33	<.0001
SP(POW)	Intercept	0.2450	0.1150	2.13	0.0331
Residual		0.06528	0.004603	14.18	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	319.8
AIC (smaller is better)	327.8
AICC (smaller is better)	327.9
BIC (smaller is better)	326.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-44.9247	31.8430	21.4	-1.41	0.1727
season	1	0.04476	0.1452	68.5	0.31	0.7588
season	2	-0.03879	0.1593	81.5	-0.24	0.8082
season	3	0.03931	0.1576	77.2	0.25	0.8036
season	4	0.1126	0.1578	74.7	0.71	0.4776
season	5	0.08189	0.1577	73.8	0.52	0.6052
season	6	0.5222	0.1576	73.6	3.31	0.0014
season	7	0.5354	0.1576	73.9	3.40	0.0011
season	8	0.5934	0.1575	75	3.77	0.0003
season	9	0.5472	0.1620	78.6	3.38	0.0011
season	10	0.3713	0.1591	81.4	2.33	0.0221
season	11	0.1731	0.1398	66.5	1.24	0.2199
season	12	0	.	.	.	.
date1		0.02174	0.01586	21.4	1.37	0.1847
temp_dev		0.1075	0.02537	300	4.24	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70	3.53	0.0006
date1	1	21.4	1.88	0.1847
temp_dev	1	300	17.96	<.0001

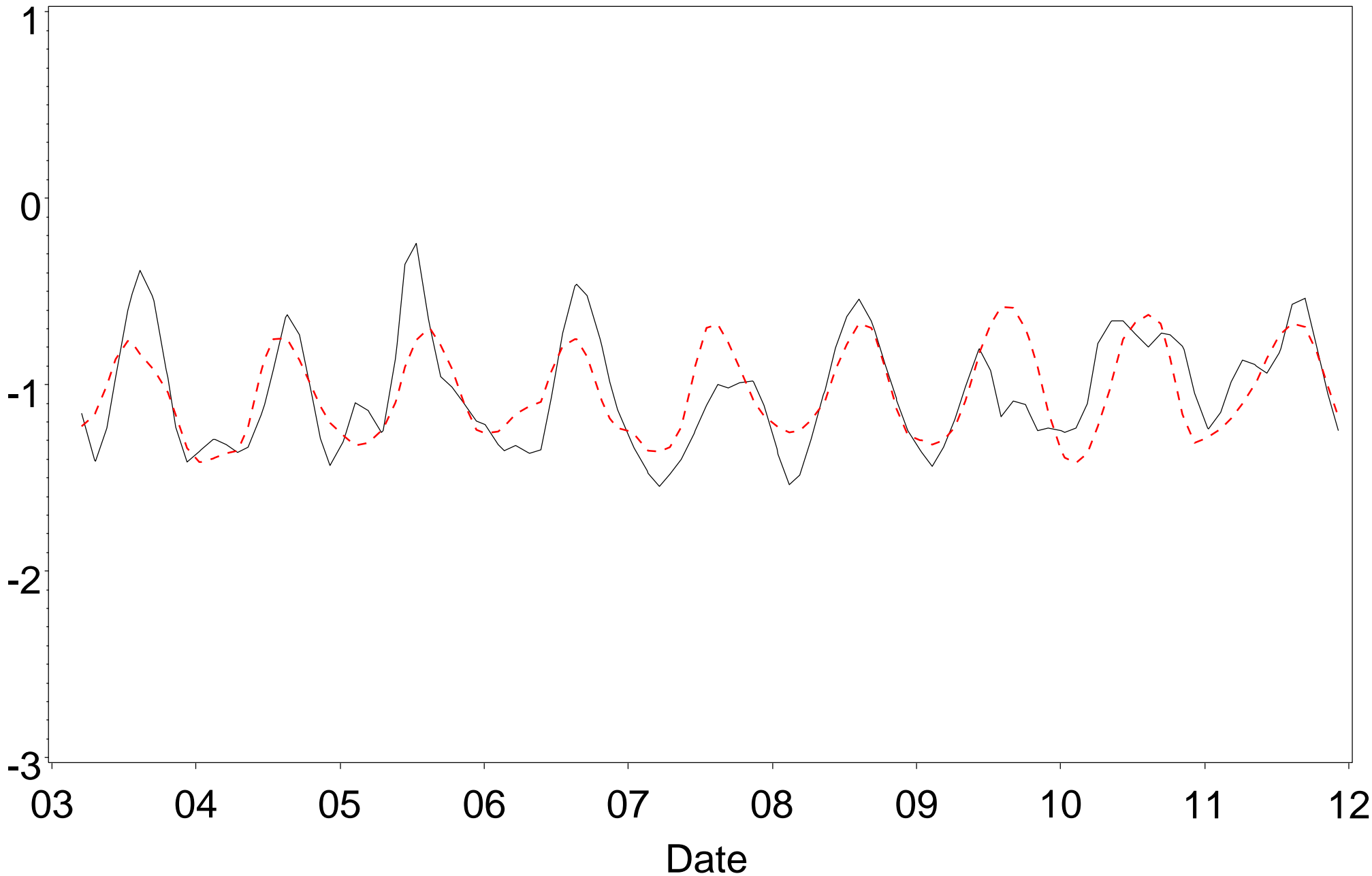
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	629.64520539	
1	2	340.56669056	0.02849030
2	2	329.54857374	0.02061586
3	2	322.12994309	0.00280089
4	1	321.22405004	0.00003919
5	1	321.21201623	0.00000001
6	1	321.21201220	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04296	0.03083	1.39	0.0818
Variance	Intercept	0.09608	0.01811	5.31	<.0001
SP(POW)	Intercept	0.2558	0.1149	2.23	0.0260
Residual		0.06581	0.004637	14.19	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	321.2
AIC (smaller is better)	329.2
AICC (smaller is better)	329.3
BIC (smaller is better)	327.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-44.3420	31.8106	21.1	-1.39	0.1779
season	1	0.04727	0.1430	69.2	0.33	0.7420
season	2	-0.04662	0.1574	82	-0.30	0.7678
season	3	0.02382	0.1560	77.5	0.15	0.8790
season	4	0.09820	0.1563	74.7	0.63	0.5317
season	5	0.06438	0.1562	73.7	0.41	0.6814
season	6	0.5045	0.1561	73.5	3.23	0.0018
season	7	0.5167	0.1561	73.9	3.31	0.0014
season	8	0.5895	0.1560	75.1	3.78	0.0003
season	9	0.5455	0.1603	78.9	3.40	0.0010
season	10	0.3642	0.1572	81.9	2.32	0.0230
season	11	0.1683	0.1377	67.2	1.22	0.2257
season	12	0	.	.	.	.
date1		0.02146	0.01584	21.1	1.35	0.1898
temp_dev		0.1042	0.02527	294	4.12	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

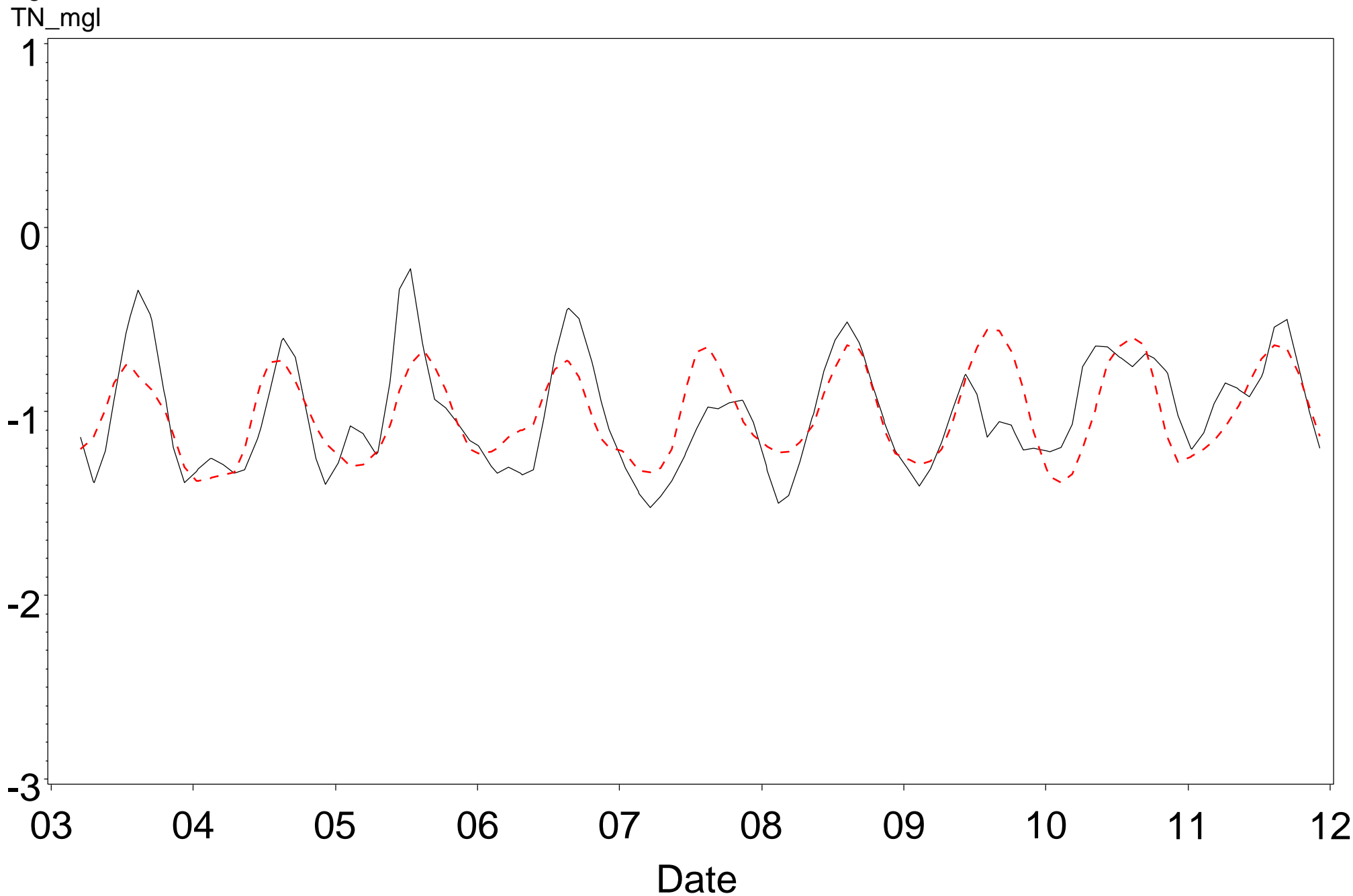
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.5	3.54	0.0005
date1	1	21.1	1.84	0.1898
temp_dev	1	294	16.99	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	511.18106500	
1	2	298.15961825	0.00951719
2	2	294.24190562	0.00401286
3	2	292.83477013	0.00035126
4	1	292.71970050	0.00000093
5	1	292.71940460	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02343	0.01705	1.37	0.0847
Variance	Intercept	0.06108	0.01519	4.02	<.0001
SP(POW)	Intercept	0.6063	0.1101	5.50	<.0001
Residual		0.07062	0.004995	14.14	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	292.7
AIC (smaller is better)	300.7
AICC (smaller is better)	300.8
BIC (smaller is better)	299.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		249.03	36.3698	10.1	6.85	<.0001
season	1	0.03106	0.09732	69.2	0.32	0.7506
season	2	0.04388	0.1141	66.1	0.38	0.7018
season	3	0.005711	0.1207	67.8	0.05	0.9624
season	4	0.05580	0.1250	66.9	0.45	0.6566
season	5	0.1257	0.1269	65.8	0.99	0.3255
season	6	0.4519	0.1273	65.4	3.55	0.0007
season	7	0.3425	0.1264	66.1	2.71	0.0086
season	8	0.5481	0.1239	67	4.42	<.0001
season	9	0.4617	0.1224	67.7	3.77	0.0003
season	10	0.2956	0.1134	64.8	2.61	0.0113
season	11	0.1381	0.09301	67.7	1.48	0.1422
season	12	0	.	.	.	.
date1		-0.1252	0.01811	10.1	-6.91	<.0001
temp_dev		0.09738	0.02105	158	4.63	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

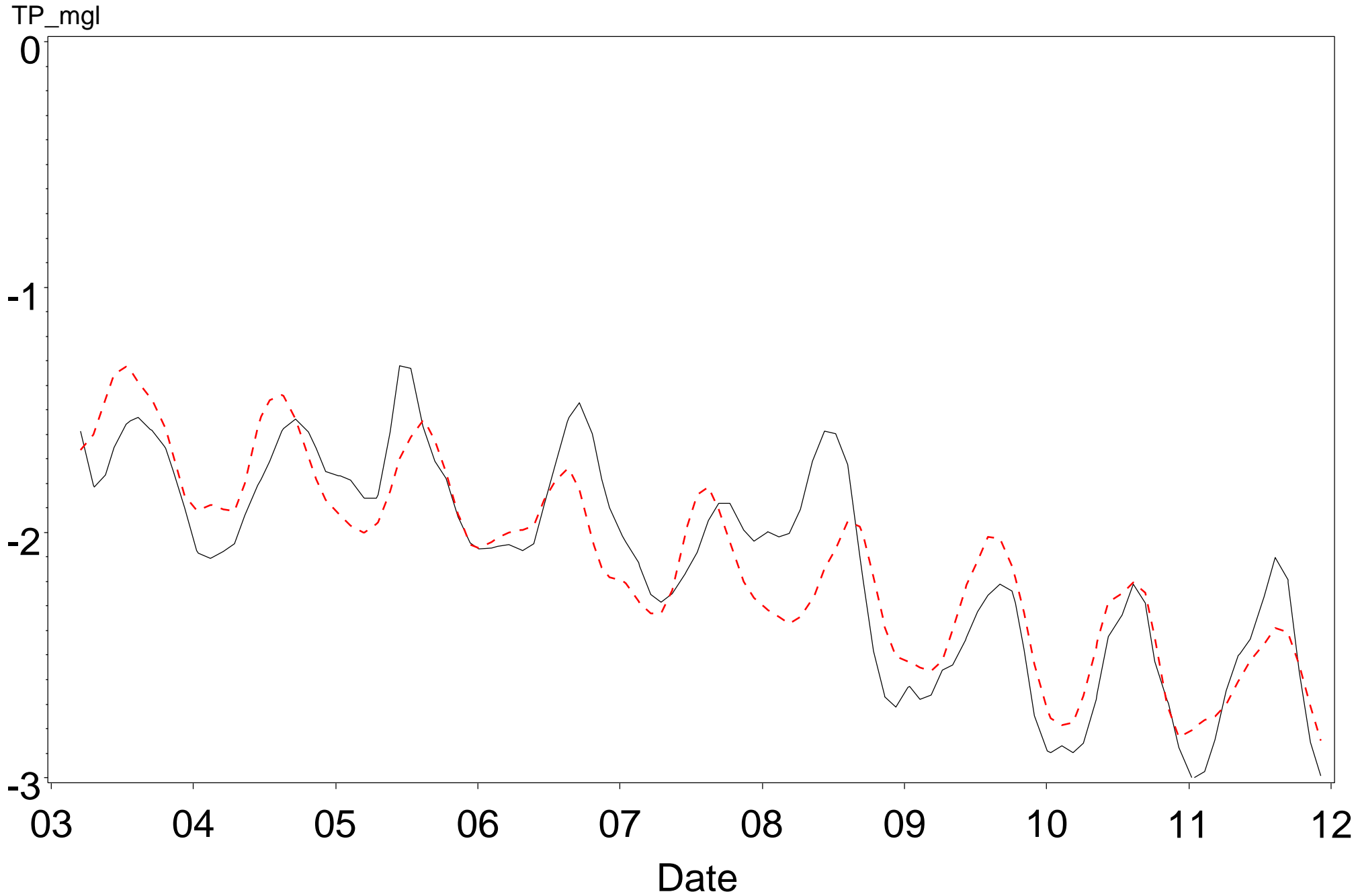
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.9	3.35	0.0010
date1	1	10.1	47.78	<.0001
temp_dev	1	158	21.40	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	DR-1 DR-2 DR-3 DR-4 DR-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	550

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	550
Number of Observations Used	519
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	801.84987115	
1	4	745.96521121	.
2	2	721.02409463	0.03144567
3	2	717.14343481	0.00515271
4	1	716.53086088	0.00027330
5	1	716.50070555	0.00000146
6	1	716.50054981	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.001961	0.002590	0.76	0.2245
Variance	Intercept	0.09047	0.02034	4.45	<.0001
SP(POW)	Intercept	-0.3889	0.1406	-2.77	0.0057
Residual		0.1722	0.01202	14.32	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	716.5
AIC (smaller is better)	724.5
AICC (smaller is better)	724.6
BIC (smaller is better)	722.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-80.3166	21.8299	59.4	-3.68	0.0005
season	1	0.07323	0.1927	48.3	0.38	0.7056
season	2	0.1202	0.1642	80.5	0.73	0.4660
season	3	0.06396	0.1685	63.6	0.38	0.7056
season	4	0.3356	0.1667	81.4	2.01	0.0474
season	5	-0.01330	0.1664	73.1	-0.08	0.9365
season	6	-0.04248	0.1671	79	-0.25	0.8000
season	7	0.03524	0.1663	72.7	0.21	0.8328
season	8	-0.02248	0.1665	81.6	-0.14	0.8929
season	9	-0.2184	0.1737	64.7	-1.26	0.2131
season	10	-0.1297	0.1640	80	-0.79	0.4311
season	11	0.003947	0.1883	45.9	0.02	0.9834
season	12	0	.	.	.	.
date1		0.04064	0.01087	59.4	3.74	0.0004
temp_dev		0.007223	0.02967	141	0.24	0.8080

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.9	1.60	0.1166
date1	1	59.4	13.97	0.0004
temp_dev	1	141	0.06	0.8080

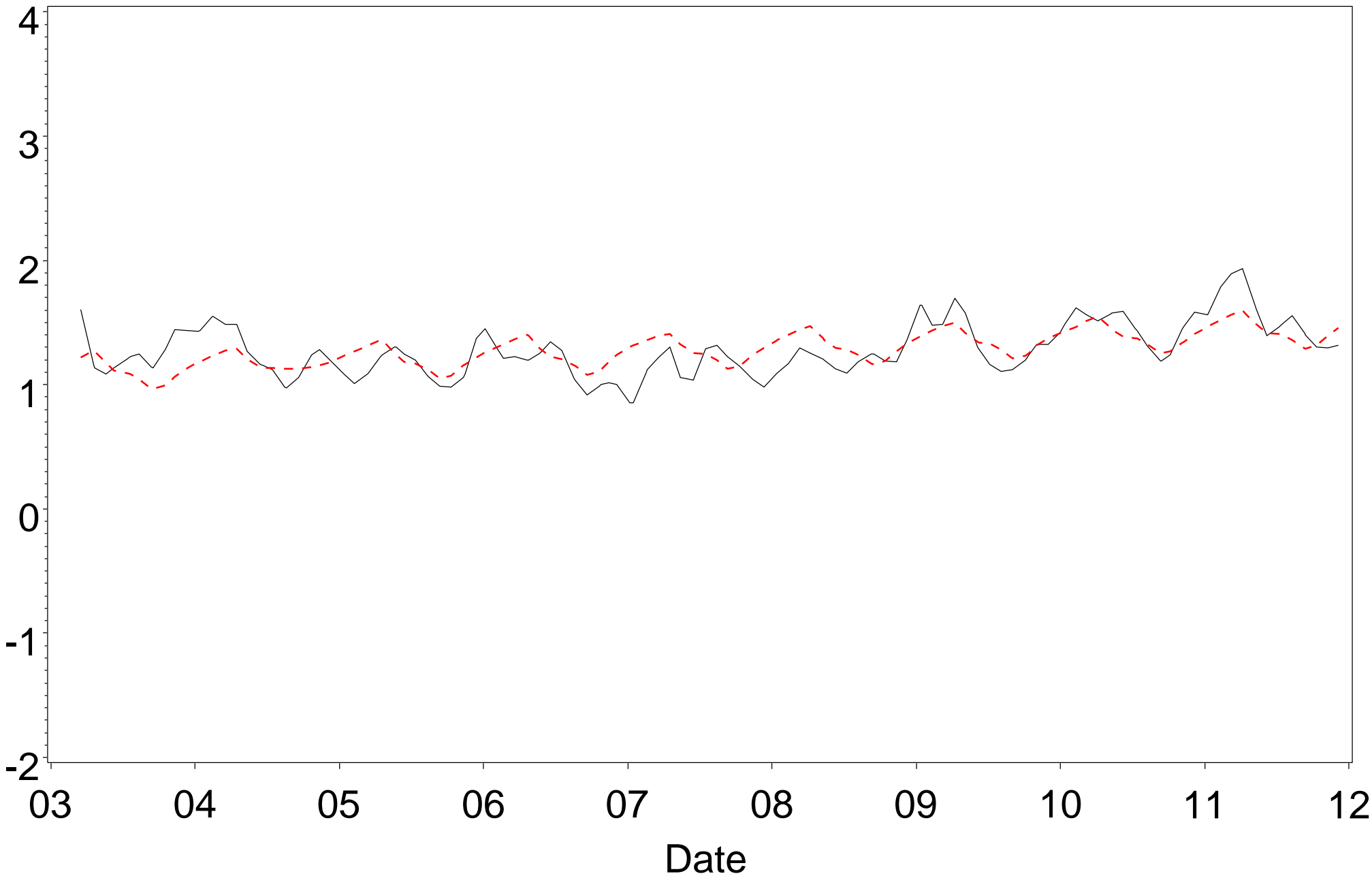
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Dona and Roberts Bay

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	565
Number of Observations Not Used	17

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1306.57979267	
1	2	1177.59291988	0.17273645
2	2	1170.63939620	0.11382924
3	2	1159.75303075	0.02035926
4	2	1158.18083084	0.00034244
5	1	1158.15544496	0.00000031
6	1	1158.15542211	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02451	0.01182	2.07	0.0190
Variance	Intercept	0.2611	0.04878	5.35	<.0001
SP(POW)	Intercept	0.1763	0.1314	1.34	0.1799
Residual		0.3090	0.02147	14.39	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1158.2
AIC (smaller is better)	1166.2
AICC (smaller is better)	1166.2
BIC (smaller is better)	1174.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-97.5735	49.4652	25.4	-1.97	0.0595
season	1	-0.1434	0.2511	69.4	-0.57	0.5700
season	2	-0.7119	0.2690	92.4	-2.65	0.0096
season	3	-0.6348	0.2725	94	-2.33	0.0220
season	4	-0.5379	0.2688	89	-2.00	0.0484
season	5	-0.4530	0.2697	90.3	-1.68	0.0965
season	6	-0.1147	0.2688	89.1	-0.43	0.6706
season	7	0.6688	0.2693	90	2.48	0.0149
season	8	0.8122	0.2696	90.7	3.01	0.0034
season	9	1.2240	0.2728	94.1	4.49	<.0001
season	10	0.9457	0.2685	93	3.52	0.0007
season	11	0.2382	0.2503	66.7	0.95	0.3448
season	12	0	.	.	.	.
date1		0.04923	0.02464	25.4	2.00	0.0565
temp_dev		0.05439	0.04613	243	1.18	0.2396

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76	9.61	<.0001
date1	1	25.4	3.99	0.0565
temp_dev	1	243	1.39	0.2396

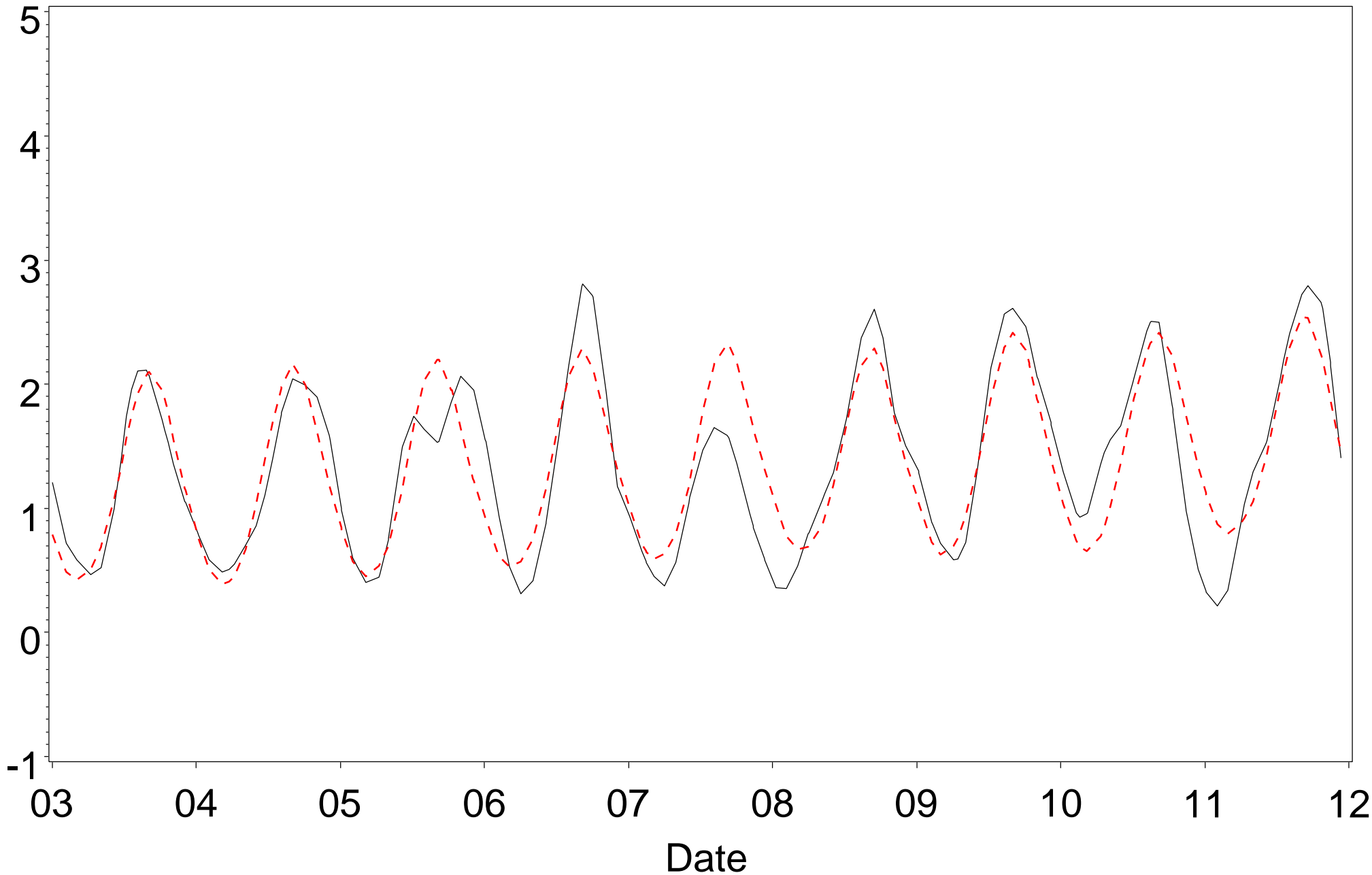
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	570
Number of Observations Not Used	12

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1058.15297446	
1	2	475.04063057	0.06768550
2	1	452.00397259	0.02155104
3	1	444.31258178	0.00615541
4	1	442.25118602	0.00070961
5	1	442.02658201	0.00001908
6	1	442.02093619	0.00000002
7	1	442.02093044	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.03935	0.01172	3.36	0.0004
Variance	Intercept	0.3508	0.08488	4.13	<.0001
SP(POW)	Intercept	0.6362	0.09109	6.98	<.0001
Residual		0.05976	0.004309	13.87	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	442.0
AIC (smaller is better)	450.0
AICC (smaller is better)	450.1
BIC (smaller is better)	457.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		161.54	85.6719	9.16	1.89	0.0914
season	1	-0.2067	0.1871	76	-1.11	0.2726
season	2	-0.3525	0.2305	82.2	-1.53	0.1300
season	3	-0.4358	0.2533	81.2	-1.72	0.0891
season	4	-0.4552	0.2645	75.1	-1.72	0.0894
season	5	-0.5260	0.2706	71.4	-1.94	0.0559
season	6	-0.6646	0.2720	70	-2.44	0.0171
season	7	0.2943	0.2697	71.8	1.09	0.2789
season	8	0.5938	0.2629	76.2	2.26	0.0268
season	9	0.9009	0.2495	80.8	3.61	0.0005
season	10	0.8407	0.2256	81.4	3.73	0.0004
season	11	0.2793	0.1799	74.1	1.55	0.1247
season	12	0	.	.	.	.
date1		-0.07886	0.04267	9.16	-1.85	0.0971
temp_dev		-0.1112	0.02622	404	-4.24	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

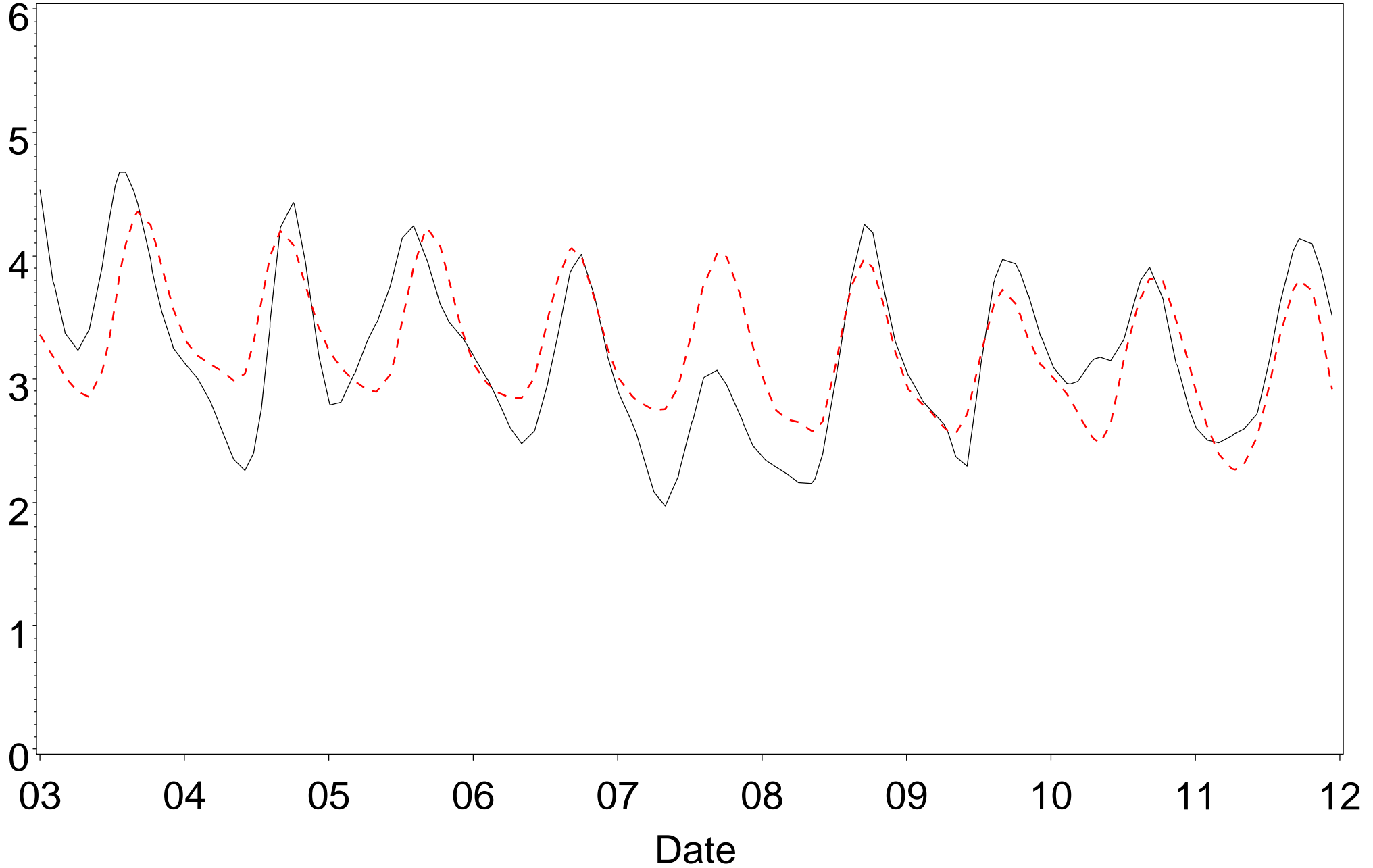
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.5	5.12	<.0001
date1	1	9.16	3.41	0.0971
temp_dev	1	404	17.98	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Color (PCU) and Sample Level = Surface

Log Scale
COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	574
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-44.42857313	
1	2	-407.23163724	0.01092402
2	1	-416.83482138	0.00365942
3	2	-419.66254011	0.00084629
4	1	-420.31988089	0.00001244
5	1	-420.32900114	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002013	0.000901	2.23	0.0128
Variance	Intercept	0.03625	0.008921	4.06	<.0001
SP(POW)	Intercept	0.6525	0.08908	7.33	<.0001
Residual		0.01643	0.001155	14.22	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-420.3
AIC (smaller is better)	-412.3
AICC (smaller is better)	-412.3
BIC (smaller is better)	-404.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-66.4184	28.4980	9.44	-2.33	0.0435
season	1	0.01657	0.06269	82.4	0.26	0.7922
season	2	0.02932	0.07614	82.9	0.39	0.7011
season	3	0.05023	0.08320	81.8	0.60	0.5477
season	4	0.02939	0.08679	77.3	0.34	0.7358
season	5	0.06359	0.08886	74.9	0.72	0.4765
season	6	0.06318	0.08926	73.6	0.71	0.4813
season	7	-0.1224	0.08859	75.3	-1.38	0.1713
season	8	-0.2028	0.08638	78.6	-2.35	0.0214
season	9	-0.3429	0.08202	81.3	-4.18	<.0001
season	10	-0.1920	0.07462	82.4	-2.57	0.0119
season	11	-0.09860	0.06071	82.8	-1.62	0.1082
season	12	0	.	.	.	.
date1		0.03840	0.01419	9.43	2.71	0.0232
temp_dev		0.01602	0.01130	257	1.42	0.1575

Mixed Model With Local Nugget

The Mixed Procedure

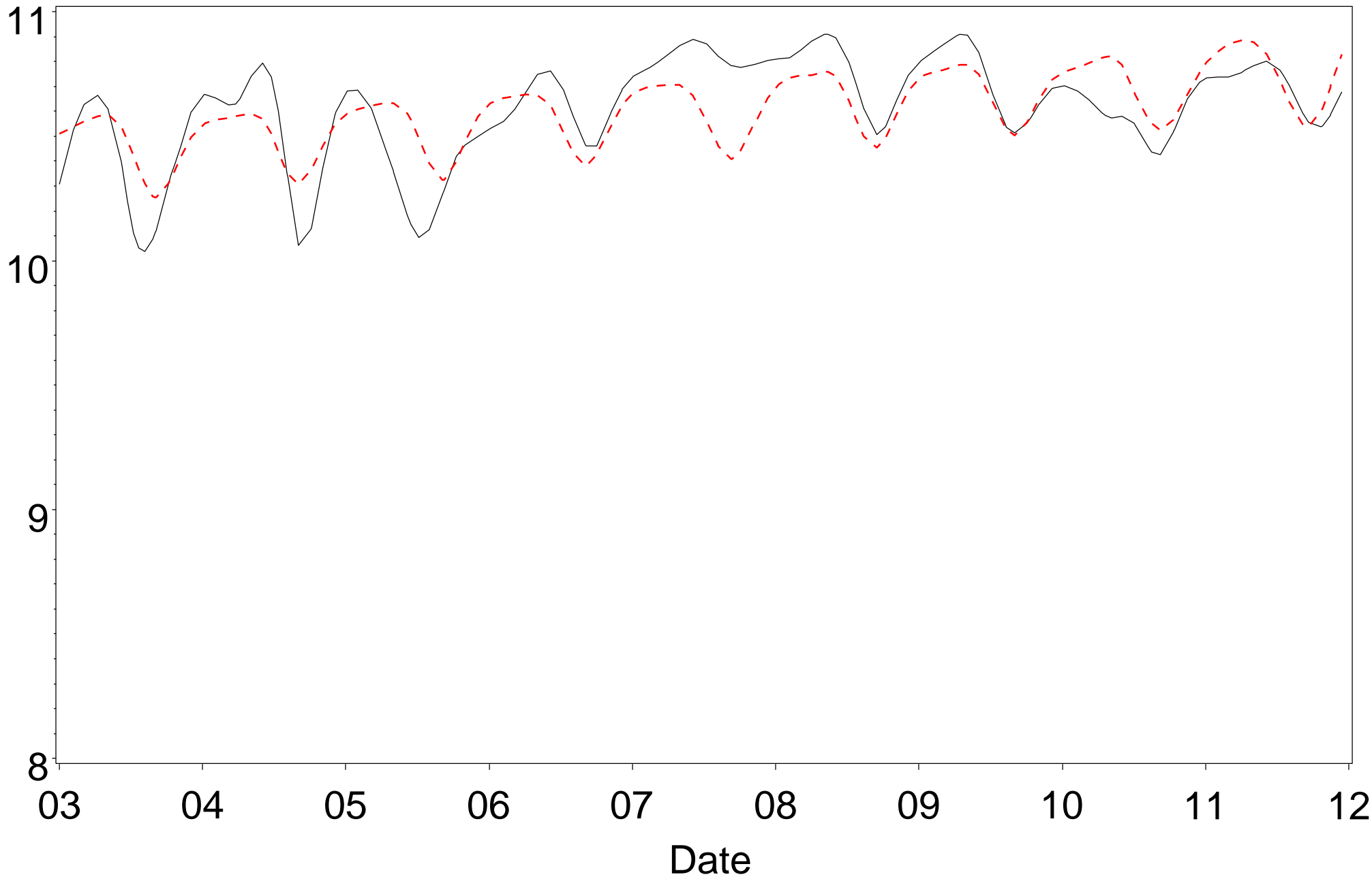
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	78.7	3.00	0.0022
date1	1	9.43	7.32	0.0232
temp_dev	1	257	2.01	0.1575

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
COND

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	574
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1760.83943216	
1	3	1633.24339507	1.21336893
2	2	1624.16747316	0.02881401
3	2	1622.19344880	0.00627024
4	1	1620.03154669	0.00065207
5	1	1619.82352781	0.00001167
6	1	1619.82003586	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1571	0.05065	3.10	0.0010
Variance	Intercept	0.4694	0.09382	5.00	<.0001
SP(POW)	Intercept	0.2450	0.1320	1.86	0.0634
Residual		0.6672	0.04640	14.38	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1619.8
AIC (smaller is better)	1627.8
AICC (smaller is better)	1627.9
BIC (smaller is better)	1635.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-58.1252	72.1253	24.1	-0.81	0.4282
season	1	-0.08606	0.3355	72.3	-0.26	0.7983
season	2	0.1612	0.3653	90.6	0.44	0.6600
season	3	-0.5081	0.3704	90.3	-1.37	0.1736
season	4	-1.2989	0.3680	85.9	-3.53	0.0007
season	5	-1.3256	0.3692	86.6	-3.59	0.0005
season	6	-1.2391	0.3682	85.5	-3.37	0.0011
season	7	-1.8881	0.3691	86.7	-5.12	<.0001
season	8	-1.7740	0.3694	88	-4.80	<.0001
season	9	-2.2045	0.3680	89.4	-5.99	<.0001
season	10	-1.6641	0.3640	91.1	-4.57	<.0001
season	11	-1.1851	0.3342	70.7	-3.55	0.0007
season	12	0	.	.	.	.
date1		0.03290	0.03592	24.1	0.92	0.3689
temp_dev		-0.1415	0.06450	221	-2.19	0.0293

Mixed Model With Local Nugget

The Mixed Procedure

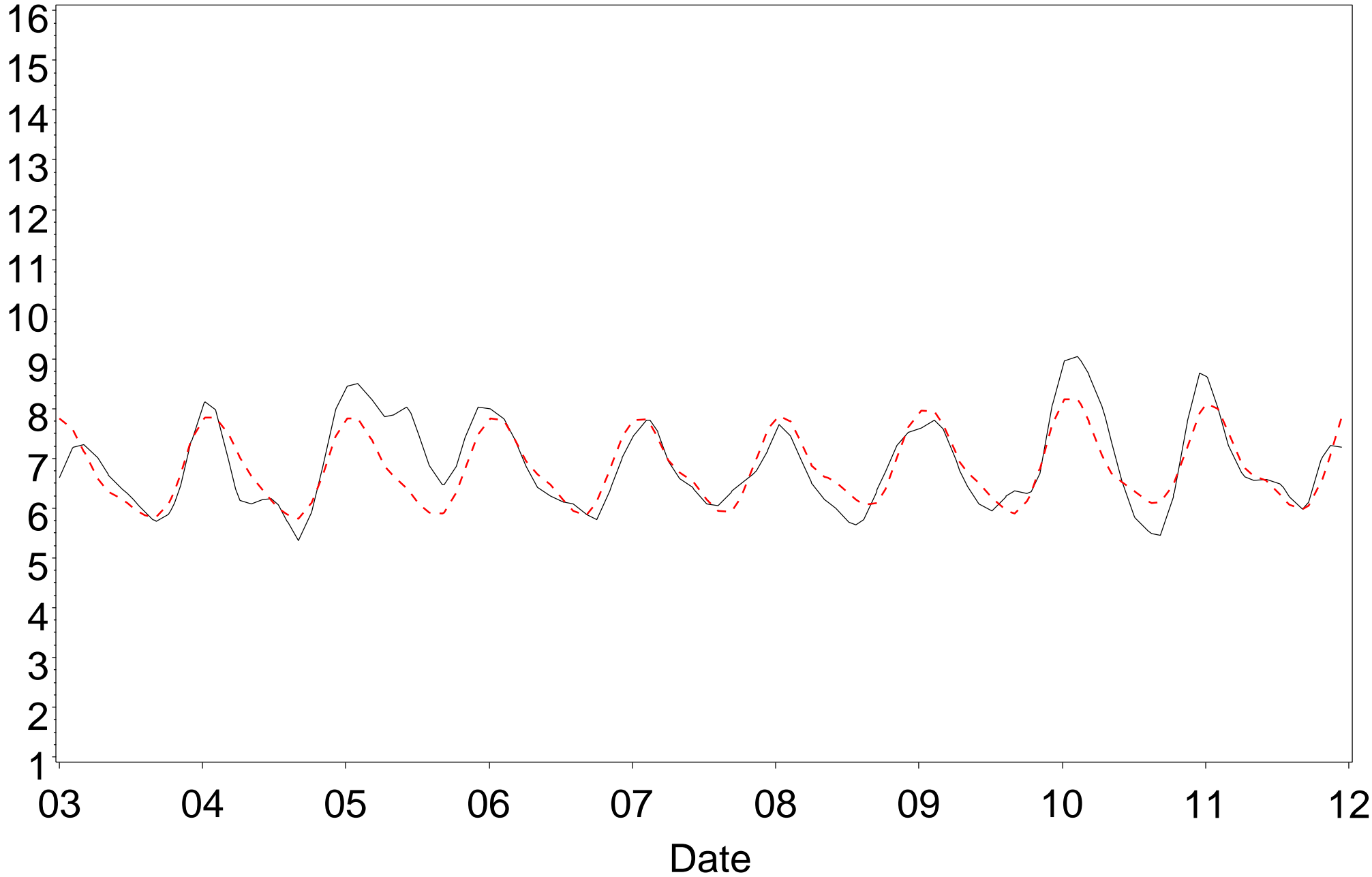
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.8	7.20	<.0001
date1	1	24.1	0.84	0.3689
temp_dev	1	221	4.81	0.0293

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale
DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	300
Number of Observations Not Used	282

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	522.19759914	
1	3	487.28983995	2.94937117
2	2	480.18297556	0.02837011
3	2	479.79232295	0.00468816
4	1	479.67658265	0.00007883
5	1	479.67474889	0.00000003
6	1	479.67474831	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03570	0.01639	2.18	0.0147
Variance	Intercept	0.1042	0.03143	3.32	0.0005
SP(POW)	Intercept	0.1836	0.2037	0.90	0.3673
Residual		0.1921	0.01929	9.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	479.7
AIC (smaller is better)	487.7
AICC (smaller is better)	487.8
BIC (smaller is better)	495.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		272.83	66.7304	13.7	4.09	0.0012
season	1	-0.2435	0.2311	35.8	-1.05	0.2990
season	2	-0.2660	0.2456	45.2	-1.08	0.2845
season	3	-0.2500	0.2491	48.1	-1.00	0.3205
season	4	-0.3276	0.2346	45.4	-1.40	0.1695
season	5	-0.2795	0.2377	47.4	-1.18	0.2456
season	6	-0.3313	0.2325	44.2	-1.42	0.1612
season	7	0.1261	0.2328	44.9	0.54	0.5909
season	8	0.2292	0.2496	48.6	0.92	0.3630
season	9	0.3106	0.2512	47.6	1.24	0.2223
season	10	0.3320	0.2437	44.1	1.36	0.1801
season	11	0.1327	0.2284	32.5	0.58	0.5653
season	12	0	.	.	.	.
date1		-0.1355	0.03327	13.7	-4.07	0.0012
temp_dev		0.02184	0.04858	152	0.45	0.6536

Mixed Model With Local Nugget

The Mixed Procedure

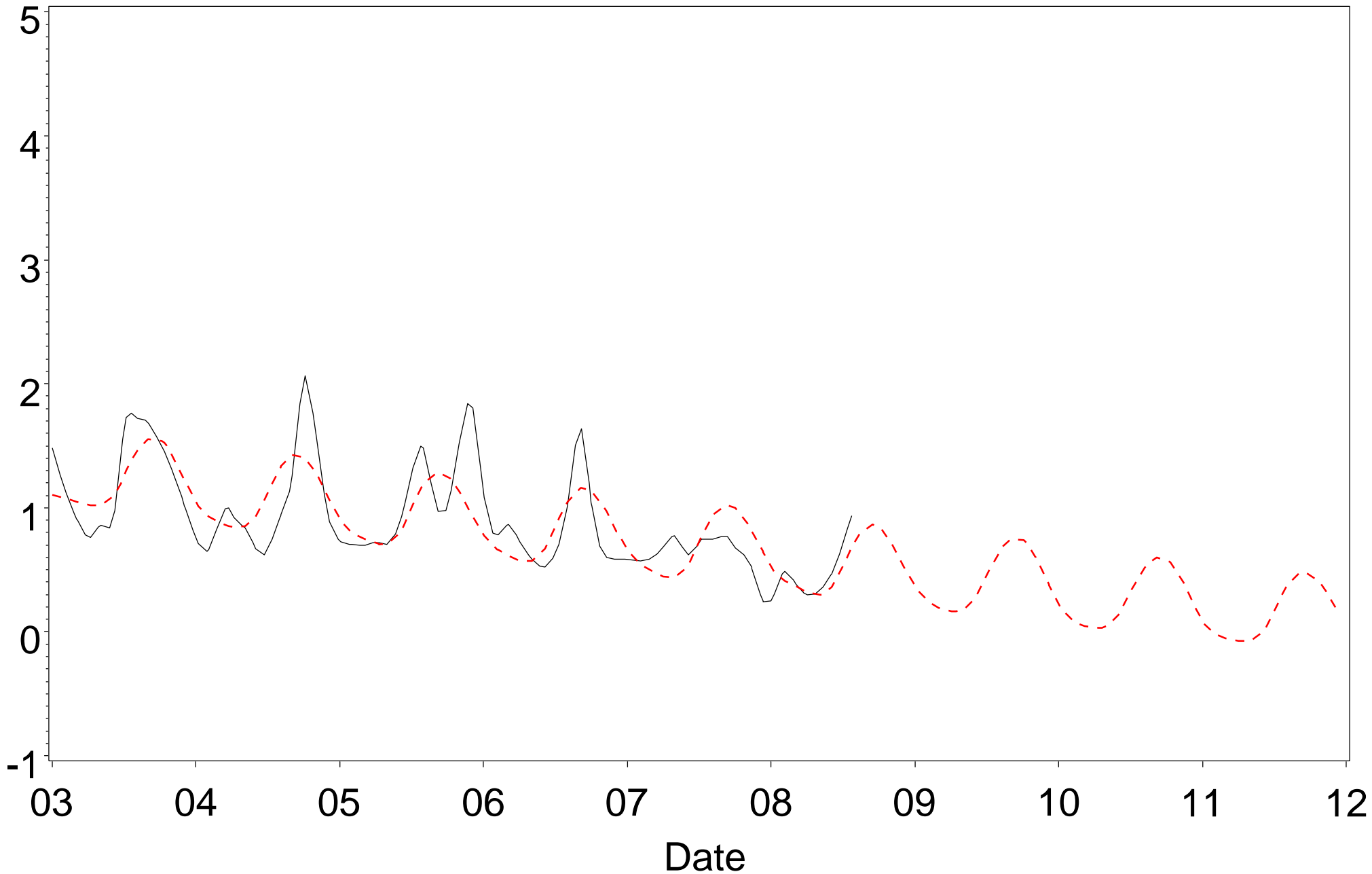
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	37	2.00	0.0574
date1	1	13.7	16.60	0.0012
temp_dev	1	152	0.20	0.6536

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	548
Number of Observations Not Used	34

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1490.02302262	
1	2	986.90282222	2.46787820
2	1	979.00824938	0.84260682
3	2	977.76487632	0.10755089
4	1	977.55227711	0.00302753
5	1	977.54633291	0.00000163
6	1	977.54632974	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.009411	0.007232	1.30	0.0966
Variance	Intercept	0.7859	0.2146	3.66	0.0001
SP(POW)	Intercept	0.7063	0.08413	8.40	<.0001
Residual		0.2096	0.01502	13.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	977.5
AIC (smaller is better)	985.5
AICC (smaller is better)	985.6
BIC (smaller is better)	993.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-90.1340	141.74	7.49	-0.64	0.5438
season	1	0.05772	0.2624	82.1	0.22	0.8264
season	2	0.1236	0.3254	83.4	0.38	0.7050
season	3	-0.03832	0.3614	83.8	-0.11	0.9158
season	4	0.2378	0.3798	79.6	0.63	0.5330
season	5	0.1486	0.3964	78.7	0.37	0.7088
season	6	-0.2319	0.3934	76.8	-0.59	0.5573
season	7	0.1742	0.3896	78.3	0.45	0.6560
season	8	-0.1174	0.3775	80.8	-0.31	0.7567
season	9	0.6755	0.3549	82.6	1.90	0.0605
season	10	0.3100	0.3180	82.9	0.97	0.3326
season	11	0.2023	0.2618	81.9	0.77	0.4419
season	12	0	.	.	.	.
date1		0.04313	0.07060	7.49	0.61	0.5594
temp_dev		0.06191	0.04422	306	1.40	0.1625

Mixed Model With Local Nugget

The Mixed Procedure

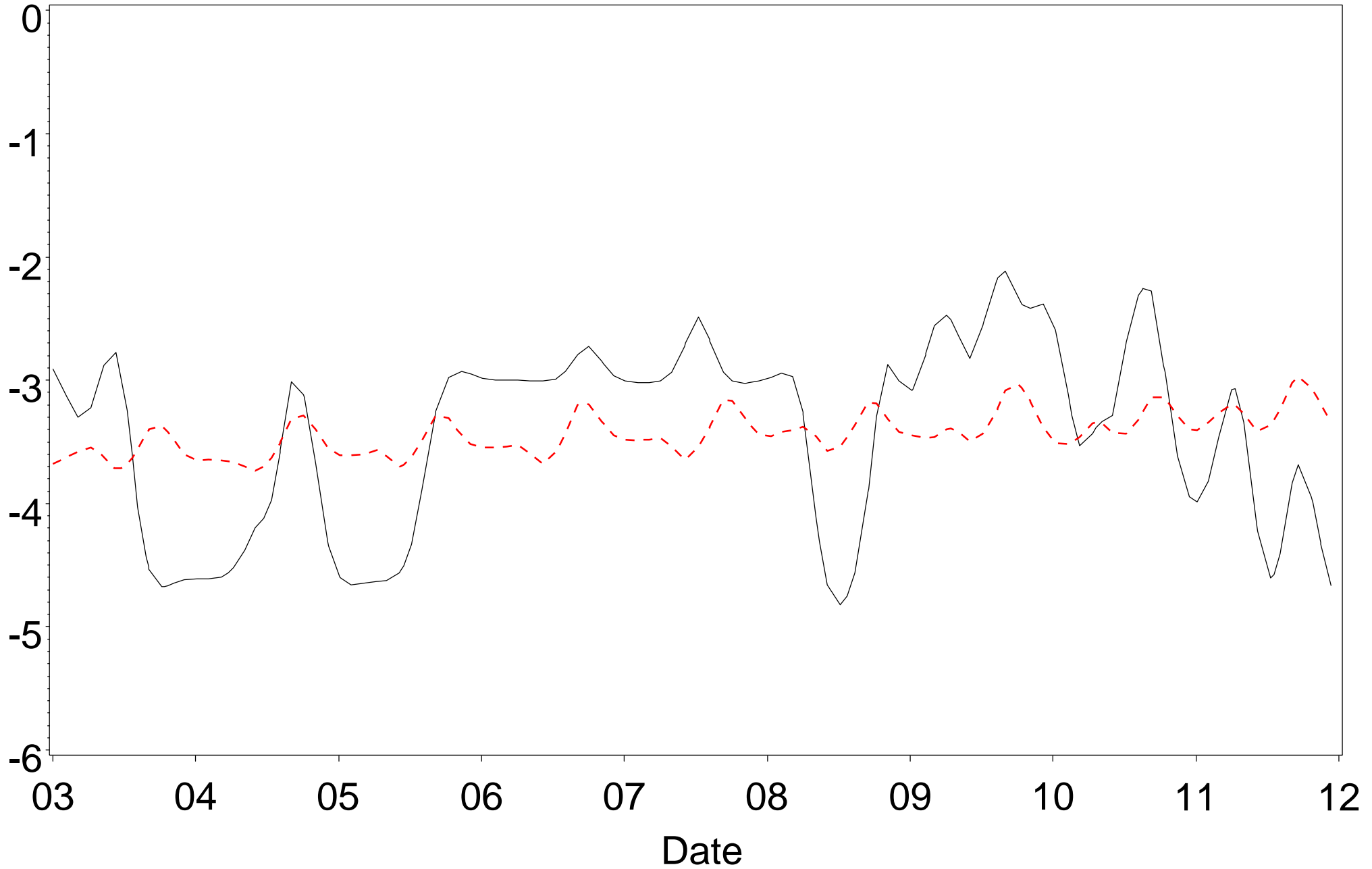
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	79.5	1.56	0.1277
date1	1	7.49	0.37	0.5594
temp_dev	1	306	1.96	0.1625

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	400
Number of Observations Not Used	182

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	747.59068894	
1	4	528.26873883	0.13490683
2	1	513.65950127	0.02419999
3	1	510.66161195	0.01495240
4	2	509.85208488	0.00929951
5	1	508.82939393	0.00031443
6	1	508.79674916	0.00000133
7	1	508.79661462	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.2643	0.07631	3.46	0.0003
SP(POW)	Intercept	0.6179	0.1163	5.31	<.0001
Residual		0.1385	0.01085	12.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	508.8
AIC (smaller is better)	514.8
AICC (smaller is better)	514.9
BIC (smaller is better)	520.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		389.74	113.08	9.55	3.45	0.0067
season	1	-0.1242	0.2070	53.9	-0.60	0.5511
season	2	-0.06495	0.2538	56.8	-0.26	0.7989
season	3	-0.01386	0.2782	56.4	-0.05	0.9604
season	4	-0.01092	0.2879	51.2	-0.04	0.9699
season	5	-0.2950	0.2940	49.2	-1.00	0.3207
season	6	-0.07713	0.2944	48.6	-0.26	0.7945
season	7	-0.02282	0.2880	49.1	-0.08	0.9372
season	8	-0.1103	0.2865	53.7	-0.38	0.7018
season	9	0.3185	0.2727	56.6	1.17	0.2476
season	10	0.2804	0.2415	57.4	1.16	0.2503
season	11	-0.00528	0.2063	55	-0.03	0.9797
season	12	0	.	.	.	.
date1		-0.1963	0.05629	9.55	-3.49	0.0063
temp_dev		-0.04948	0.04123	165	-1.20	0.2319

Mixed Model With Local Nugget

The Mixed Procedure

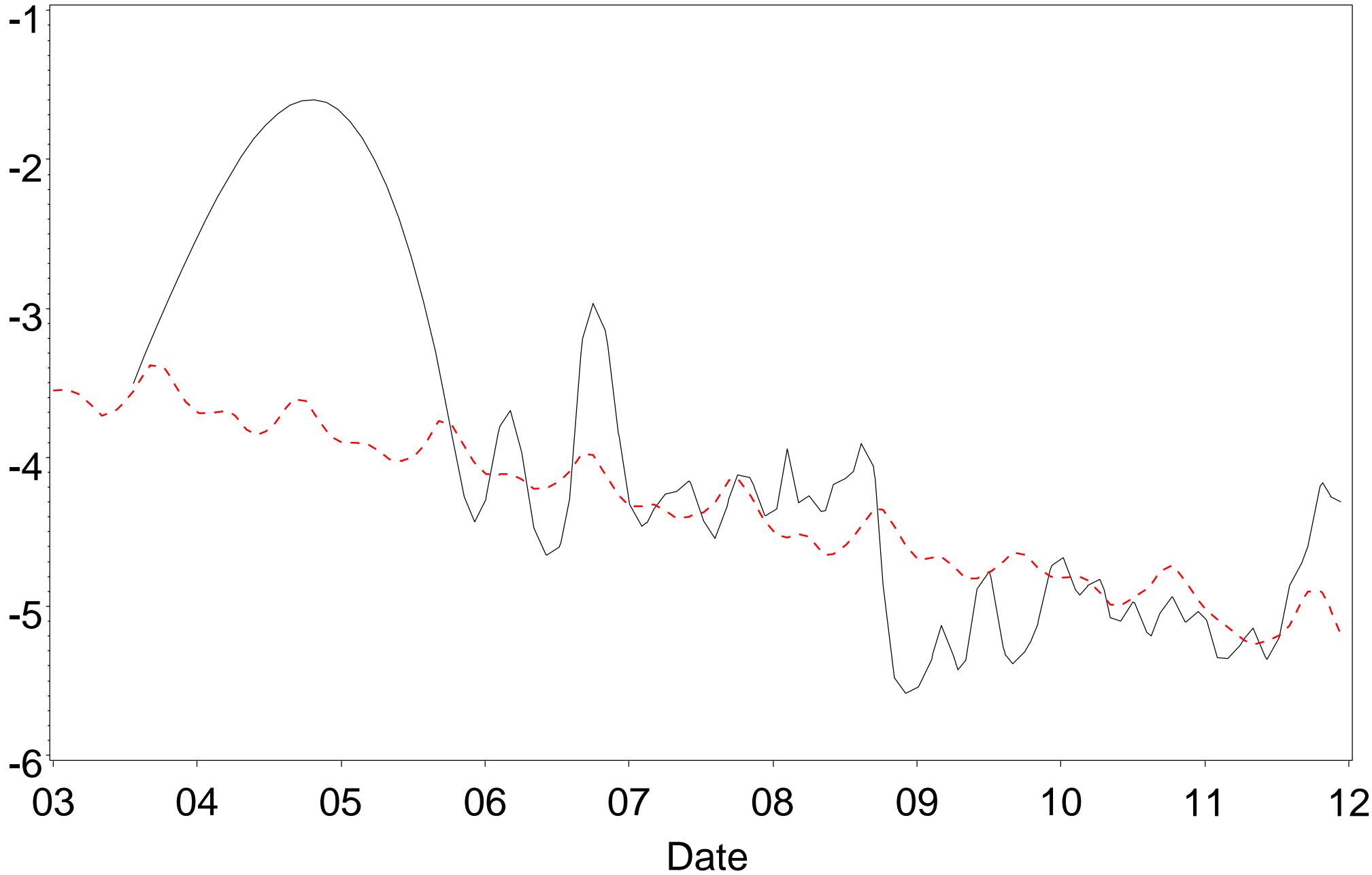
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	52.5	0.80	0.6357
date1	1	9.55	12.16	0.0063
temp_dev	1	165	1.44	0.2319

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	568
Number of Observations Not Used	14

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-342.72252820	
1	3	-615.05314959	0.02410773
2	2	-624.31641975	0.01588923
3	2	-640.80198380	0.00403175
4	2	-644.42591143	0.00015837
5	1	-644.56427229	0.00000112
6	1	-644.56520926	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002610	0.000848	3.08	0.0010
Variance	Intercept	0.01896	0.003083	6.15	<.0001
SP(POW)	Intercept	0.002144	0.1201	0.02	0.9858
Residual		0.009864	0.000694	14.21	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-644.6
AIC (smaller is better)	-636.6
AICC (smaller is better)	-636.5
BIC (smaller is better)	-628.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-31.9216	11.1362	33.6	-2.87	0.0071
season	1	-0.02724	0.06850	66.1	-0.40	0.6921
season	2	0.06001	0.07119	93.8	0.84	0.4014
season	3	0.06422	0.06871	94.1	0.93	0.3524
season	4	0.1138	0.06845	92.9	1.66	0.0997
season	5	0.09536	0.06855	93.6	1.39	0.1675
season	6	0.1682	0.06851	93.4	2.45	0.0159
season	7	0.08306	0.06853	93.7	1.21	0.2285
season	8	0.1423	0.06852	93.8	2.08	0.0405
season	9	-0.06158	0.06845	93.4	-0.90	0.3706
season	10	-0.01031	0.06902	94.2	-0.15	0.8816
season	11	-0.09956	0.06852	62	-1.45	0.1513
season	12	0	.	.	.	.
date1		0.01984	0.005546	33.6	3.58	0.0011
temp_dev		0.03391	0.009788	365	3.46	0.0006

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.8	2.96	0.0026
date1	1	33.6	12.80	0.0011
temp_dev	1	365	12.00	0.0006

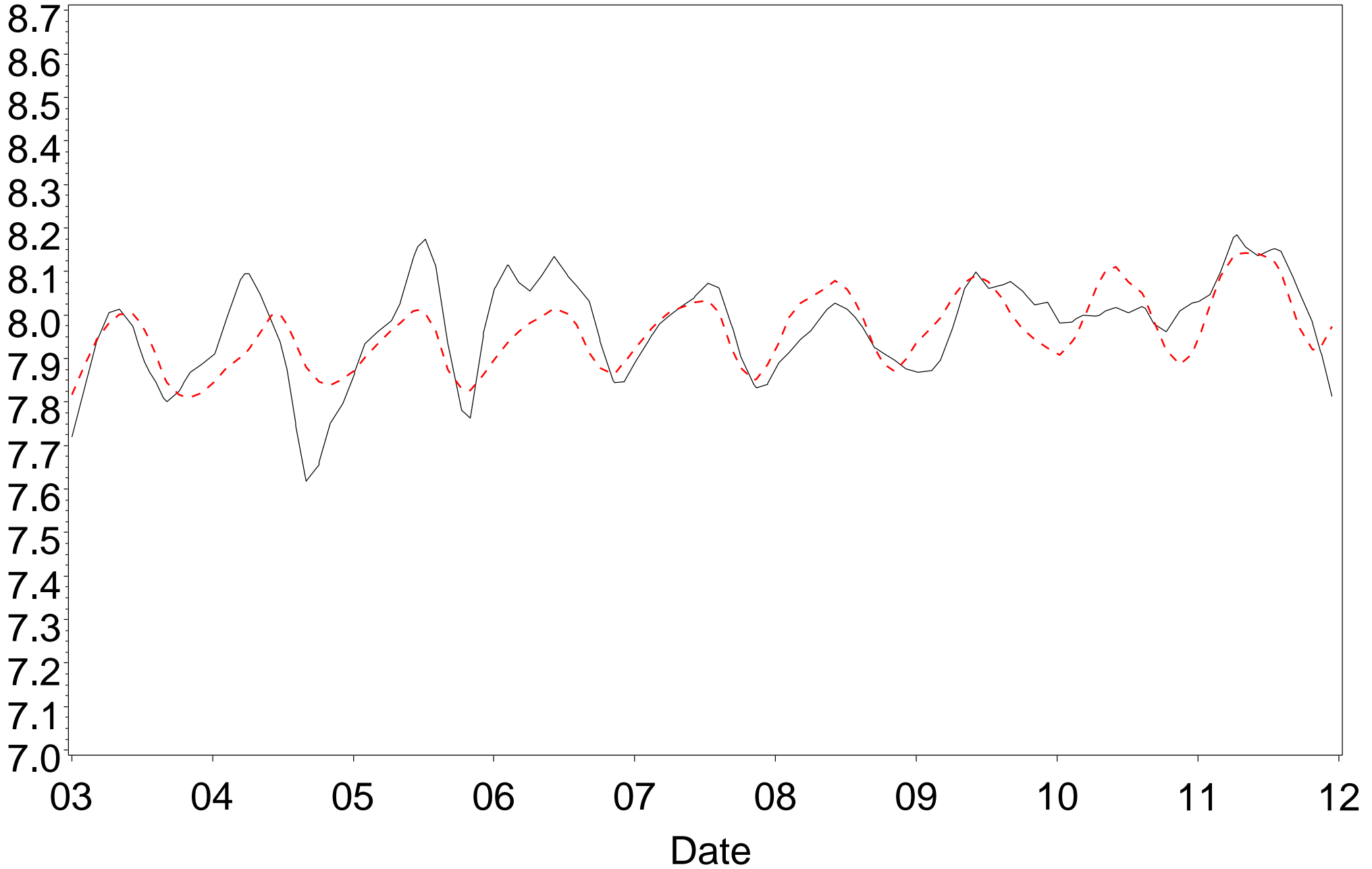
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	574
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-12.75664946	
1	2	-536.60002460	0.01797152
2	1	-554.19430786	0.00649236
3	2	-560.65102859	0.00187898
4	1	-562.39726492	0.00021383
5	1	-562.58306799	0.00000549
6	1	-562.58752063	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002976	0.001039	2.86	0.0021
Variance	Intercept	0.04601	0.01178	3.90	<.0001
SP(POW)	Intercept	0.6828	0.08347	8.18	<.0001
Residual		0.01133	0.000800	14.17	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-562.6
AIC (smaller is better)	-554.6
AICC (smaller is better)	-554.5
BIC (smaller is better)	-546.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-78.3791	33.2860	8.59	-2.35	0.0442
season	1	0.02022	0.06515	82.4	0.31	0.7570
season	2	0.05089	0.08053	84.4	0.63	0.5291
season	3	0.05434	0.08889	83.4	0.61	0.5427
season	4	0.03185	0.09342	79.2	0.34	0.7340
season	5	0.08568	0.09590	76.6	0.89	0.3744
season	6	0.07243	0.09648	75.5	0.75	0.4551
season	7	-0.1368	0.09557	77	-1.43	0.1564
season	8	-0.2309	0.09282	80.1	-2.49	0.0149
season	9	-0.3848	0.08759	83.1	-4.39	<.0001
season	10	-0.2249	0.07875	83.9	-2.86	0.0054
season	11	-0.06405	0.06269	81.9	-1.02	0.3099
season	12	0	.	.	.	.
date1		0.04069	0.01658	8.59	2.45	0.0377
temp_dev		0.02795	0.01044	332	2.68	0.0078

Mixed Model With Local Nugget

The Mixed Procedure

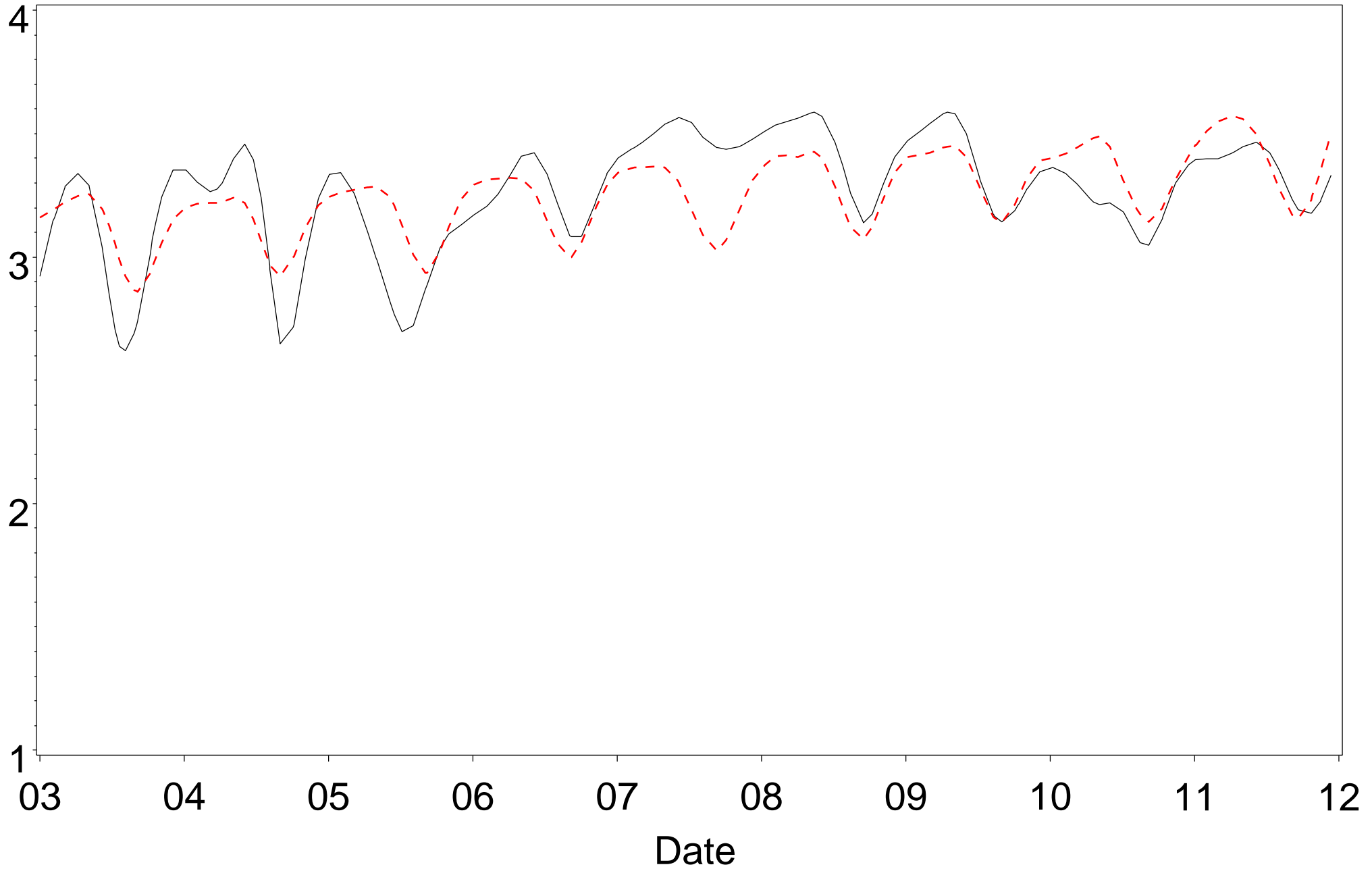
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	78.9	3.44	0.0006
date1	1	8.59	6.02	0.0377
temp_dev	1	332	7.17	0.0078

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale
Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	574
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1594.16229418	
1	4	-2186.63229231	0.11976399
2	1	-2422.67121942	0.03167271
3	1	-2491.02127768	.
4	1	-2513.37531466	0.00279243
5	2	-2519.19654349	0.00030280
6	1	-2519.77083970	0.00000431
7	1	-2519.77857441	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		6.138E-6	7.761E-6	0.79	0.2145
Variance	Intercept	0.003945	0.000621	6.36	<.0001
SP(POW)	Intercept	0.2091	0.1036	2.02	0.0436
Residual		0.000280	0.000019	14.44	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-2519.8
AIC (smaller is better)	-2511.8
AICC (smaller is better)	-2511.7
BIC (smaller is better)	-2504.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		14.8318	5.7057	23.3	2.60	0.0159
season	1	-0.06182	0.02707	75.7	-2.28	0.0252
season	2	-0.06599	0.02949	92	-2.24	0.0276
season	3	0.02765	0.02985	87.4	0.93	0.3568
season	4	0.1986	0.02986	84.8	6.65	<.0001
season	5	0.3121	0.02985	84.2	10.45	<.0001
season	6	0.4146	0.02983	84	13.90	<.0001
season	7	0.4408	0.02983	84.2	14.77	<.0001
season	8	0.4560	0.02983	85.1	15.29	<.0001
season	9	0.4259	0.02978	87.8	14.30	<.0001
season	10	0.3397	0.02936	92.2	11.57	<.0001
season	11	0.1685	0.02664	70.5	6.33	<.0001
season	12	0	.	.	.	.
date1		-0.00591	0.002842	23.3	-2.08	0.0486
temp_dev		0.06059	0.001968	536	30.79	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

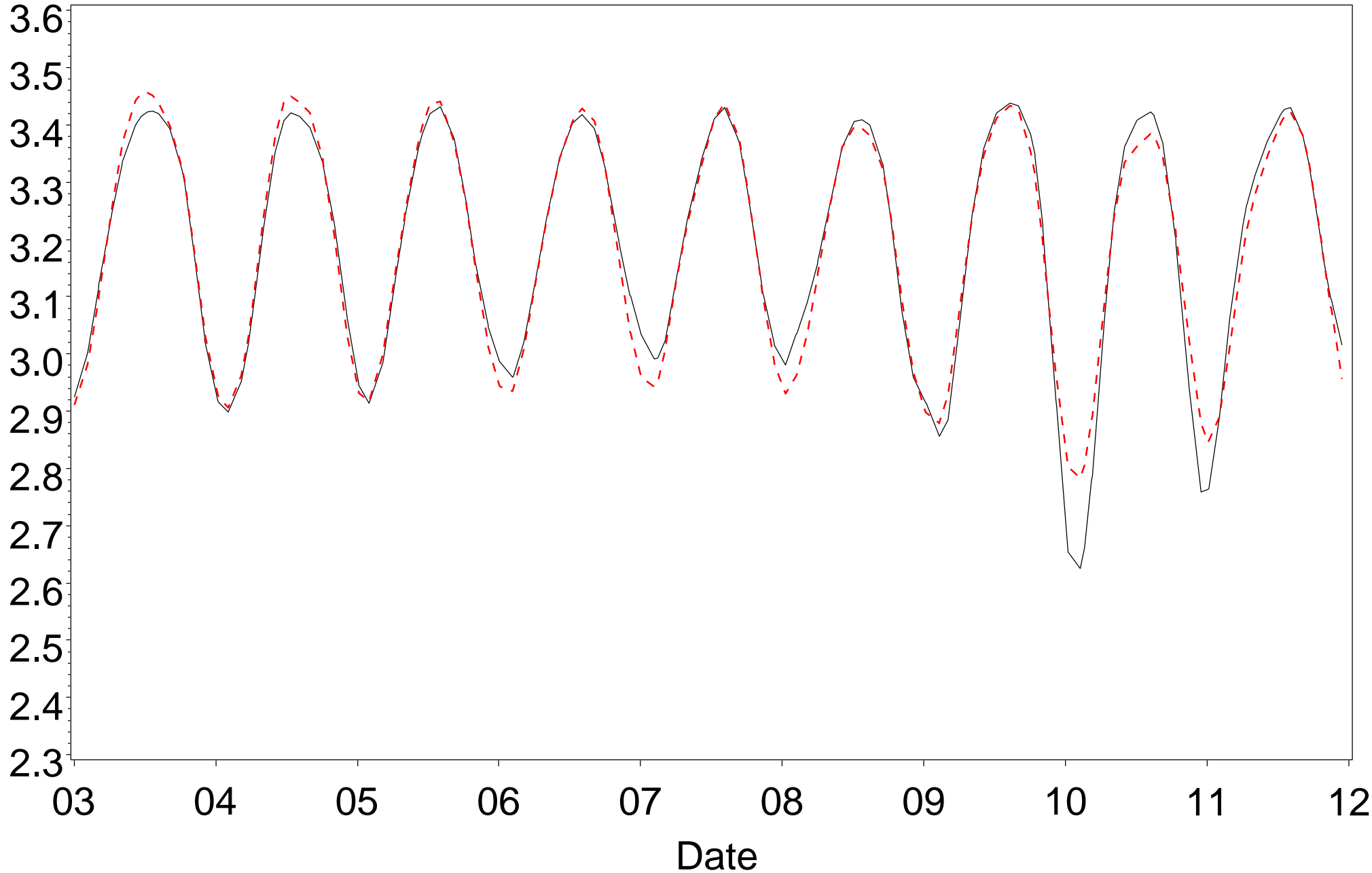
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.6	67.42	<.0001
date1	1	23.3	4.33	0.0486
temp_dev	1	536	948.01	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale
TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	567
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1209.81962883	
1	2	915.96951317	0.21341534
2	1	902.48807115	0.19594264
3	2	896.32079160	0.13113945
4	2	886.65311157	0.02588181
5	1	884.83836182	0.00078340
6	1	884.78546330	0.00000141
7	1	884.78537023	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01205	0.006775	1.78	0.0377
Variance	Intercept	0.3192	0.05486	5.82	<.0001
SP(POW)	Intercept	0.2359	0.1151	2.05	0.0405
Residual		0.1674	0.01175	14.25	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	884.8
AIC (smaller is better)	892.8
AICC (smaller is better)	892.9
BIC (smaller is better)	900.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		22.5374	54.6412	22.2	0.41	0.6840
season	1	0.06763	0.2530	74.8	0.27	0.7899
season	2	-0.06193	0.2770	92.8	-0.22	0.8236
season	3	-0.1776	0.2821	90.2	-0.63	0.5305
season	4	0.1505	0.2806	85.2	0.54	0.5931
season	5	0.3872	0.2810	84.8	1.38	0.1719
season	6	0.2777	0.2804	84	0.99	0.3249
season	7	0.4897	0.2807	84.8	1.74	0.0847
season	8	0.2588	0.2808	86.1	0.92	0.3593
season	9	0.5953	0.2799	88.9	2.13	0.0362
season	10	0.03545	0.2762	93.7	0.13	0.8982
season	11	-0.04420	0.2499	70.8	-0.18	0.8601
season	12	0	.	.	.	.
date1		-0.01165	0.02721	22.1	-0.43	0.6726
temp_dev		-0.07031	0.03960	388	-1.78	0.0766

Mixed Model With Local Nugget

The Mixed Procedure

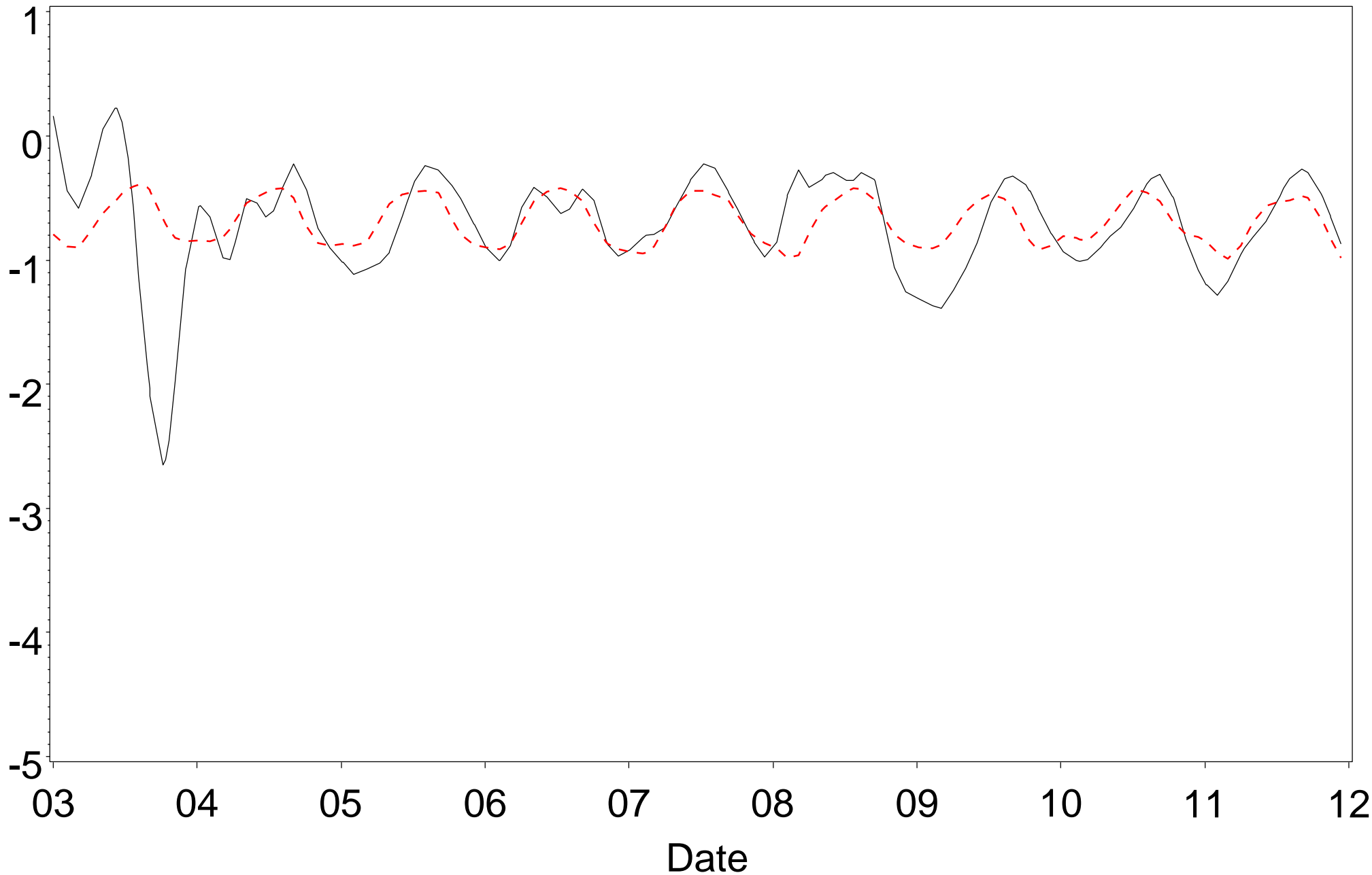
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.1	1.30	0.2394
date1	1	22.1	0.18	0.6726
temp_dev	1	388	3.15	0.0766

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	565
Number of Observations Not Used	17

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	979.64889933	
1	2	720.58484900	0.07693811
2	1	706.32067541	0.05725077
3	2	700.76427813	0.02903549
4	1	695.57144593	0.00220788
5	1	695.19864872	0.00002599
6	1	695.19448396	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01361	0.006579	2.07	0.0193
Variance	Intercept	0.2332	0.04130	5.65	<.0001
SP(POW)	Intercept	0.2615	0.1135	2.30	0.0213
Residual		0.1164	0.008294	14.03	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	695.2
AIC (smaller is better)	703.2
AICC (smaller is better)	703.3
BIC (smaller is better)	711.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		47.4182	47.8435	21.3	0.99	0.3328
season	1	0.05476	0.2131	73.1	0.26	0.7979
season	2	-0.07609	0.2353	88.7	-0.32	0.7472
season	3	-0.1713	0.2405	85.9	-0.71	0.4783
season	4	0.1283	0.2395	80.6	0.54	0.5937
season	5	0.3545	0.2400	80.1	1.48	0.1435
season	6	0.2809	0.2395	79.2	1.17	0.2444
season	7	0.4724	0.2397	80	1.97	0.0522
season	8	0.3532	0.2398	81.8	1.47	0.1447
season	9	0.6247	0.2386	84.8	2.62	0.0105
season	10	0.1334	0.2345	89.6	0.57	0.5710
season	11	-0.03971	0.2103	69.8	-0.19	0.8508
season	12	0	.	.	.	.
date1		-0.02403	0.02383	21.3	-1.01	0.3245
temp_dev		-0.04668	0.03354	378	-1.39	0.1648

Mixed Model With Local Nugget

The Mixed Procedure

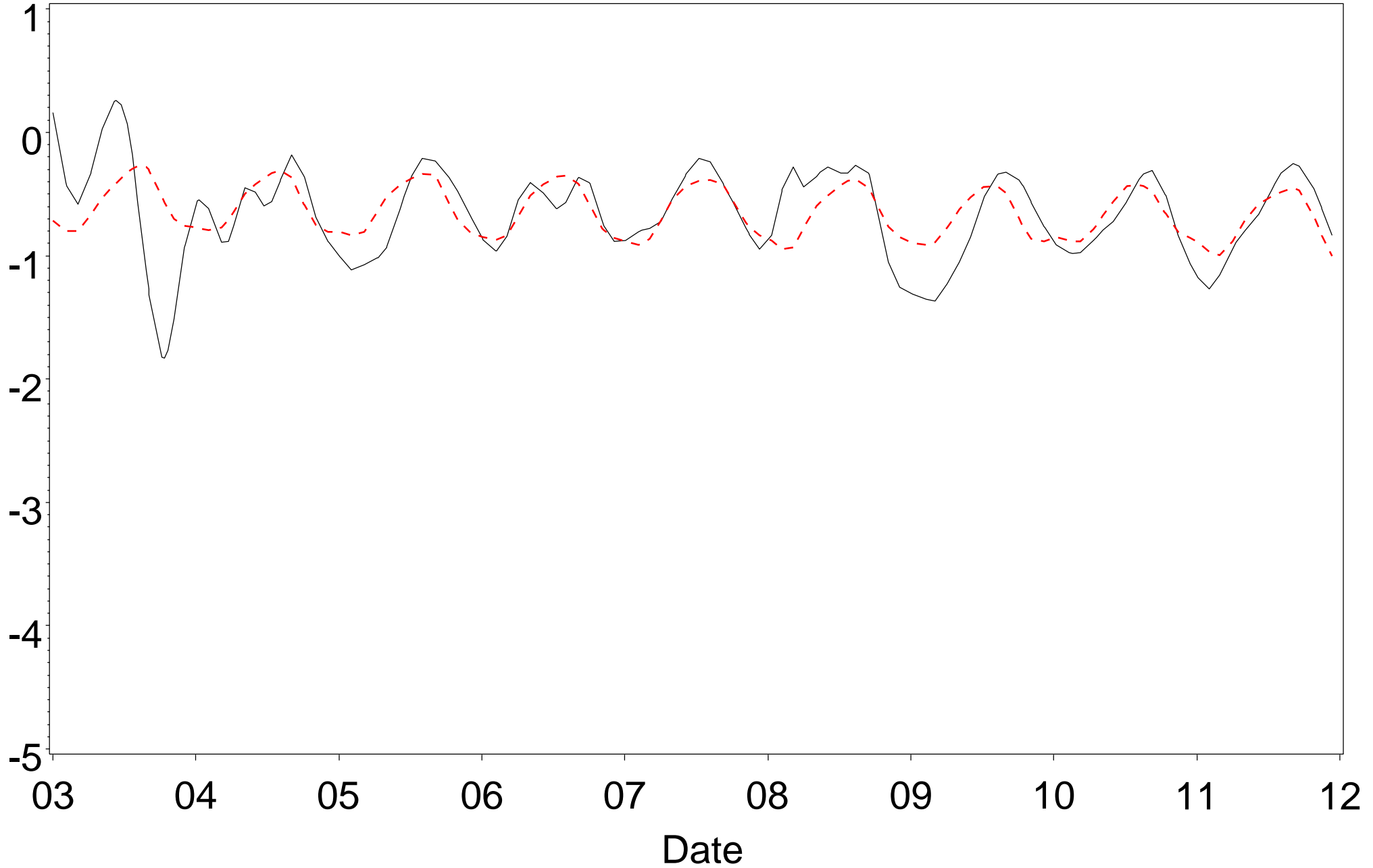
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.3	1.69	0.0922
date1	1	21.3	1.02	0.3245
temp_dev	1	378	1.94	0.1648

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	566
Number of Observations Not Used	16

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1045.15447391	
1	2	714.89696940	0.02100395
2	2	710.82393798	0.01681986
3	2	707.57501590	0.00509933
4	2	706.70162286	0.00027235
5	1	706.65850695	0.00000056
6	1	706.65841994	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.003857	0.003508	1.10	0.1358
Variance	Intercept	0.2264	0.05223	4.33	<.0001
SP(POW)	Intercept	0.5976	0.09414	6.35	<.0001
Residual		0.1335	0.009281	14.38	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	706.7
AIC (smaller is better)	714.7
AICC (smaller is better)	714.7
BIC (smaller is better)	722.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		81.7822	66.5297	10.9	1.23	0.2447
season	1	0.1414	0.1690	85.6	0.84	0.4052
season	2	0.09905	0.2022	86.7	0.49	0.6255
season	3	-0.1818	0.2194	85.3	-0.83	0.4095
season	4	-0.2667	0.2260	77.7	-1.18	0.2415
season	5	0.07669	0.2304	74.5	0.33	0.7402
season	6	-0.1503	0.2309	72.5	-0.65	0.5172
season	7	0.3984	0.2297	74.8	1.73	0.0870
season	8	0.7368	0.2297	80.7	3.21	0.0019
season	9	0.8207	0.2158	84.1	3.80	0.0003
season	10	0.7385	0.1988	86.7	3.71	0.0004
season	11	0.2887	0.1643	85.5	1.76	0.0824
season	12	0	.	.	.	.
date1		-0.03994	0.03314	10.9	-1.21	0.2534
temp_dev		-0.01366	0.03110	256	-0.44	0.6608

Mixed Model With Local Nugget

The Mixed Procedure

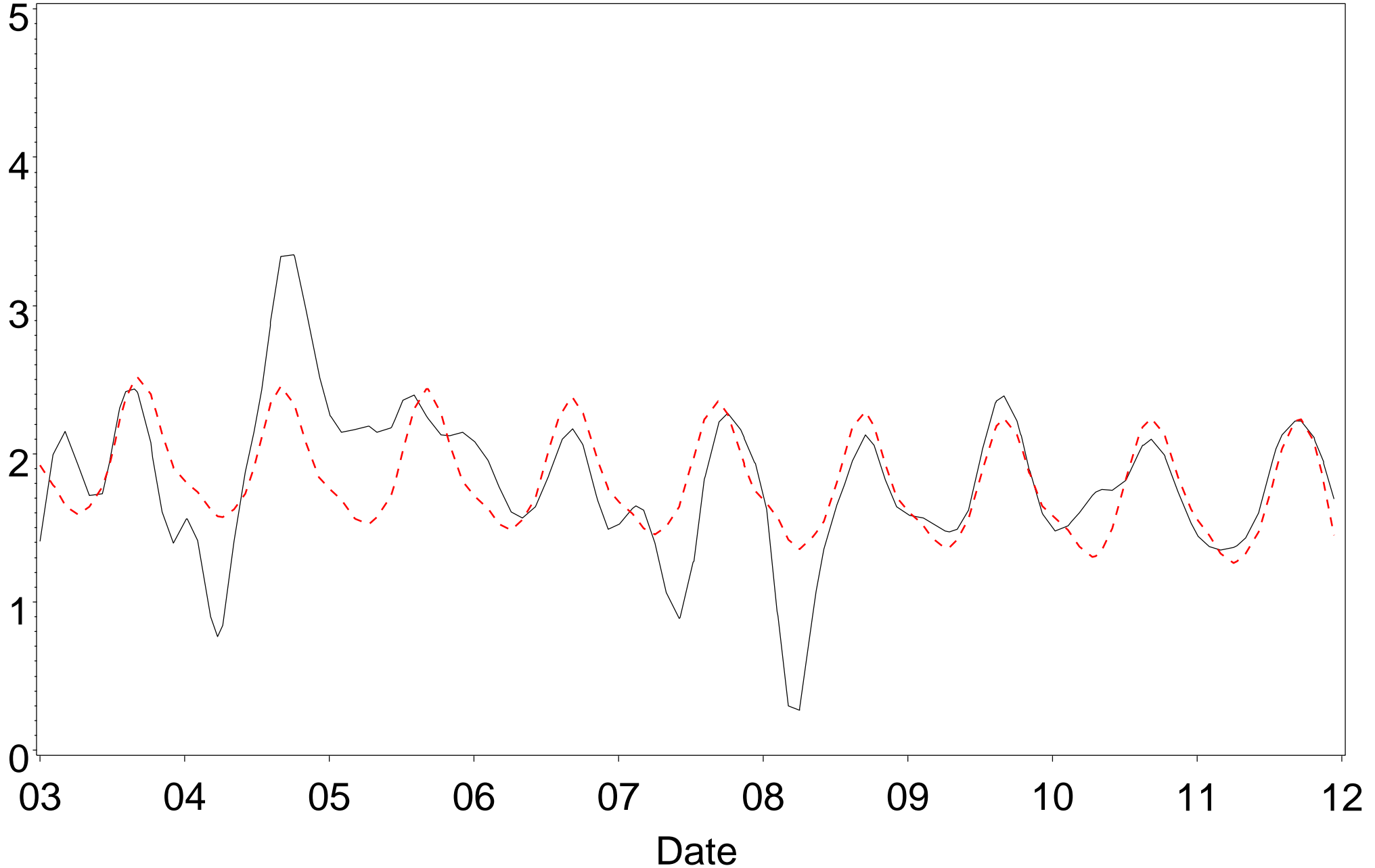
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	81.8	3.88	0.0002
date1	1	10.9	1.45	0.2534
temp_dev	1	256	0.19	0.6608

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	570
Number of Observations Not Used	12

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1287.18420832	
1	2	803.05791847	0.08785373
2	1	791.53623246	0.02039911
3	2	788.72358939	0.00399874
4	1	788.21084204	0.00011752
5	1	788.19686372	0.00000010
6	1	788.19685240	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05561	0.01749	3.18	0.0007
Variance	Intercept	0.4503	0.1053	4.28	<.0001
SP(POW)	Intercept	0.6278	0.08917	7.04	<.0001
Residual		0.1226	0.008821	13.90	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	788.2
AIC (smaller is better)	796.2
AICC (smaller is better)	796.3
BIC (smaller is better)	804.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		128.58	96.8951	10.3	1.33	0.2132
season	1	-0.09802	0.2185	75	-0.45	0.6550
season	2	-0.3724	0.2669	79.5	-1.40	0.1667
season	3	-0.3326	0.2923	79.6	-1.14	0.2586
season	4	-0.3794	0.3041	74.2	-1.25	0.2160
season	5	-0.4860	0.3109	71.5	-1.56	0.1224
season	6	-0.4777	0.3123	70.1	-1.53	0.1306
season	7	-0.09002	0.3099	71.8	-0.29	0.7723
season	8	0.04253	0.3025	75.3	0.14	0.8886
season	9	0.4288	0.2877	78.6	1.49	0.1402
season	10	0.1482	0.2615	78.8	0.57	0.5726
season	11	-0.01193	0.2108	73.9	-0.06	0.9550
season	12	0	.	.	.	.
date1		-0.06508	0.04826	10.3	-1.35	0.2064
temp_dev		-0.1296	0.03490	327	-3.71	0.0002

Mixed Model With Local Nugget

The Mixed Procedure

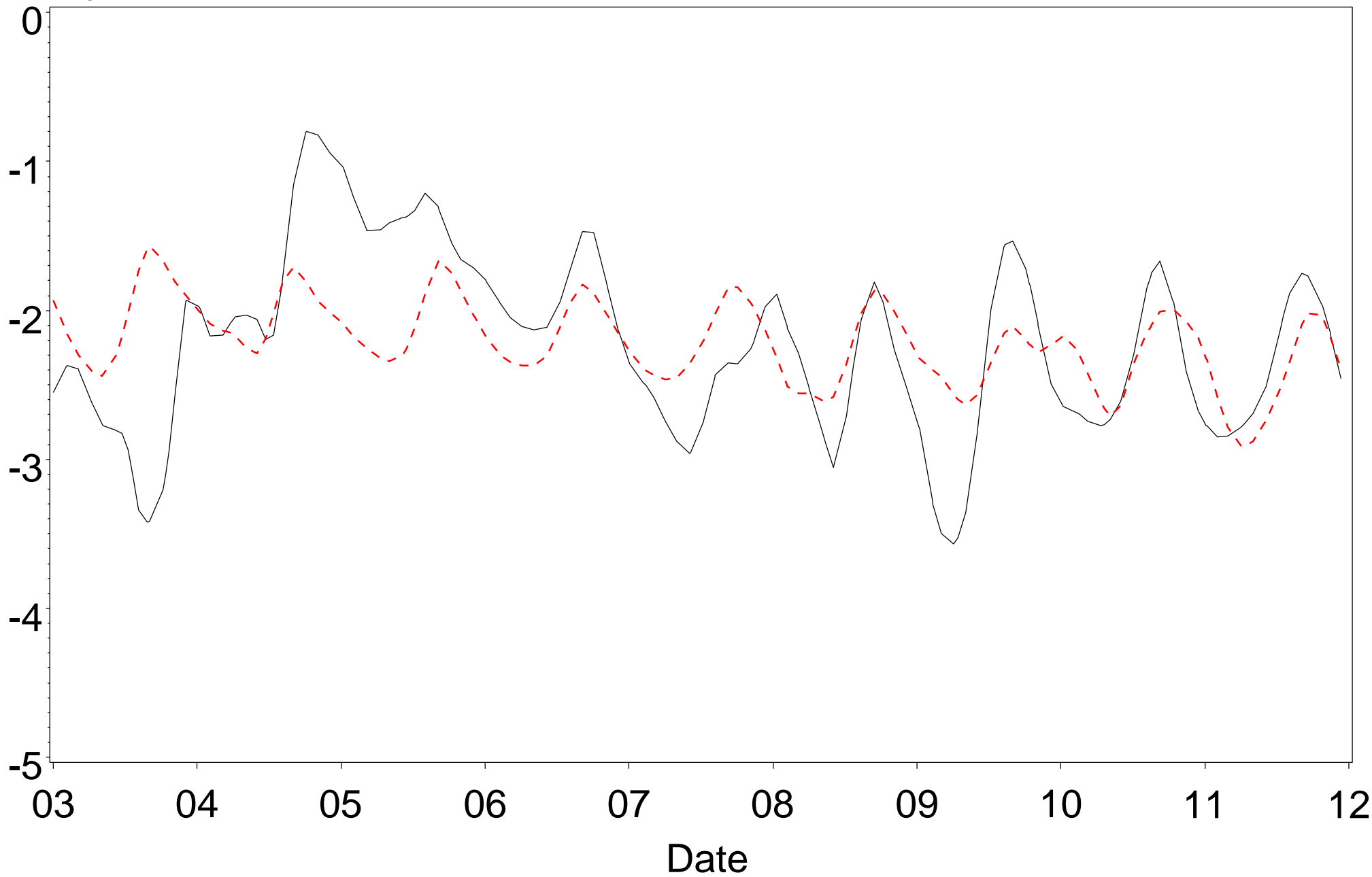
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.1	1.16	0.3285
date1	1	10.3	1.82	0.2064
temp_dev	1	327	13.79	0.0002

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
TP_mgl

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	561
Number of Observations Not Used	21

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1410.87487825	
1	2	1192.41011524	0.09207693
2	1	1182.04860226	0.04196578
3	2	1179.18669856	0.02552503
4	1	1176.72701552	0.00095794
5	1	1176.64246662	0.00000214
6	1	1176.64228315	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01883	0.01081	1.74	0.0407
Variance	Intercept	0.4339	0.09090	4.77	<.0001
SP(POW)	Intercept	0.4812	0.1149	4.19	<.0001
Residual		0.3135	0.02188	14.33	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1176.6
AIC (smaller is better)	1184.6
AICC (smaller is better)	1184.7
BIC (smaller is better)	1192.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		63.0496	80.8278	12.8	0.78	0.4496
season	1	0.4353	0.2624	76.9	1.66	0.1011
season	2	0.2533	0.3054	87	0.83	0.4091
season	3	0.3786	0.3239	86.3	1.17	0.2457
season	4	-0.2142	0.3281	77.5	-0.65	0.5158
season	5	-0.1154	0.3316	73.9	-0.35	0.7288
season	6	-0.08774	0.3314	71.9	-0.26	0.7919
season	7	0.07712	0.3314	74.6	0.23	0.8166
season	8	-0.03630	0.3279	79.3	-0.11	0.9121
season	9	-0.1544	0.3195	85	-0.48	0.6301
season	10	-0.05887	0.3015	86.2	-0.20	0.8456
season	11	-0.1269	0.2564	74.4	-0.50	0.6221
season	12	0	.	.	.	.
date1		-0.03053	0.04026	12.8	-0.76	0.4619
temp_dev		0.07349	0.04831	252	1.52	0.1295

Mixed Model With Local Nugget

The Mixed Procedure

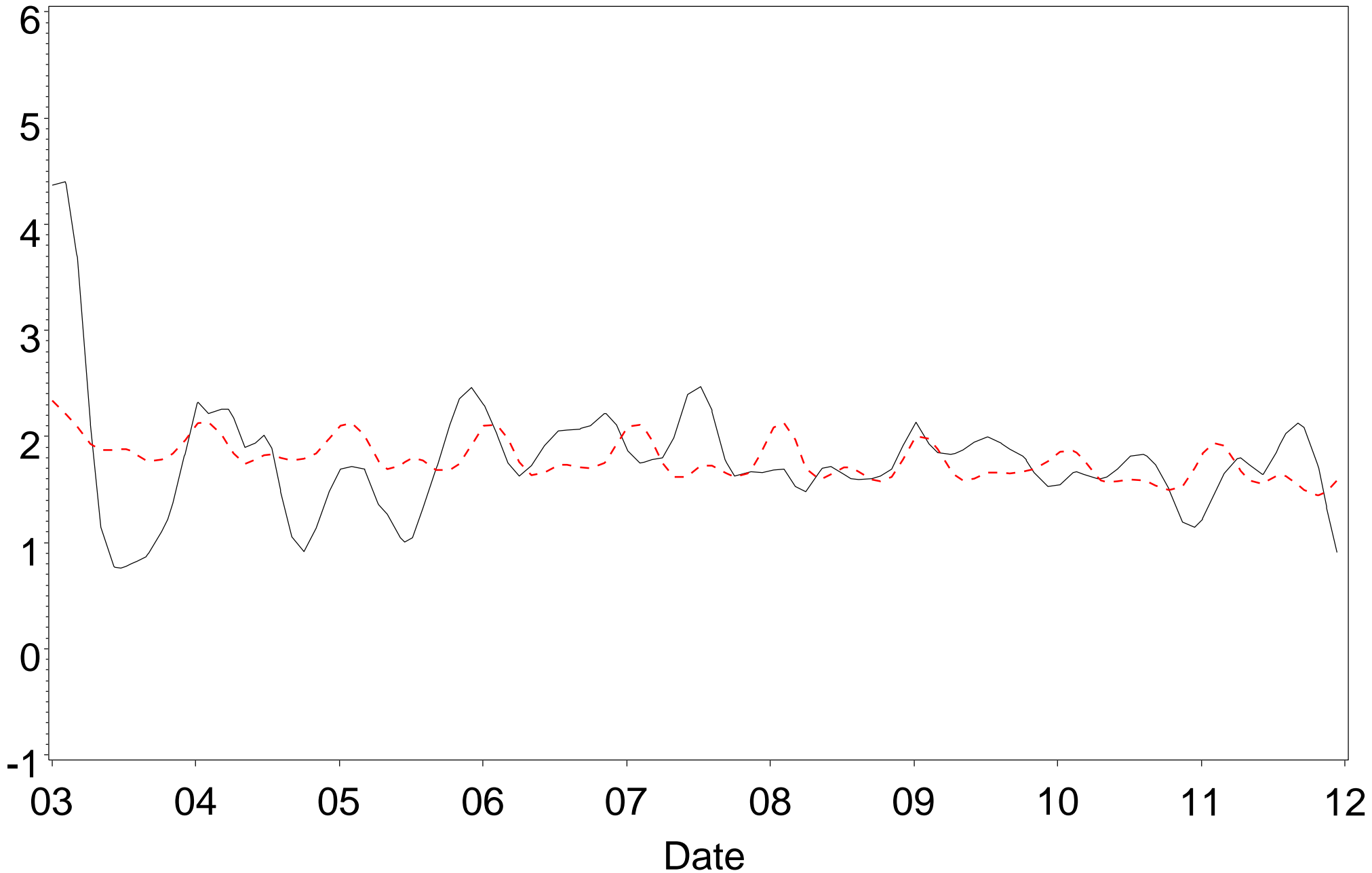
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.4	0.87	0.5713
date1	1	12.8	0.58	0.4619
temp_dev	1	252	2.31	0.1295

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Log Scale
TSS_mgl

Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	52	061 062 066 067 068 069 073 074 075 076 080 081 082 083 091 092 093 094 106 107 108 109 110 121 122 123 124 125 126 133 134 135 136 137 138 466 62 67 68 69 73 74 75 76 80 81 82 83 92 93 94 96

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	52
Subjects	1
Max Obs Per Subject	582

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	582
Number of Observations Used	567
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1124.75042589	
1	2	893.99450929	0.15801020
2	1	882.06769287	0.08500281
3	2	879.42936368	0.05111408
4	1	875.45988706	0.00347914
5	1	875.19731621	0.00005608
6	1	875.19329859	0.00000003
7	1	875.19329636	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03247	0.01191	2.73	0.0032
Variance	Intercept	0.2497	0.04794	5.21	<.0001
SP(POW)	Intercept	0.3986	0.1162	3.43	0.0006
Residual		0.1660	0.01183	14.03	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	875.2
AIC (smaller is better)	883.2
AICC (smaller is better)	883.3
BIC (smaller is better)	891.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-54.6033	56.8308	16.5	-0.96	0.3505
season	1	0.004779	0.2082	72.9	0.02	0.9818
season	2	-0.02182	0.2382	87.6	-0.09	0.9272
season	3	-0.04771	0.2544	87.3	-0.19	0.8517
season	4	-0.1093	0.2501	79.7	-0.44	0.6633
season	5	-0.1046	0.2519	77.7	-0.42	0.6791
season	6	0.07243	0.2513	75.9	0.29	0.7740
season	7	0.3840	0.2513	77.6	1.53	0.1306
season	8	0.5205	0.2502	81.3	2.08	0.0406
season	9	0.4200	0.2462	86.1	1.71	0.0915
season	10	0.09751	0.2359	86.9	0.41	0.6803
season	11	-0.08617	0.2044	70.2	-0.42	0.6747
season	12	0	.	.	.	.
date1		0.02736	0.02830	16.5	0.97	0.3477
temp_dev		0.04917	0.03712	285	1.32	0.1863

Mixed Model With Local Nugget

The Mixed Procedure

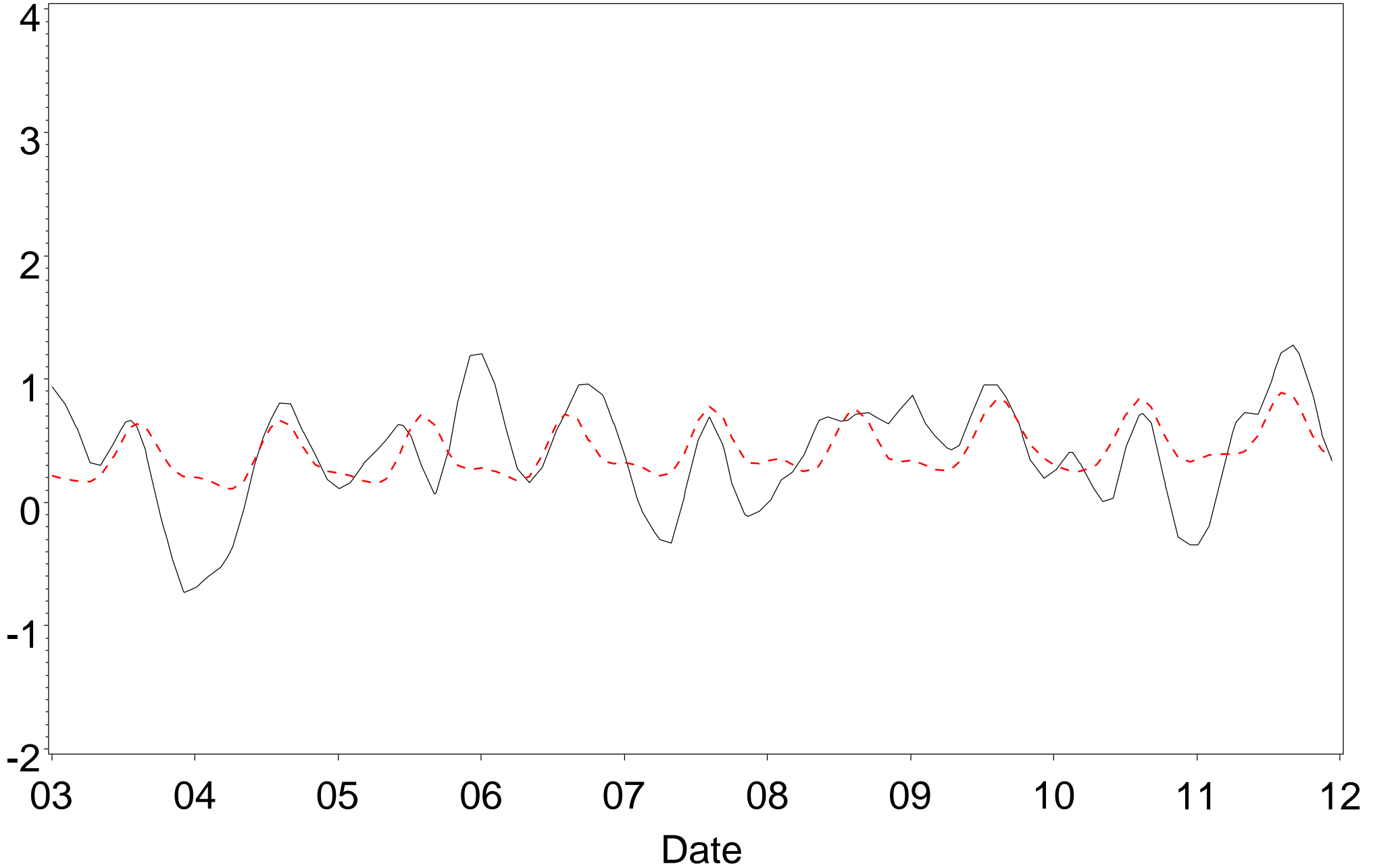
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.6	1.08	0.3888
date1	1	16.5	0.93	0.3477
temp_dev	1	285	1.75	0.1863

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum East Wall

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale
Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	640.61504458	
1	3	558.97656039	0.07270511
2	2	555.72565445	0.02110094
3	2	551.94647611	0.00074093
4	1	551.82075145	0.00000154
5	1	551.82049410	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.009225	0.004714	1.96	0.0252
Variance	Intercept	0.07051	0.01643	4.29	<.0001
SP(POW)	Intercept	0.3969	0.1479	2.68	0.0073
Residual		0.1245	0.009250	13.46	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	551.8
AIC (smaller is better)	559.8
AICC (smaller is better)	559.9
BIC (smaller is better)	567.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-79.1229	34.9576	14.2	-2.26	0.0398
season	1	0.2523	0.1291	63.2	1.95	0.0552
season	2	0.3702	0.1442	73.4	2.57	0.0123
season	3	0.2701	0.1495	76.8	1.81	0.0746
season	4	0.4705	0.1515	75.8	3.11	0.0027
season	5	0.3730	0.1516	73.3	2.46	0.0162
season	6	0.3949	0.1514	72.1	2.61	0.0110
season	7	0.2420	0.1517	73.6	1.60	0.1149
season	8	0.5245	0.1506	75.5	3.48	0.0008
season	9	0.3044	0.1450	77.2	2.10	0.0391
season	10	0.3586	0.1394	72.7	2.57	0.0122
season	11	0.2132	0.1286	61.4	1.66	0.1026
season	12	0	.	.	.	.
date1		0.03945	0.01741	14.2	2.27	0.0396
temp_dev		0.1087	0.02569	161	4.23	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

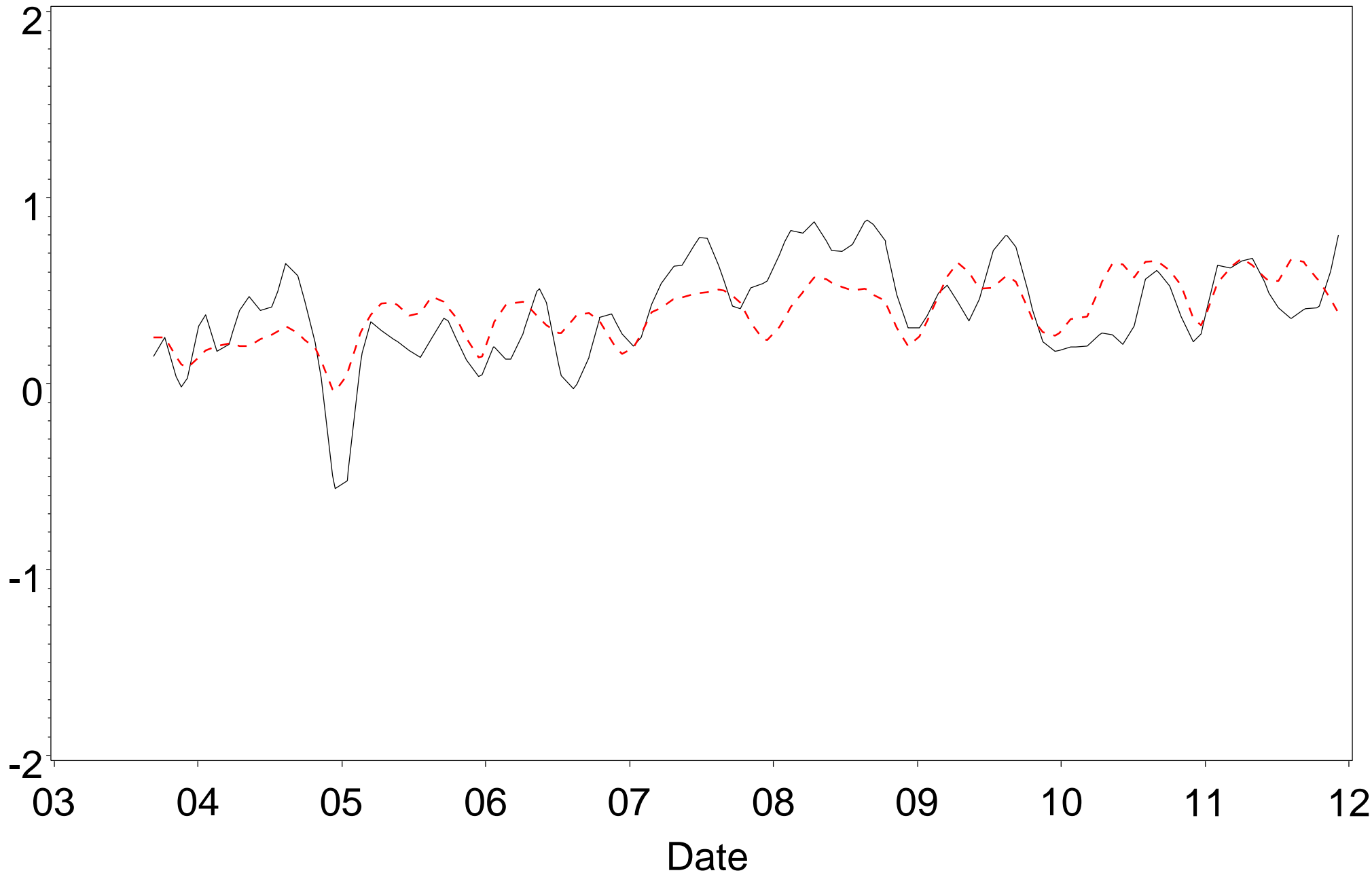
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.2	1.75	0.0811
date1	1	14.2	5.13	0.0396
temp_dev	1	161	17.91	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

Log Scale
BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	491
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1213.22842596	
1	2	1037.96508087	0.00390248
2	1	1037.59865423	0.00037536
3	1	1037.56642262	0.00000451
4	1	1037.56605652	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02902	0.01897	1.53	0.0630
Variance	Intercept	0.3501	0.1924	1.82	0.0344
SP(POW)	Intercept	0.8873	0.07731	11.48	<.0001
Residual		0.3704	0.02892	12.81	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1037.6
AIC (smaller is better)	1045.6
AICC (smaller is better)	1045.7
BIC (smaller is better)	1053.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		200.56	143.20	2.45	1.40	0.2744
season	1	0.08319	0.1769	110	0.47	0.6391
season	2	0.004394	0.2020	57.1	0.02	0.9827
season	3	0.05689	0.2198	44.5	0.26	0.7969
season	4	0.4763	0.2322	40.2	2.05	0.0468
season	5	0.04385	0.2379	37.6	0.18	0.8548
season	6	0.7176	0.2389	36.6	3.00	0.0048
season	7	0.6416	0.2425	39.5	2.65	0.0116
season	8	0.6872	0.2281	40.3	3.01	0.0045
season	9	0.7666	0.2118	45.2	3.62	0.0007
season	10	0.6561	0.1934	58.1	3.39	0.0013
season	11	0.4337	0.1748	113	2.48	0.0145
season	12	0	.	.	.	.
date1		-0.09951	0.07132	2.45	-1.40	0.2758
temp_dev		0.1612	0.03823	190	4.22	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.1	3.14	0.0017
date1	1	2.45	1.95	0.2758
temp_dev	1	190	17.79	<.0001

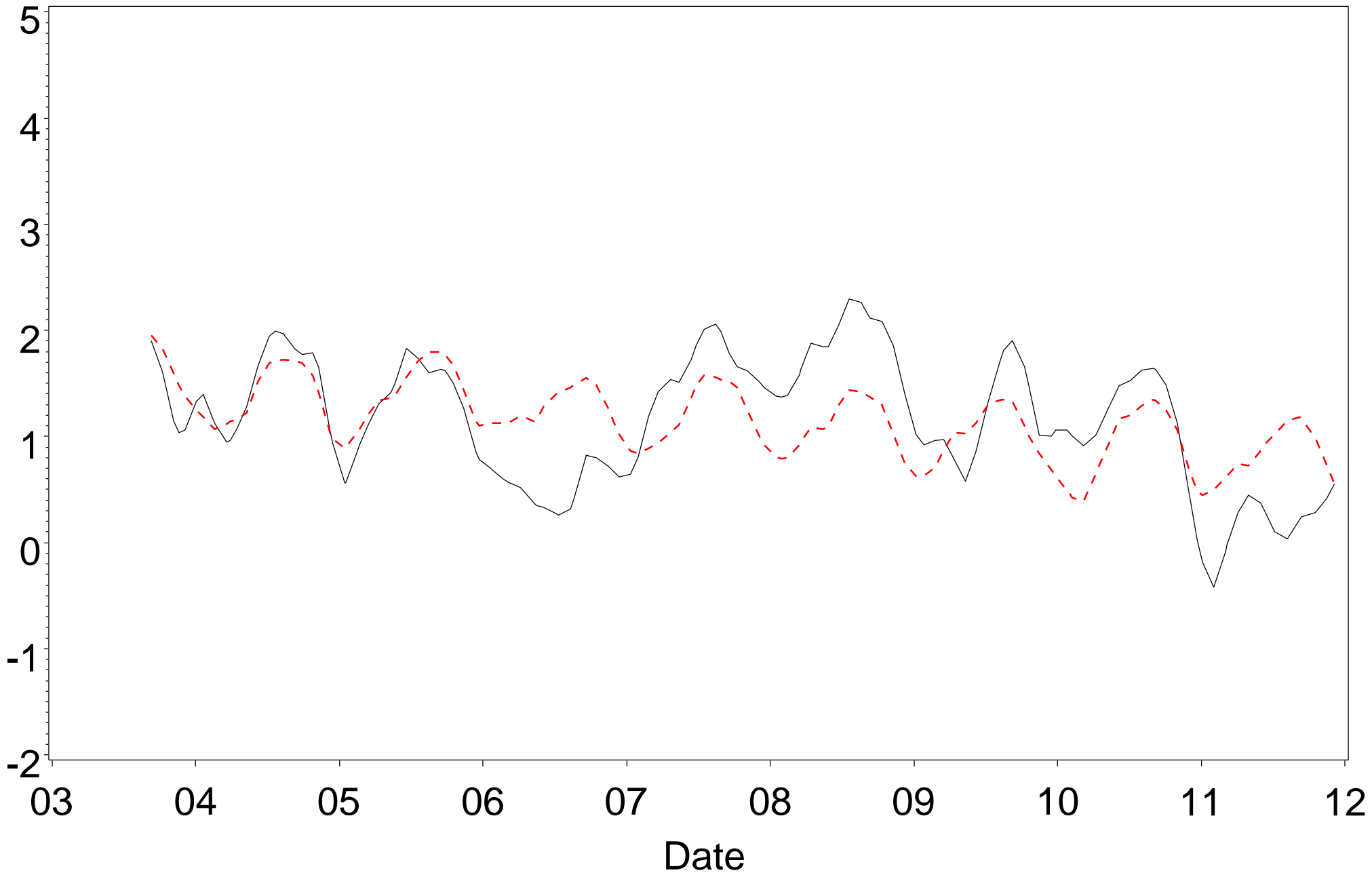
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1364.43659541	
1	2	1078.58798100	0.10028071
2	2	1074.24071296	0.05315102
3	2	1068.44789180	0.00554862
4	1	1067.91470176	0.00005573
5	1	1067.90959105	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.4676	0.1067	4.38	<.0001
Variance	Intercept	0.2568	0.05395	4.76	<.0001
SP(POW)	Intercept	0.3553	0.1284	2.77	0.0057
Residual		0.2719	0.02084	13.05	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1067.9
AIC (smaller is better)	1075.9
AICC (smaller is better)	1076.0
BIC (smaller is better)	1084.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		132.92	62.9798	16.7	2.11	0.0502
season	1	-0.9121	0.2346	67.8	-3.89	0.0002
season	2	-0.4350	0.2630	79.5	-1.65	0.1020
season	3	-0.7197	0.2712	77.9	-2.65	0.0097
season	4	-0.5328	0.2745	75.1	-1.94	0.0560
season	5	-0.5621	0.2746	72.5	-2.05	0.0443
season	6	-0.2423	0.2764	73.1	-0.88	0.3835
season	7	0.4783	0.2745	72.7	1.74	0.0857
season	8	0.2401	0.2728	75	0.88	0.3817
season	9	0.2085	0.2651	80.4	0.79	0.4340
season	10	0.4608	0.2538	78.5	1.82	0.0733
season	11	0.01739	0.2339	66.1	0.07	0.9409
season	12	0	.	.	.	.
date1		-0.06471	0.03137	16.7	-2.06	0.0550
temp_dev		-0.04004	0.04352	204	-0.92	0.3587

Mixed Model With Local Nugget

The Mixed Procedure

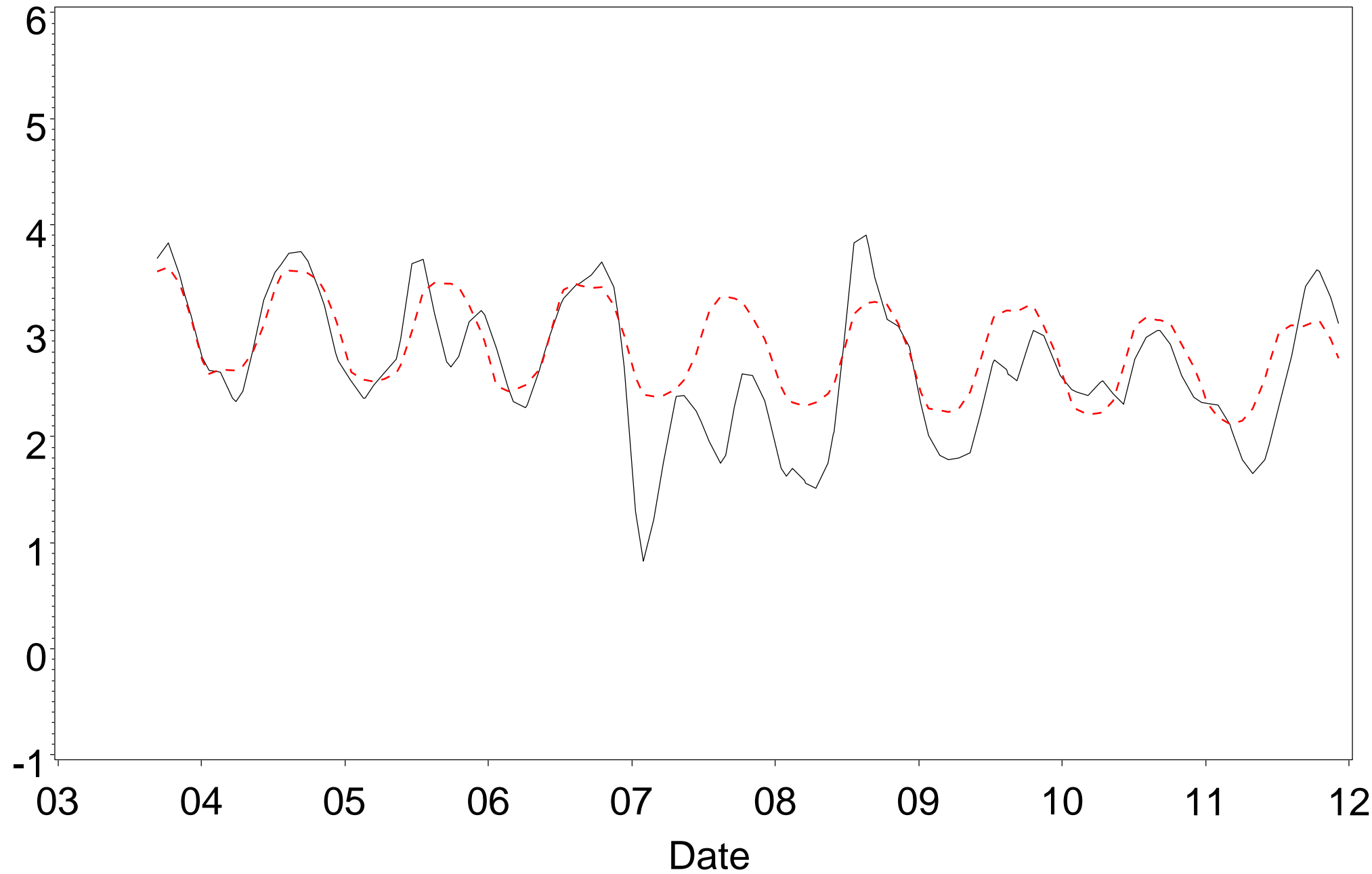
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.4	4.61	<.0001
date1	1	16.7	4.26	0.0550
temp_dev	1	204	0.85	0.3587

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
COLOR

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1124.56814146	
1	4	909.07969679	.
2	2	893.48107795	4.21862002
3	2	886.02488322	91.61255700
4	1	876.22109795	0.57175944
5	1	872.91840212	0.06990206
6	1	872.41240192	0.00318069
7	1	872.39016511	0.00001371
8	1	872.39007245	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.7257	0.1655	4.38	<.0001
Variance	Intercept	0.05009	0.01843	2.72	0.0033
SP(POW)	Intercept	0.6215	0.1709	3.64	0.0003
Residual		0.1981	0.01523	13.01	<.0001

Fit Statistics	
-2 Res Log Likelihood	872.4
AIC (smaller is better)	880.4
AICC (smaller is better)	880.5
BIC (smaller is better)	888.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-56.6416	38.2483	7.45	-1.48	0.1796
season	1	0.1720	0.1239	78.2	1.39	0.1691
season	2	0.1905	0.1357	55.2	1.40	0.1658
season	3	0.2395	0.1423	52.3	1.68	0.0985
season	4	0.2653	0.1476	54.6	1.80	0.0778
season	5	0.2666	0.1494	55	1.78	0.0798
season	6	0.1641	0.1521	55.8	1.08	0.2852
season	7	-0.2288	0.1489	54.4	-1.54	0.1302

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.2425	0.1457	52.9	-1.66	0.1019
season	9	-0.3306	0.1411	55.5	-2.34	0.0227
season	10	0.05311	0.1302	53.6	0.41	0.6849
season	11	0.08090	0.1233	77.3	0.66	0.5136
season	12	0	.	.	.	.
date1		0.03332	0.01905	7.46	1.75	0.1211
temp_dev		0.08159	0.02700	132	3.02	0.0030

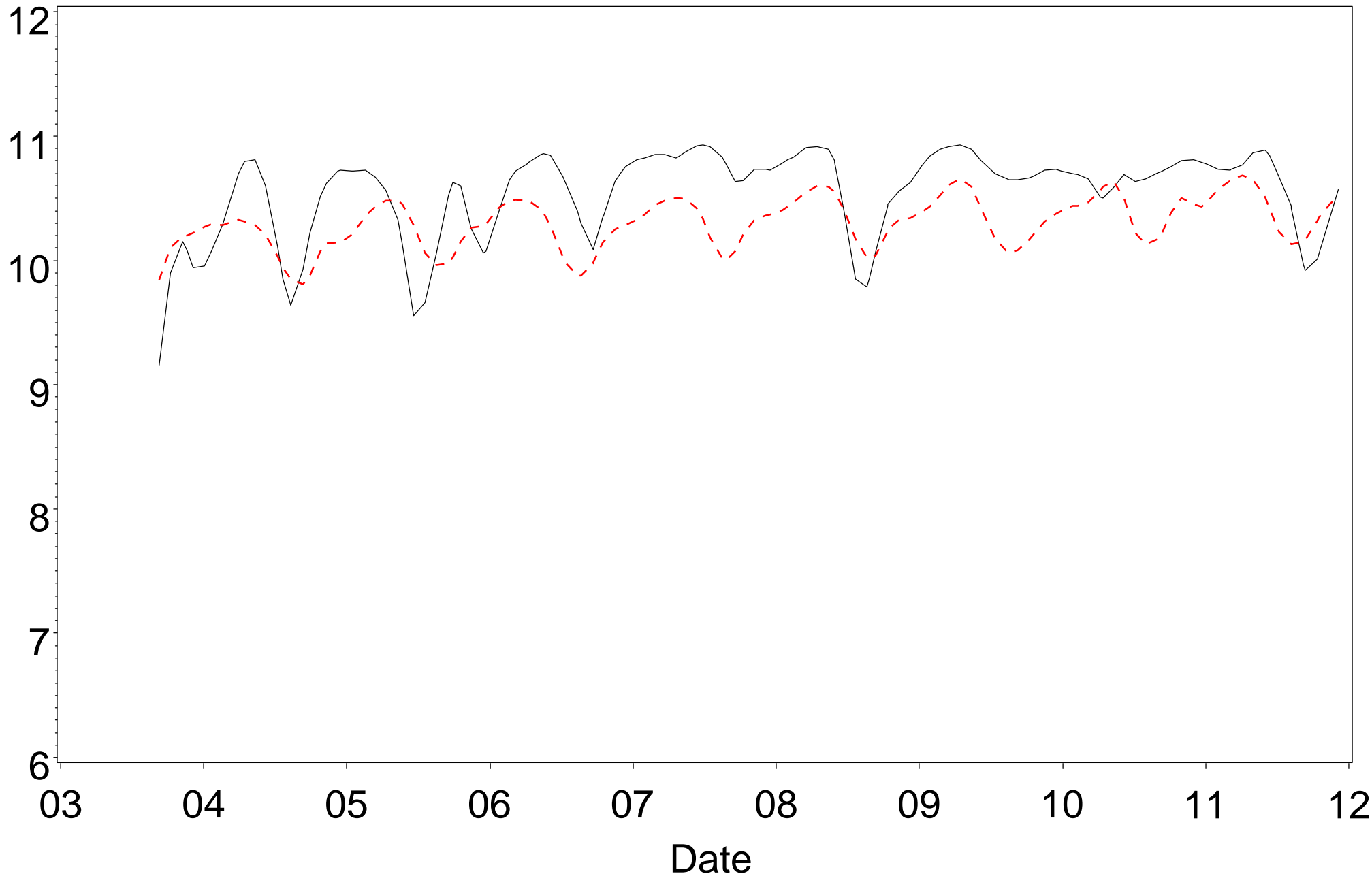
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.5	3.11	0.0022
date1	1	7.46	3.06	0.1211
temp_dev	1	132	9.13	0.0030

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
COND

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1545.45294337	
1	2	1437.37379166	0.04326286
2	2	1432.69287466	0.01972646
3	2	1426.38738358	0.00218758
4	1	1425.76810964	0.00002045
5	1	1425.76254896	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2671	0.08708	3.07	0.0011
Variance	Intercept	0.4277	0.09631	4.44	<.0001
SP(POW)	Intercept	0.3404	0.1330	2.56	0.0105
Residual		0.6847	0.05266	13.00	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1425.8
AIC (smaller is better)	1433.8
AICC (smaller is better)	1433.8
BIC (smaller is better)	1441.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		188.17	82.4153	18.1	2.28	0.0347
season	1	0.3862	0.3232	69.7	1.20	0.2361
season	2	-0.2293	0.3569	78.7	-0.64	0.5223
season	3	-0.2004	0.3665	78.1	-0.55	0.5860
season	4	-0.6226	0.3704	76.6	-1.68	0.0969
season	5	-1.9036	0.3701	74.4	-5.14	<.0001
season	6	-2.4176	0.3700	74	-6.53	<.0001
season	7	-2.2532	0.3702	74.7	-6.09	<.0001
season	8	-1.7316	0.3680	76	-4.71	<.0001
season	9	-2.0023	0.3567	79.5	-5.61	<.0001
season	10	-1.6516	0.3449	78	-4.79	<.0001
season	11	-0.8147	0.3223	68.2	-2.53	0.0138
season	12	0	.	.	.	.
date1		-0.09022	0.04105	18.1	-2.20	0.0412
temp_dev		-0.06039	0.06295	180	-0.96	0.3386

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.5	9.59	<.0001
date1	1	18.1	4.83	0.0412
temp_dev	1	180	0.92	0.3386

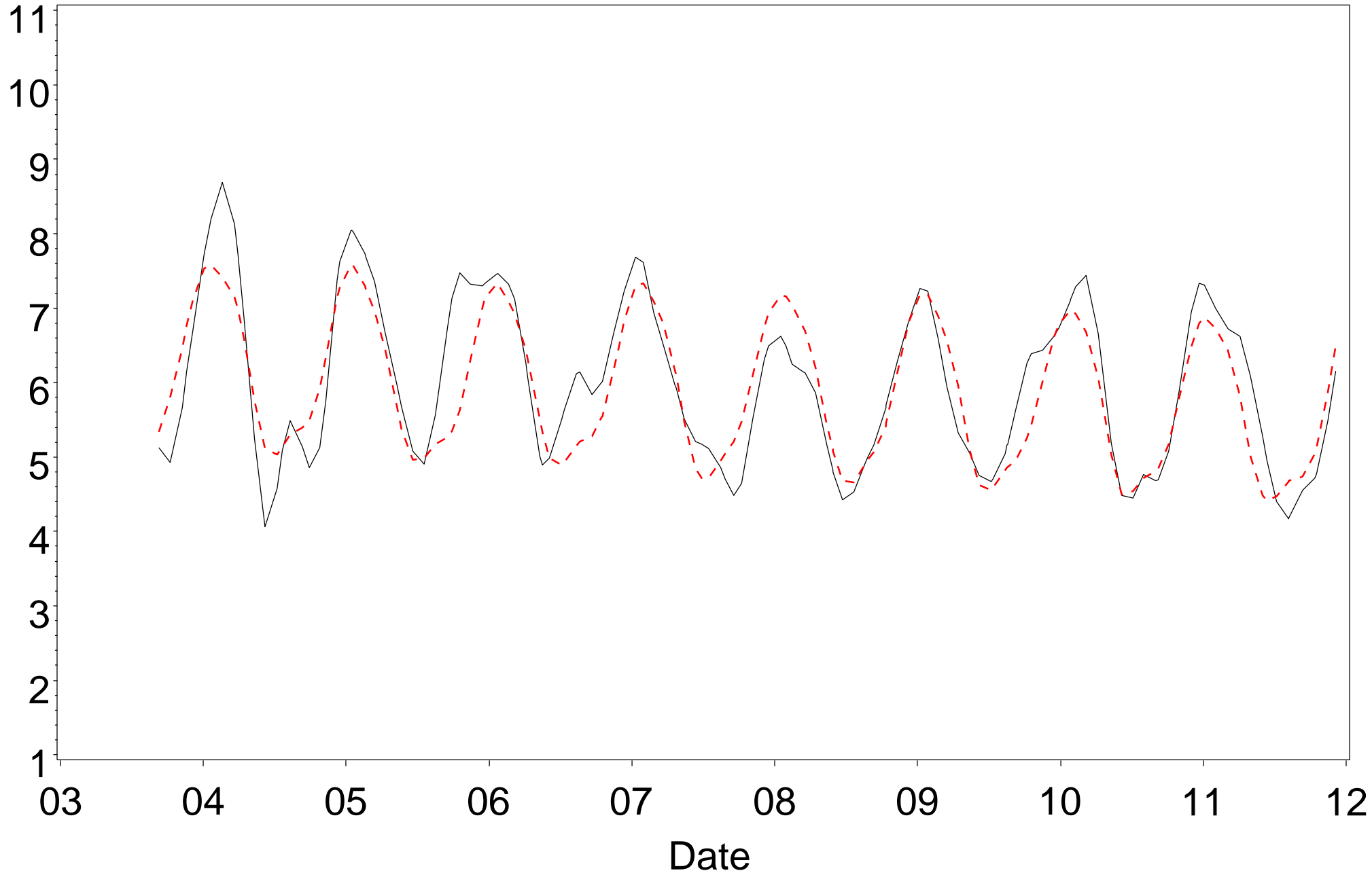
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1113.14497281	
1	3	905.19102525	0.83812988
2	2	895.25967085	1.49917996
3	2	886.82348402	2.38068961
4	1	885.63150808	0.19788442
5	1	885.60882690	0.00015051
6	1	885.60880823	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1765	0.04171	4.23	<.0001
Variance	Intercept	0.1370	0.02935	4.67	<.0001
SP(POW)	Intercept	0.2751	0.1415	1.95	0.0518
Residual		0.2072	0.01562	13.27	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	885.6
AIC (smaller is better)	893.6
AICC (smaller is better)	893.7
BIC (smaller is better)	901.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		6.5485	44.0635	19.4	0.15	0.8834
season	1	-0.3347	0.1871	67.5	-1.79	0.0781
season	2	-0.3618	0.2040	83	-1.77	0.0798
season	3	-0.8052	0.2074	82	-3.88	0.0002
season	4	-0.2226	0.2088	80.9	-1.07	0.2894
season	5	-0.1213	0.2083	79.3	-0.58	0.5619
season	6	0.2608	0.2088	79.7	1.25	0.2153
season	7	0.4161	0.2083	79.4	2.00	0.0492
season	8	0.06061	0.2075	80.1	0.29	0.7710
season	9	0.3434	0.2025	84.1	1.70	0.0936
season	10	0.3168	0.1972	82.1	1.61	0.1120
season	11	-0.2420	0.1868	66	-1.30	0.1996
season	12	0	.	.	.	.
date1		-0.00273	0.02195	19.4	-0.12	0.9021
temp_dev		-0.02591	0.03579	191	-0.72	0.4700

Mixed Model With Local Nugget

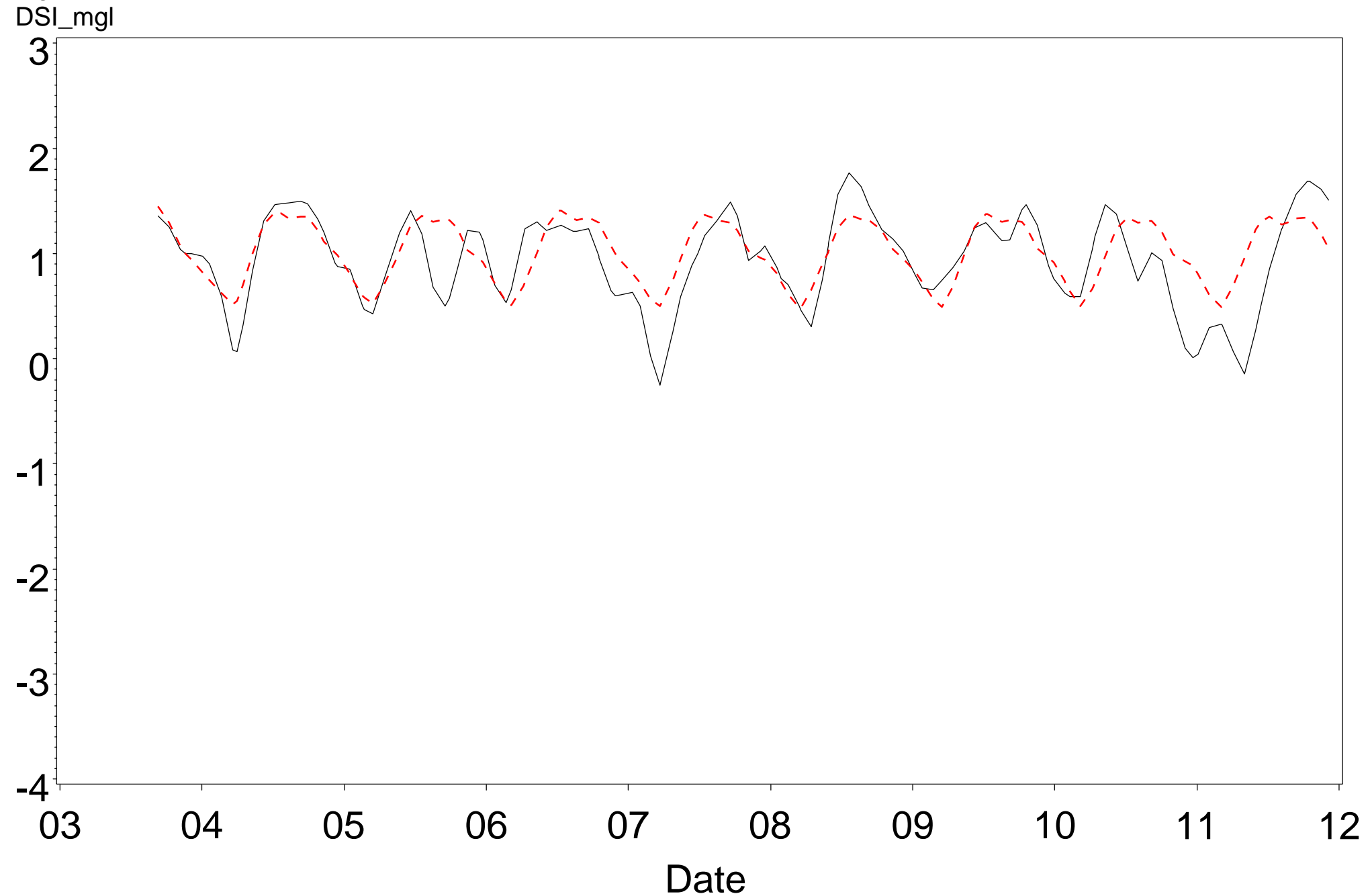
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71.1	5.03	<.0001
date1	1	19.4	0.02	0.9021
temp_dev	1	191	0.52	0.4700

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale Parameter = Dissolved Silica (as SiO₂) (mg/L) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	386
Number of Observations Not Used	110

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1073.98511570	
1	3	1063.26825324	0.00336328
2	1	1062.47336771	0.00110528
3	1	1062.20341906	0.00072663
4	2	1061.98846349	0.01559311
5	4	1061.84598864	0.00041593
6	2	1061.76766438	0.00000656
7	1	1061.76642171	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05973	0.03818	1.56	0.0588
Variance	Intercept	0.1263	0.05615	2.25	0.0123
SP(POW)	Intercept	0.1609	0.5019	0.32	0.7486
Residual		0.7456	0.06699	11.13	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1061.8
AIC (smaller is better)	1069.8
AICC (smaller is better)	1069.9
BIC (smaller is better)	1077.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-53.7521	53.7864	11.9	-1.00	0.3376
season	1	-0.2115	0.2767	27.7	-0.76	0.4512
season	2	0.09873	0.3027	54.9	0.33	0.7455
season	3	0.2844	0.2833	60.8	1.00	0.3194
season	4	0.6119	0.2992	67.4	2.05	0.0448
season	5	-0.2078	0.3017	60.7	-0.69	0.4936
season	6	-0.05613	0.3158	58.7	-0.18	0.8595
season	7	-0.03462	0.3001	60.1	-0.12	0.9086
season	8	0.2581	0.2907	60.7	0.89	0.3781
season	9	0.5319	0.2793	63.8	1.90	0.0614
season	10	0.1560	0.3012	53.2	0.52	0.6067
season	11	-0.2106	0.2679	25.6	-0.79	0.4391
season	12	0	.	.	.	.
date1		0.02748	0.02679	11.8	1.03	0.3254
temp_dev		-0.07225	0.05922	84.2	-1.22	0.2258

Mixed Model With Local Nugget

The Mixed Procedure

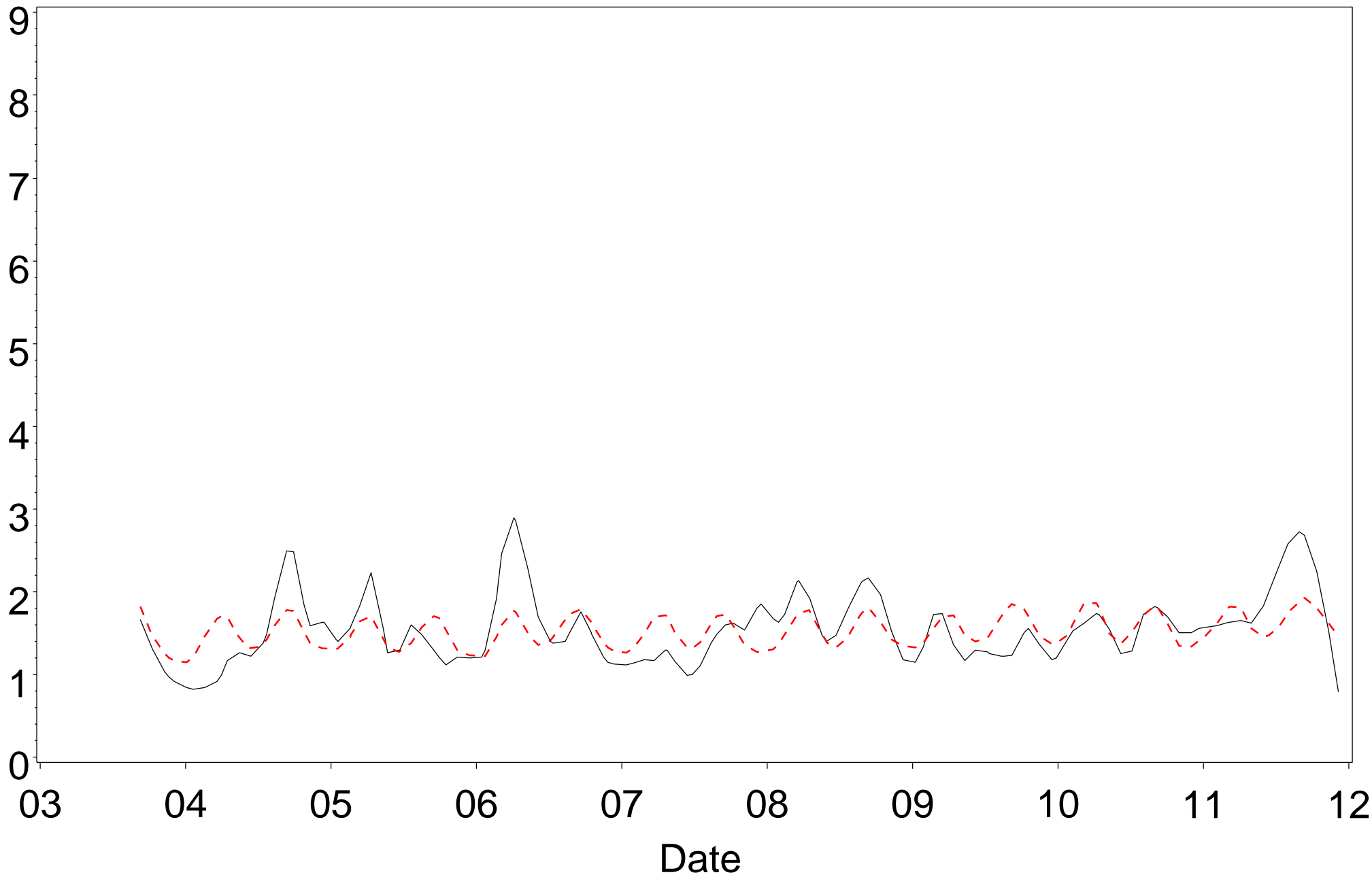
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	37.4	1.59	0.1428
date1	1	11.8	1.05	0.3254
temp_dev	1	84.2	1.49	0.2258

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1317.96103945	
1	3	1172.62873075	6.52115088
2	2	1163.54238851	2.41732218
3	2	1146.69758868	0.00815731
4	2	1145.70931618	0.00015878
5	1	1145.68822417	0.00000020
6	1	1145.68819845	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1512	0.04309	3.51	0.0002
Variance	Intercept	0.3520	0.06553	5.37	<.0001
SP(POW)	Intercept	-0.06262	0.1403	-0.45	0.6554
Residual		0.3518	0.02674	13.15	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1145.7
AIC (smaller is better)	1153.7
AICC (smaller is better)	1153.8
BIC (smaller is better)	1161.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		268.32	53.0929	32.2	5.05	<.0001
season	1	-0.5069	0.3263	55.9	-1.55	0.1259
season	2	-0.1444	0.3202	86.1	-0.45	0.6531
season	3	-0.5696	0.3177	85.8	-1.79	0.0765
season	4	-0.5709	0.3191	86.8	-1.79	0.0770
season	5	-0.3316	0.3185	86.3	-1.04	0.3007
season	6	-0.5155	0.3185	86.4	-1.62	0.1092
season	7	-0.1317	0.3185	86.4	-0.41	0.6804
season	8	-0.5376	0.3181	85.7	-1.69	0.0947
season	9	0.03041	0.3090	86.7	0.10	0.9218
season	10	0.06843	0.3104	85.8	0.22	0.8260
season	11	-0.4039	0.3265	55.9	-1.24	0.2213
season	12	0	.	.	.	.
date1		-0.1354	0.02644	32.2	-5.12	<.0001
temp_dev		-0.01251	0.05260	277	-0.24	0.8122

Mixed Model With Local Nugget

The Mixed Procedure

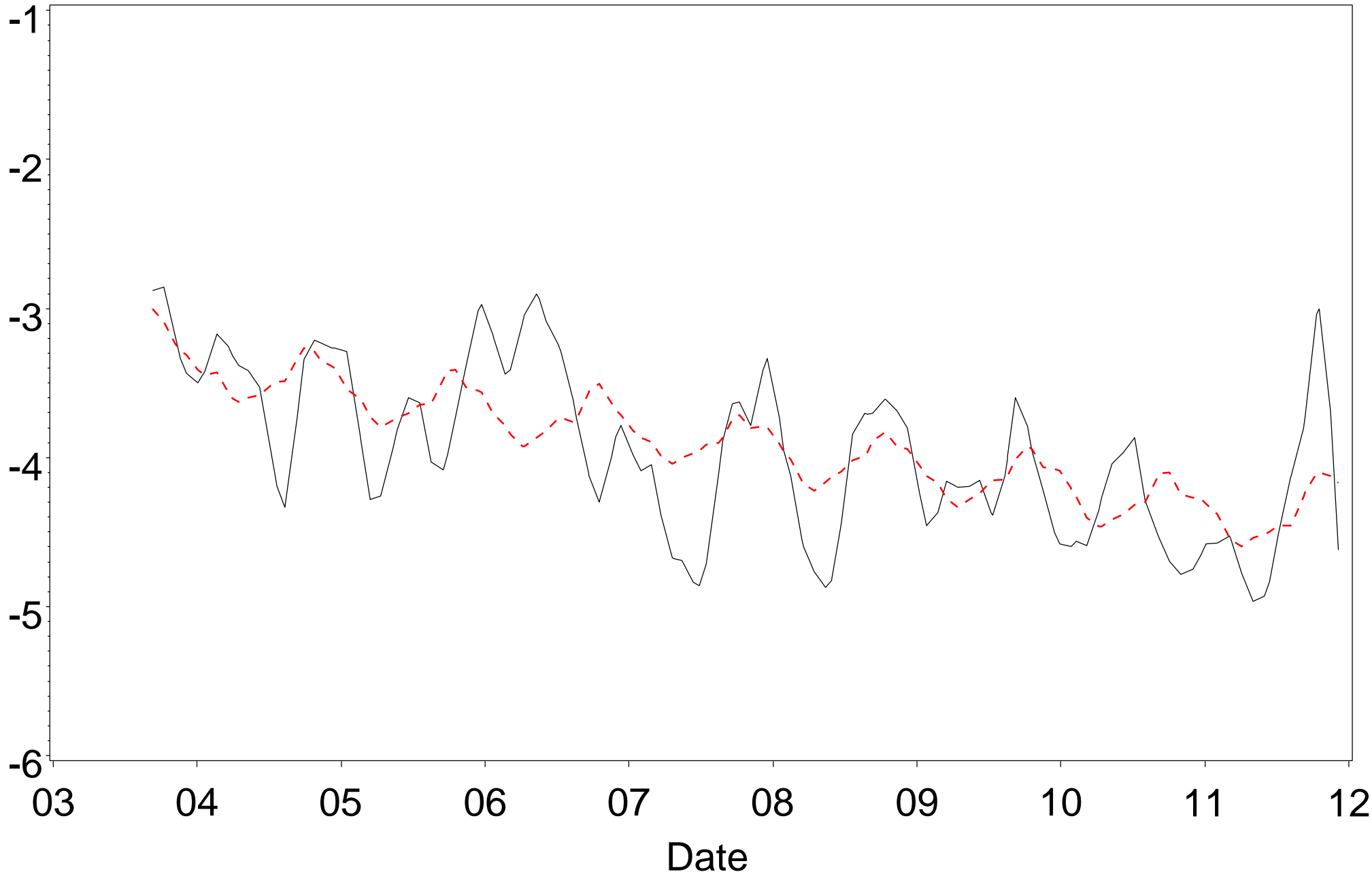
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.8	1.22	0.2923
date1	1	32.2	26.24	<.0001
temp_dev	1	277	0.06	0.8122

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	491
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1208.26631641	
1	3	1112.92922727	3.95776076
2	2	1089.61658340	0.18945498
3	2	1083.01055052	0.00248312
4	1	1082.73831913	0.00002926
5	1	1082.73527413	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1946	0.05740	3.39	0.0003
Variance	Intercept	0.1587	0.03654	4.34	<.0001
SP(POW)	Intercept	-0.03090	0.1558	-0.20	0.8428
Residual		0.3421	0.02613	13.09	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1082.7
AIC (smaller is better)	1090.7
AICC (smaller is better)	1090.8
BIC (smaller is better)	1098.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		204.64	40.4300	33.9	5.06	<.0001
season	1	-0.2369	0.2378	59.3	-1.00	0.3232
season	2	-0.2884	0.2367	82.4	-1.22	0.2265
season	3	-0.6788	0.2346	82.3	-2.89	0.0049
season	4	-0.4387	0.2360	84	-1.86	0.0665
season	5	-0.3616	0.2353	83.2	-1.54	0.1282
season	6	-0.2483	0.2356	83.9	-1.05	0.2950
season	7	-0.2005	0.2445	83.3	-0.82	0.4146
season	8	-0.1366	0.2346	82	-0.58	0.5620
season	9	0.1194	0.2289	84.4	0.52	0.6031
season	10	0.3590	0.2292	81.9	1.57	0.1211
season	11	-0.2801	0.2379	59.1	-1.18	0.2439
season	12	0	.	.	.	.
date1		-0.1041	0.02014	33.9	-5.17	<.0001
temp_dev		-0.05203	0.04436	178	-1.17	0.2424

Mixed Model With Local Nugget

The Mixed Procedure

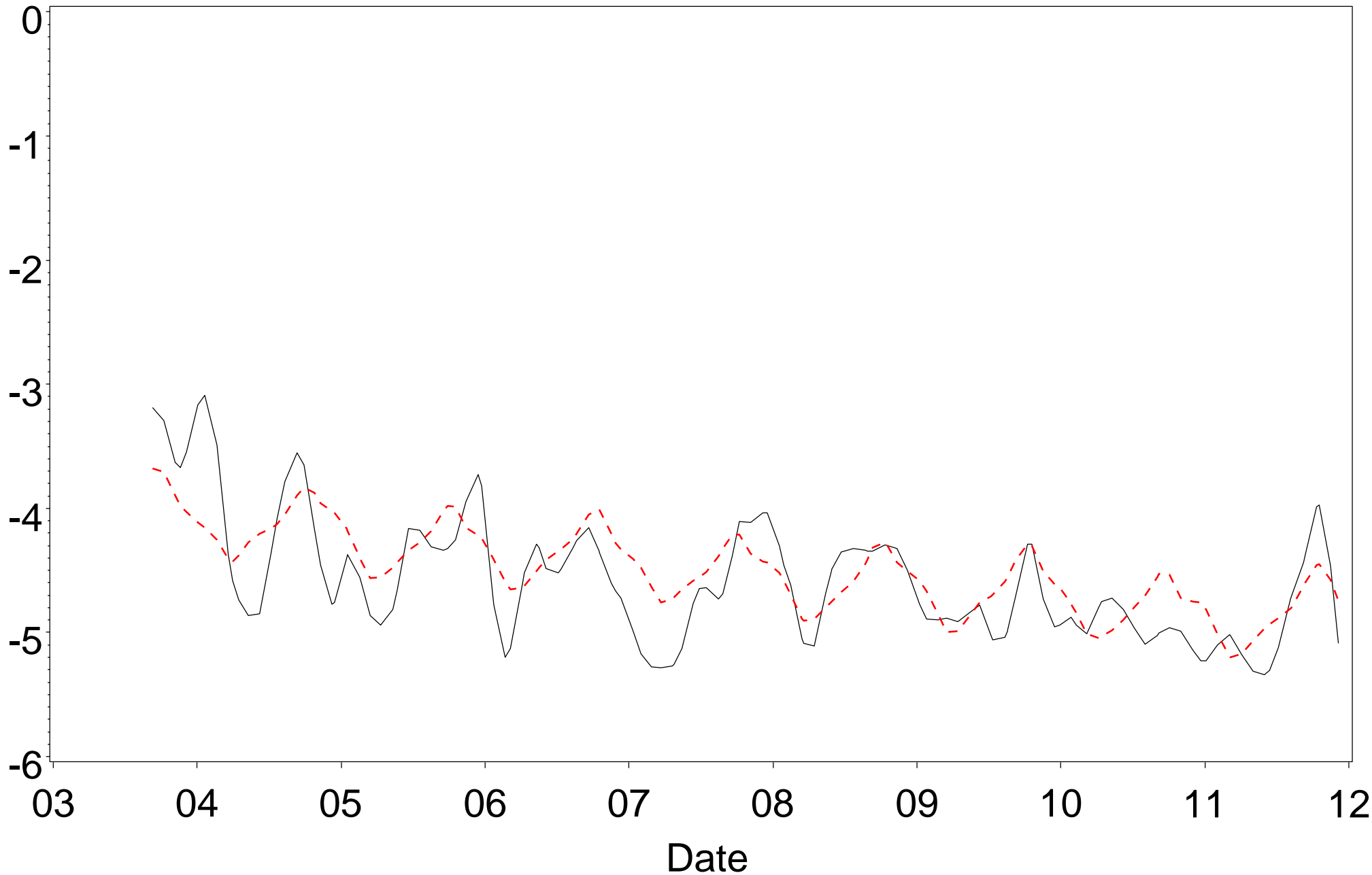
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.6	2.67	0.0065
date1	1	33.9	26.71	<.0001
temp_dev	1	178	1.38	0.2424

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	481
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1198.09304423	
1	3	974.10650112	0.36802943
2	1	948.60717263	0.18826214
3	2	939.03885941	0.25636576
4	2	925.50469875	0.12193328
5	2	921.01701970	0.00818961
6	1	920.74401138	0.00009312
7	1	920.74107642	0.00000002
8	1	920.74107581	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1136	0.03298	3.45	0.0003
Variance	Intercept	0.3699	0.06542	5.65	<.0001
SP(POW)	Intercept	0.08445	0.1306	0.65	0.5178
Residual		0.2111	0.01637	12.90	<.0001

Fit Statistics	
-2 Res Log Likelihood	920.7
AIC (smaller is better)	928.7
AICC (smaller is better)	928.8
BIC (smaller is better)	936.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		285.41	58.4849	25.1	4.88	<.0001
season	1	-0.4082	0.3031	57.8	-1.35	0.1832
season	2	-0.2896	0.3150	81.9	-0.92	0.3606
season	3	-0.4798	0.3140	81.2	-1.53	0.1304
season	4	-0.5688	0.3141	81.5	-1.81	0.0739
season	5	-0.4393	0.3137	81.2	-1.40	0.1653
season	6	-0.3428	0.3138	81.4	-1.09	0.2779
season	7	-0.3172	0.3257	81.4	-0.97	0.3330

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.3774	0.3252	80.9	-1.16	0.2492
season	9	0.2732	0.3151	82.1	0.87	0.3884
season	10	-0.2298	0.3054	81.7	-0.75	0.4539
season	11	-0.09558	0.3033	57.2	-0.32	0.7538
season	12	0	.	.	.	.
date1		-0.1450	0.02913	25.1	-4.98	<.0001
temp_dev		-0.06838	0.04602	333	-1.49	0.1382

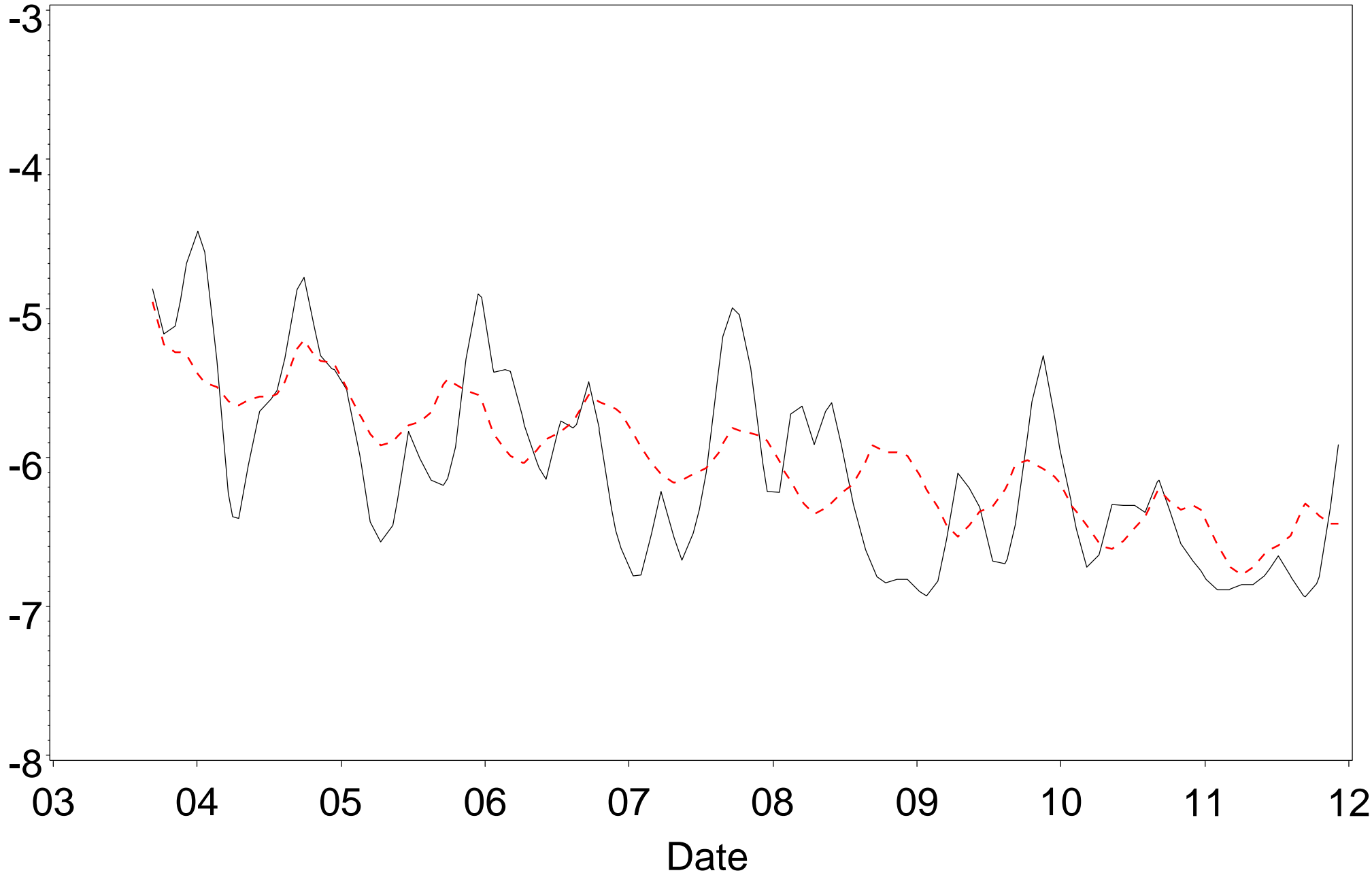
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	66.2	1.03	0.4345
date1	1	25.1	24.79	<.0001
temp_dev	1	333	2.21	0.1382

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

Log Scale
NO2_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	486
Number of Observations Not Used	10

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1138.89944515	
1	3	1044.21253554	0.10503978
2	2	1039.37781667	0.00929943
3	1	1038.47326887	0.00055602
4	1	1038.42344669	0.00000354
5	1	1038.42314301	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1783	0.05589	3.19	0.0007
Variance	Intercept	0.1213	0.03026	4.01	<.0001
SP(POW)	Intercept	-0.09286	0.1678	-0.55	0.5800
Residual		0.3285	0.02541	12.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1038.4
AIC (smaller is better)	1046.4
AICC (smaller is better)	1046.5
BIC (smaller is better)	1054.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		182.62	35.6701	38.1	5.12	<.0001
season	1	-0.2228	0.2200	58	-1.01	0.3154
season	2	-0.2515	0.2149	82	-1.17	0.2453
season	3	-0.5753	0.2130	82.3	-2.70	0.0084
season	4	-0.3729	0.2148	84.2	-1.74	0.0862
season	5	-0.3355	0.2140	83.4	-1.57	0.1208
season	6	-0.1888	0.2226	84.3	-0.85	0.3988
season	7	-0.1882	0.2223	83.5	-0.85	0.3995
season	8	-0.1120	0.2133	82.1	-0.52	0.6011
season	9	0.04346	0.2080	84.6	0.21	0.8350
season	10	0.4274	0.2081	81.4	2.05	0.0432
season	11	-0.2944	0.2201	58	-1.34	0.1863
season	12	0	.	.	.	.
date1		-0.09317	0.01777	38.1	-5.24	<.0001
temp_dev		-0.04649	0.04168	162	-1.12	0.2663

Mixed Model With Local Nugget

The Mixed Procedure

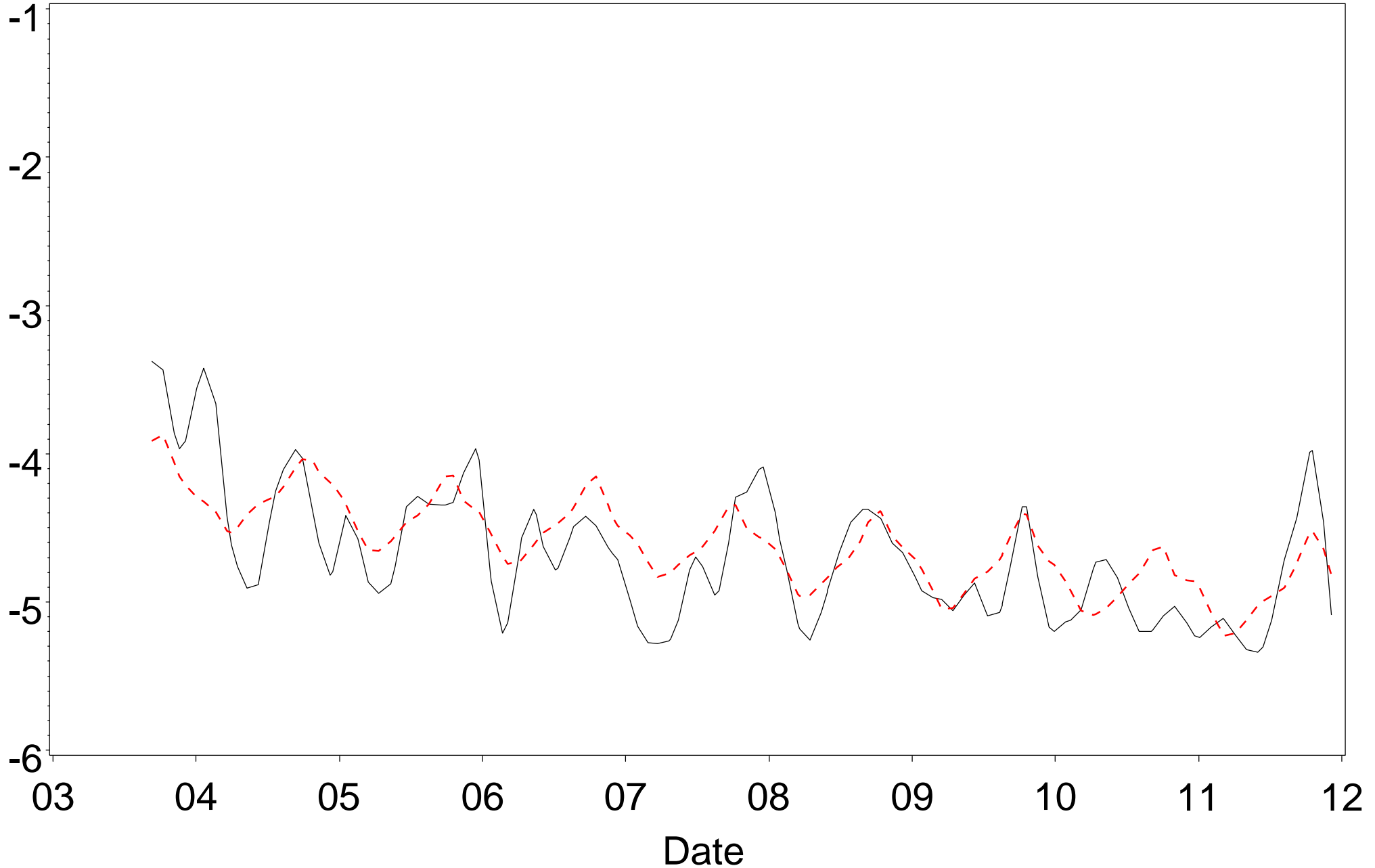
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.5	2.92	0.0032
date1	1	38.1	27.50	<.0001
temp_dev	1	162	1.24	0.2663

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	117.21345078	
1	2	-14.92553912	0.08397189
2	2	-21.73241113	0.02389125
3	2	-34.56010532	0.00300364
4	1	-36.07911355	0.00015464
5	1	-36.15480643	0.00000160
6	1	-36.15555047	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03227	0.008691	3.71	0.0001
Variance	Intercept	0.02132	0.004483	4.76	<.0001
SP(POW)	Intercept	0.1551	0.1464	1.06	0.2892
Residual		0.02939	0.002304	12.76	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-36.2
AIC (smaller is better)	-28.2
AICC (smaller is better)	-28.1
BIC (smaller is better)	-20.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-0.04715	15.7803	23	-0.00	0.9976
season	1	0.01706	0.07665	59.6	0.22	0.8246
season	2	0.04219	0.08108	79.7	0.52	0.6043
season	3	0.008265	0.08122	78.8	0.10	0.9192
season	4	-0.03769	0.08144	79.4	-0.46	0.6448
season	5	0.01634	0.08123	78.8	0.20	0.8411
season	6	0.004697	0.08156	79.6	0.06	0.9542
season	7	-0.01615	0.08123	78.8	-0.20	0.8429
season	8	0.1464	0.08105	78.2	1.81	0.0747
season	9	-0.07407	0.07937	80.9	-0.93	0.3534
season	10	-0.03592	0.07847	79	-0.46	0.6484
season	11	-0.03408	0.07664	58.6	-0.44	0.6582
season	12	0	.	.	.	.
date1		0.003890	0.007859	23	0.49	0.6253
temp_dev		0.02425	0.01409	204	1.72	0.0869

Mixed Model With Local Nugget

The Mixed Procedure

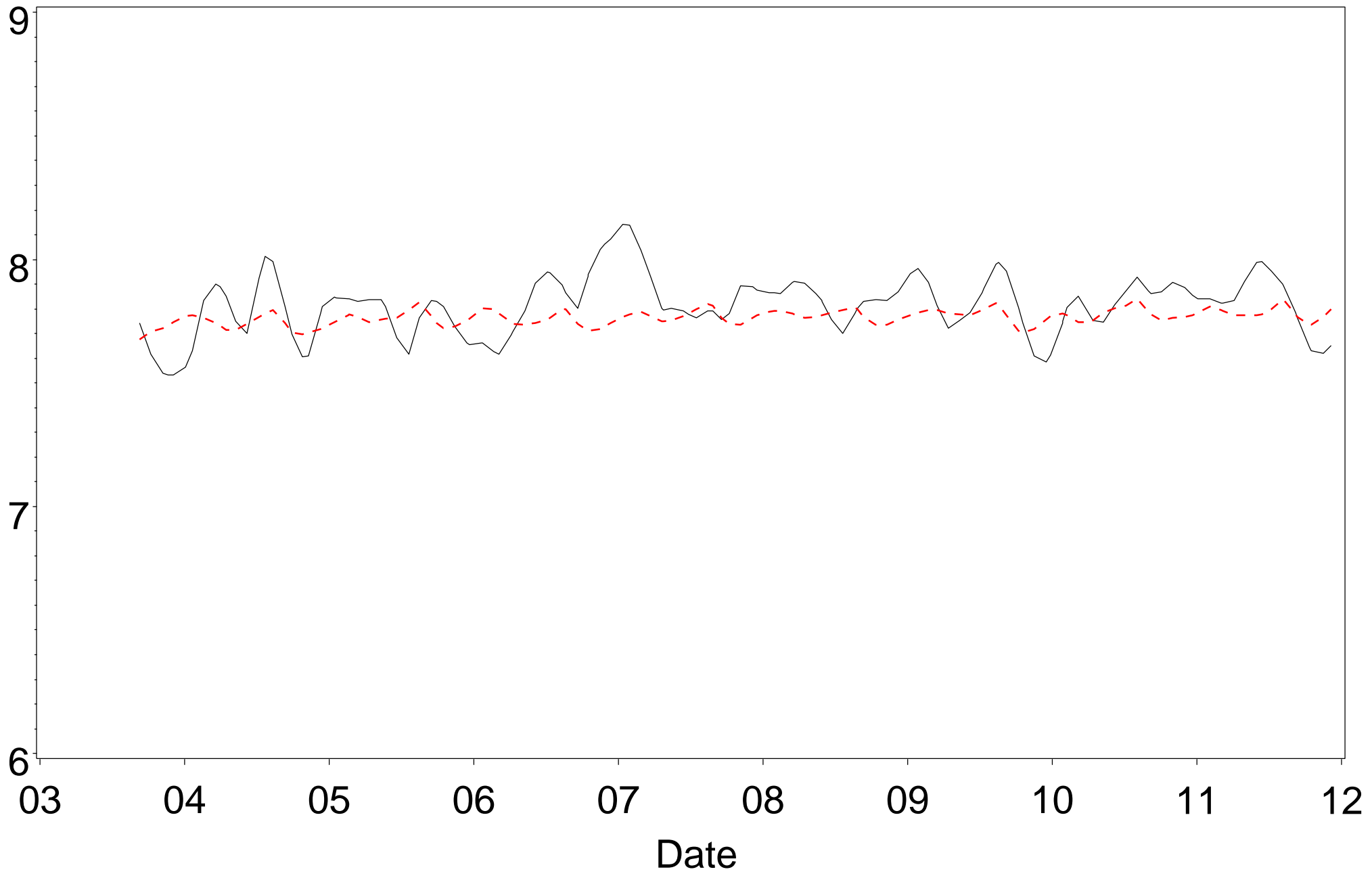
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.7	0.96	0.4913
date1	1	23	0.24	0.6253
temp_dev	1	204	2.96	0.0869

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = pH (SU) and Sample Level = Surface

Log Scale
PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1362.40380443	
1	2	1156.62162965	0.04317910
2	2	1148.69398004	0.03717633
3	2	1144.82573857	0.01610712
4	1	1142.50411302	0.00080952
5	1	1142.39451230	0.00000717
6	1	1142.39358618	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2956	0.07180	4.12	<.0001
Variance	Intercept	0.2848	0.06029	4.72	<.0001
SP(POW)	Intercept	0.3351	0.1483	2.26	0.0239
Residual		0.3438	0.02636	13.05	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1142.4
AIC (smaller is better)	1150.4
AICC (smaller is better)	1150.5
BIC (smaller is better)	1158.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		211.77	65.2629	15.5	3.24	0.0052
season	1	-0.3424	0.2537	57.6	-1.35	0.1824
season	2	-0.3112	0.2827	75.2	-1.10	0.2744
season	3	-0.1886	0.2904	77.7	-0.65	0.5179
season	4	-0.09427	0.2932	76.4	-0.32	0.7487
season	5	0.3895	0.2929	74.2	1.33	0.1877
season	6	0.2012	0.2936	74.3	0.69	0.4953
season	7	0.2040	0.2930	74.4	0.70	0.4883
season	8	-0.4073	0.2915	75.9	-1.40	0.1665
season	9	-0.1708	0.2831	79.3	-0.60	0.5482
season	10	0.09819	0.2730	74	0.36	0.7202
season	11	-0.3542	0.2531	55.9	-1.40	0.1671
season	12	0	.	.	.	.
date1		-0.1080	0.03250	15.5	-3.32	0.0045
temp_dev		-0.08411	0.04784	179	-1.76	0.0804

Mixed Model With Local Nugget

The Mixed Procedure

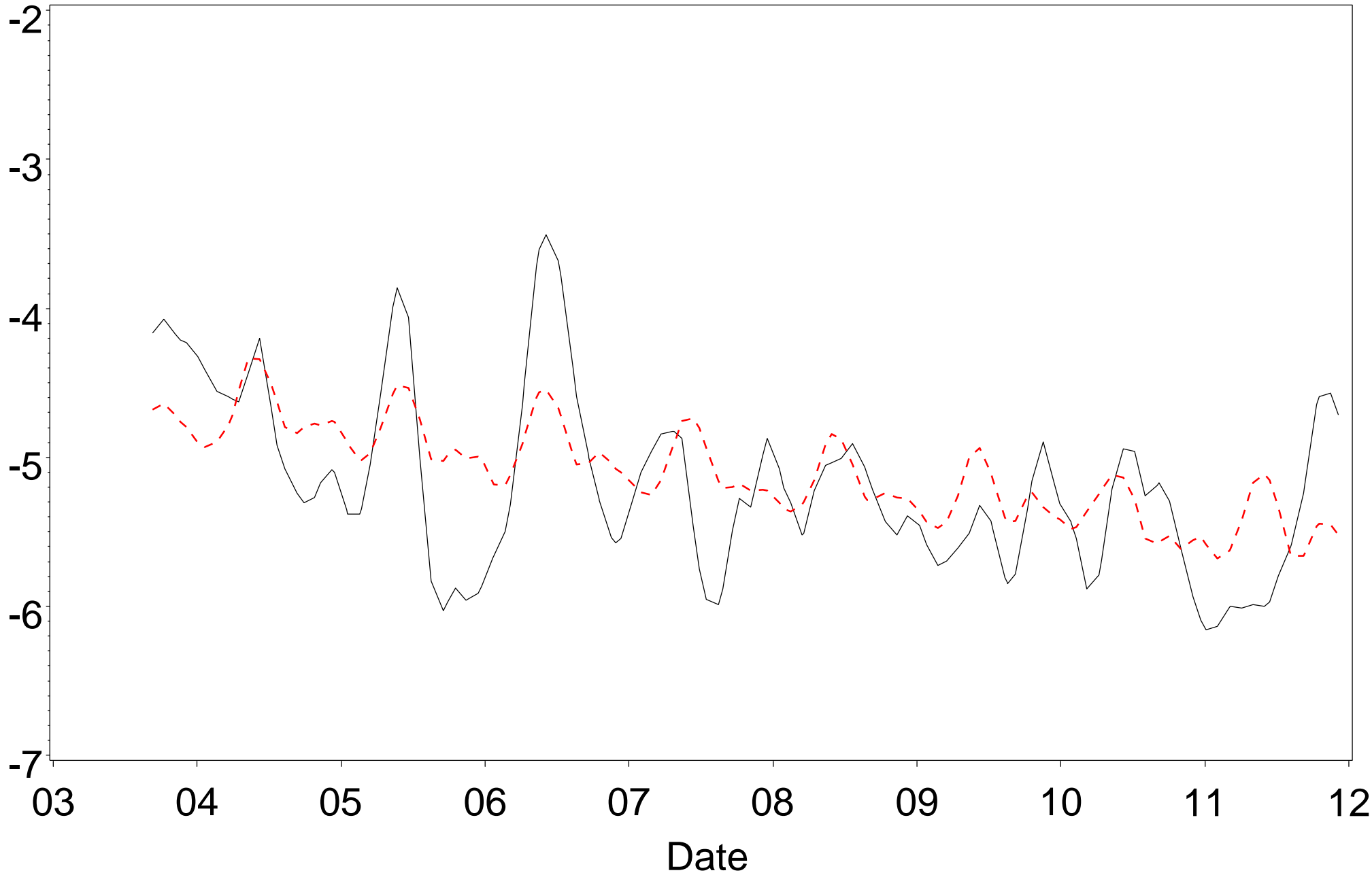
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	62.4	1.56	0.1329
date1	1	15.5	11.04	0.0045
temp_dev	1	179	3.09	0.0804

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

Log Scale
PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	424
Number of Observations Not Used	72

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1043.82995489	
1	2	871.41109643	0.22745435
2	1	853.98035011	0.13126532
3	1	845.58061295	0.05334961
4	1	842.57774883	0.01151110
5	1	841.99436153	0.00072008
6	1	841.96112002	0.00000344
7	1	841.96096721	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.7487	0.1748	4.28	<.0001
Variance	Intercept	0.06622	0.02813	2.35	0.0093
SP(POW)	Intercept	0.7065	0.1618	4.37	<.0001
Residual		0.2435	0.02050	11.88	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	842.0
AIC (smaller is better)	850.0
AICC (smaller is better)	850.1
BIC (smaller is better)	858.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-58.4714	46.8352	4.83	-1.25	0.2690
season	1	0.1869	0.1393	83.9	1.34	0.1834
season	2	0.2029	0.1485	49.3	1.37	0.1780
season	3	0.2681	0.1714	48.4	1.56	0.1244
season	4	0.2811	0.1690	43.1	1.66	0.1035
season	5	0.3051	0.1901	48.9	1.60	0.1150
season	6	0.1961	0.1952	67.7	1.00	0.3187
season	7	-0.2633	0.1698	43.4	-1.55	0.1284
season	8	-0.3538	0.1685	43.9	-2.10	0.0415
season	9	-0.3648	0.1547	45.1	-2.36	0.0228
season	10	0.04050	0.1420	48.1	0.29	0.7767
season	11	0.1028	0.1368	84.4	0.75	0.4546
season	12	0	.	.	.	.
date1		0.03057	0.02333	4.83	1.31	0.2489
temp_dev		0.08636	0.03132	144	2.76	0.0066

Mixed Model With Local Nugget

The Mixed Procedure

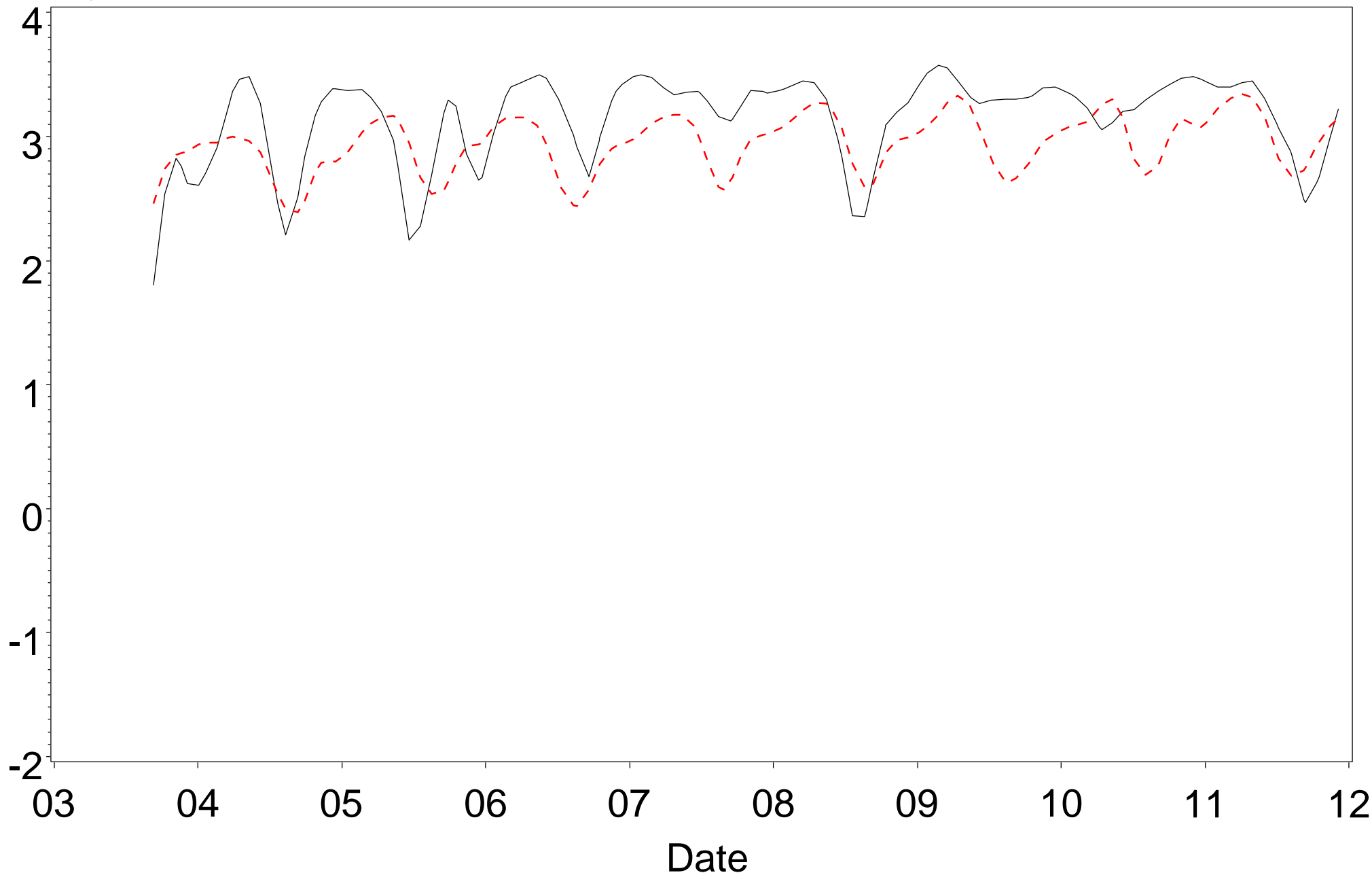
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.2	3.02	0.0029
date1	1	4.83	1.72	0.2489
temp_dev	1	144	7.60	0.0066

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1630.16439787	
1	4	-2200.13887396	.
2	1	-2205.77672804	0.00119474
3	1	-2208.06872707	0.00030633
4	1	-2208.61927521	0.00002774
5	1	-2208.66487052	0.00000028
6	1	-2208.66530937	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000035	0.000018	1.95	0.0258
Variance	Intercept	0.001938	0.000316	6.13	<.0001
SP(POW)	Intercept	0.09797	0.1181	0.83	0.4068
Residual		0.000259	0.000020	12.89	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-2208.7
AIC (smaller is better)	-2200.7
AICC (smaller is better)	-2200.6
BIC (smaller is better)	-2192.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		5.9806	4.0968	24.3	1.46	0.1571
season	1	-0.00142	0.02075	59.1	-0.07	0.9456
season	2	0.06910	0.02175	81.3	3.18	0.0021
season	3	0.1739	0.02173	79.9	8.00	<.0001
season	4	0.2817	0.02171	79.6	12.98	<.0001
season	5	0.4101	0.02170	79.5	18.90	<.0001
season	6	0.5092	0.02169	79.4	23.48	<.0001
season	7	0.4918	0.02170	79.5	22.67	<.0001
season	8	0.5365	0.02171	79.7	24.71	<.0001
season	9	0.4738	0.02109	80	22.47	<.0001
season	10	0.3644	0.02110	81.3	17.27	<.0001
season	11	0.2330	0.02077	58.5	11.22	<.0001
season	12	0	.	.	.	.
date1		-0.00154	0.002040	24.3	-0.75	0.4581
temp_dev		0.07065	0.001825	451	38.70	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

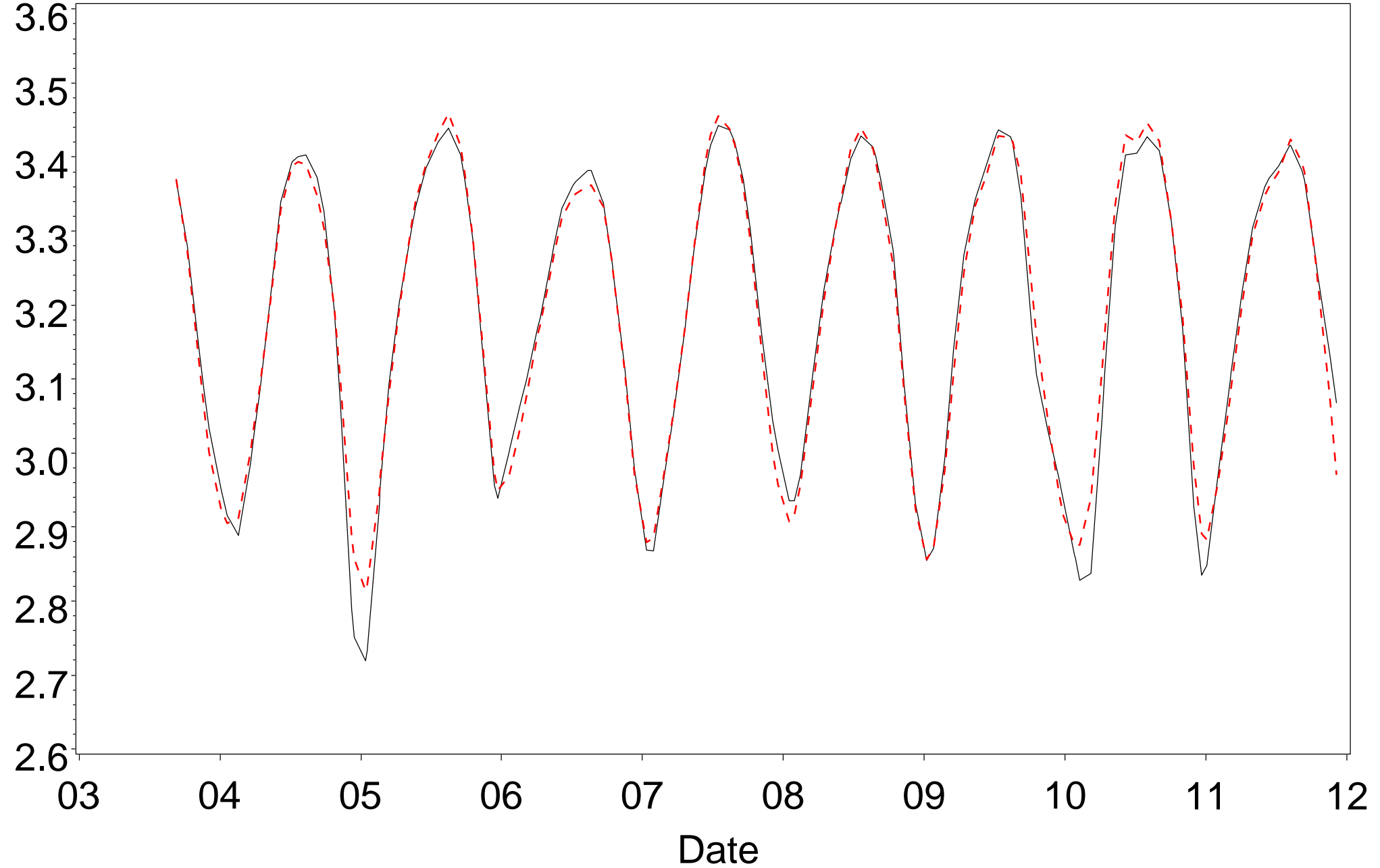
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.8	141.55	<.0001
date1	1	24.3	0.57	0.4581
temp_dev	1	451	1497.95	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
TEMP_C

Parameter = Temperature (Degree C) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1037.52647729	
1	2	841.58847691	0.20705532
2	1	835.75276496	0.10307772
3	2	834.00093276	0.04261605
4	1	832.78506466	0.00162441
5	1	832.73987843	0.00001129
6	1	832.73957694	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04329	0.01650	2.62	0.0043
Variance	Intercept	0.2509	0.05771	4.35	<.0001
SP(POW)	Intercept	0.5441	0.1104	4.93	<.0001
Residual		0.1934	0.01496	12.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	832.7
AIC (smaller is better)	840.7
AICC (smaller is better)	840.8
BIC (smaller is better)	848.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		152.18	73.6997	11.4	2.06	0.0625
season	1	-0.1907	0.1968	70.2	-0.97	0.3361
season	2	-0.09291	0.2322	73.5	-0.40	0.6902
season	3	-0.3047	0.2488	73.5	-1.23	0.2245
season	4	-0.2344	0.2572	70.3	-0.91	0.3653
season	5	-0.02949	0.2604	66.7	-0.11	0.9102
season	6	-0.05176	0.2612	65.5	-0.20	0.8435
season	7	0.007469	0.2601	67.4	0.03	0.9772
season	8	-0.08528	0.2549	70.9	-0.33	0.7389
season	9	-0.1660	0.2409	74.1	-0.69	0.4929
season	10	0.01418	0.2235	72.7	0.06	0.9496
season	11	-0.00719	0.1953	68.3	-0.04	0.9707
season	12	0	.	.	.	.
date1		-0.07615	0.03670	11.4	-2.07	0.0615
temp_dev		-0.01767	0.03615	200	-0.49	0.6255

Mixed Model With Local Nugget

The Mixed Procedure

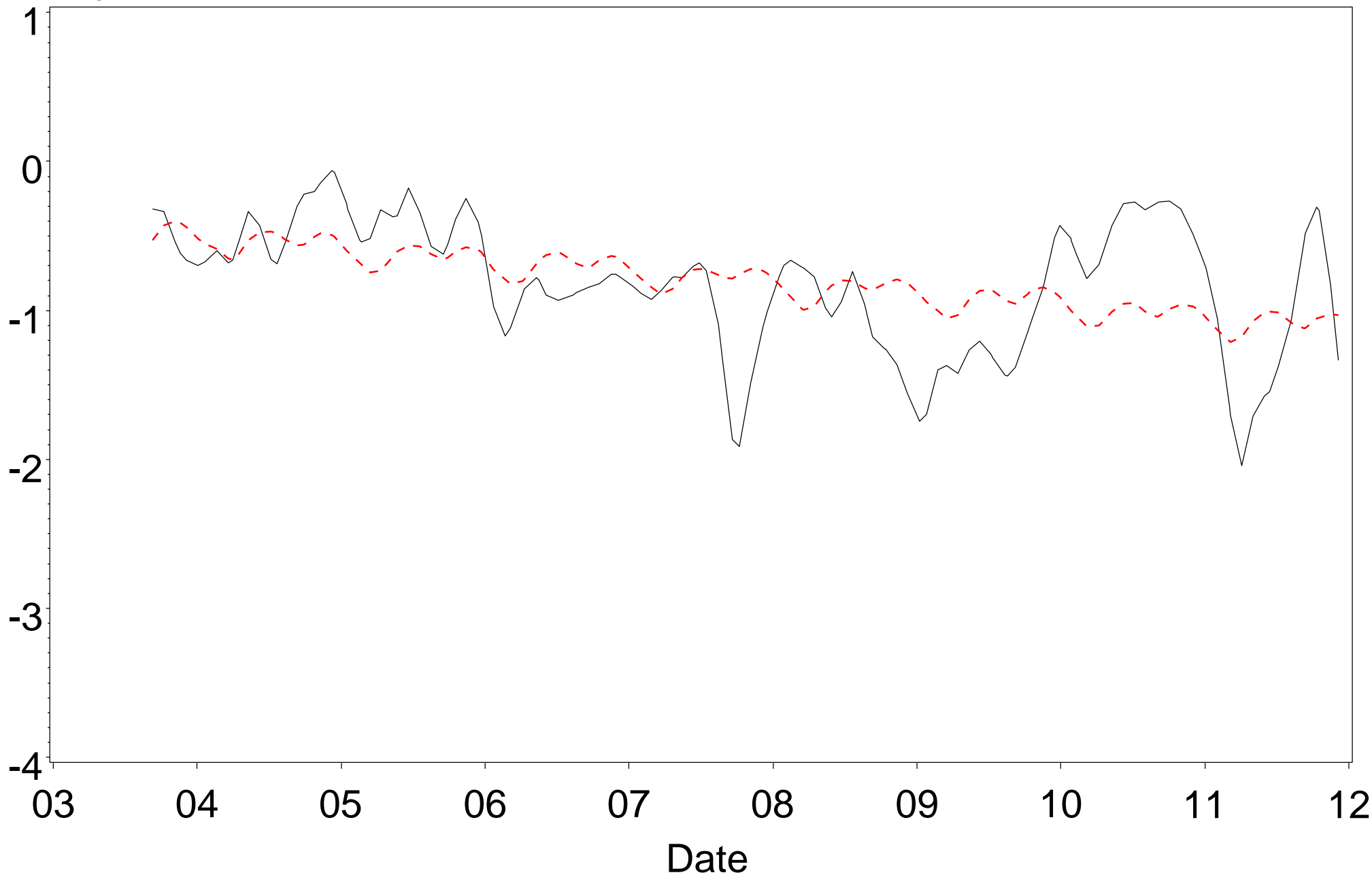
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68	0.40	0.9529
date1	1	11.4	4.30	0.0615
temp_dev	1	200	0.24	0.6255

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1036.67040518	
1	2	867.55901396	0.45743523
2	1	862.17960966	0.18423701
3	2	860.27043614	0.04794820
4	1	859.61235286	0.00082343
5	1	859.60131471	0.00000116
6	1	859.60129949	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04175	0.01687	2.47	0.0067
Variance	Intercept	0.2299	0.05434	4.23	<.0001
SP(POW)	Intercept	0.5549	0.1123	4.94	<.0001
Residual		0.2115	0.01633	12.95	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	859.6
AIC (smaller is better)	867.6
AICC (smaller is better)	867.7
BIC (smaller is better)	875.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		151.61	71.7026	11	2.11	0.0582
season	1	-0.1952	0.1915	71.5	-1.02	0.3115
season	2	-0.1069	0.2248	72.7	-0.48	0.6359
season	3	-0.3241	0.2408	73.1	-1.35	0.1826
season	4	-0.2493	0.2493	70.6	-1.00	0.3206
season	5	-0.04323	0.2525	67.3	-0.17	0.8645
season	6	-0.07183	0.2532	66.1	-0.28	0.7775
season	7	0.001151	0.2521	67.9	0.00	0.9964
season	8	-0.02322	0.2469	71	-0.09	0.9253
season	9	-0.1500	0.2332	73.6	-0.64	0.5221
season	10	0.03951	0.2163	71.9	0.18	0.8556
season	11	-0.00348	0.1900	69.6	-0.02	0.9855
season	12	0	.	.	.	.
date1		-0.07584	0.03571	11	-2.12	0.0573
temp_dev		-0.03305	0.03627	187	-0.91	0.3633

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.7	0.45	0.9245
date1	1	11	4.51	0.0573
temp_dev	1	187	0.83	0.3633

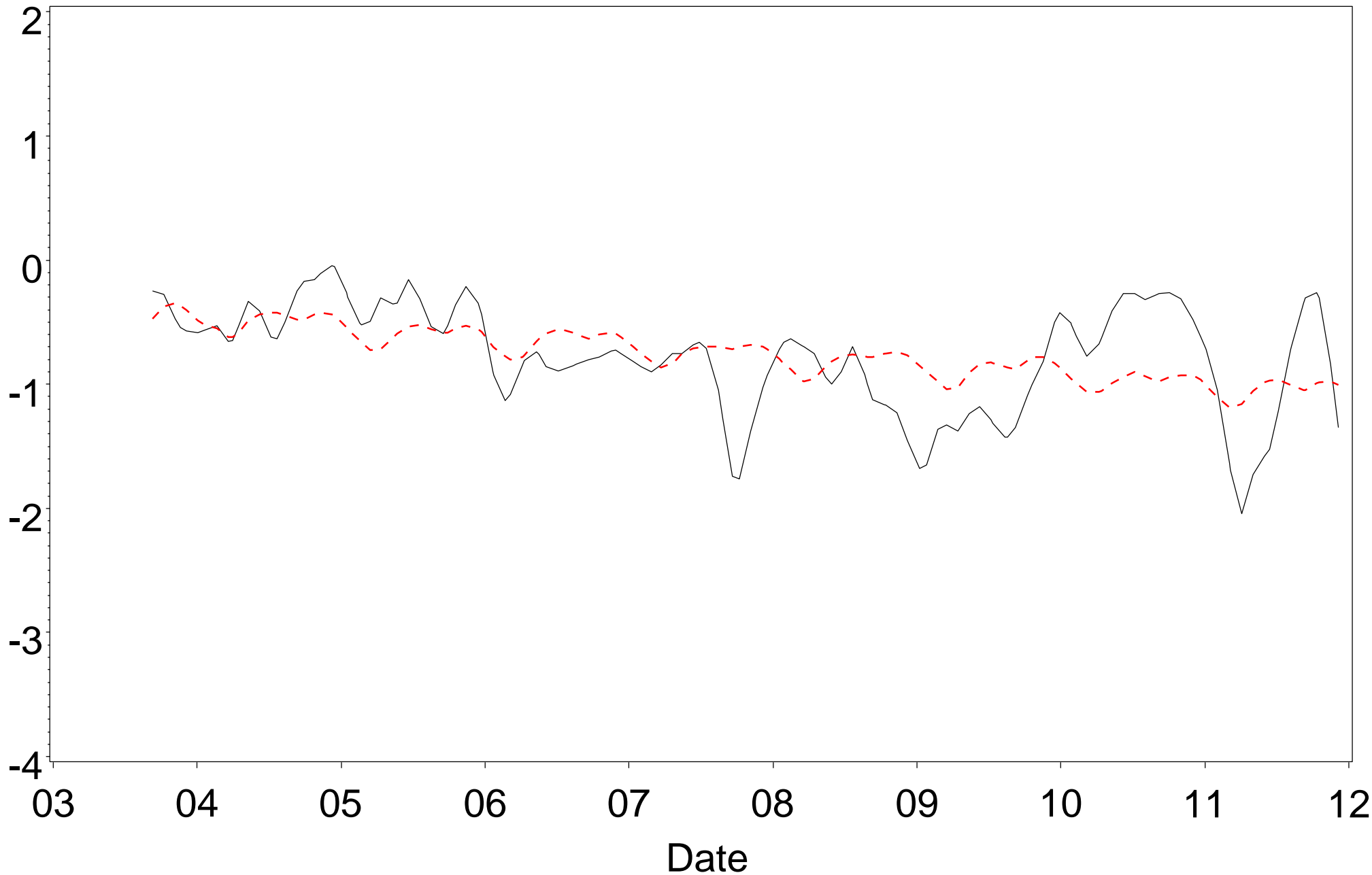
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	444
Number of Observations Not Used	52

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	557.48028174	
1	2	185.53419481	0.00956875
2	2	181.87471365	0.00422702
3	2	180.29576642	0.00090438
4	1	179.98981600	0.00003364
5	1	179.97932282	0.00000004
6	1	179.97931090	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1395	0.03107	4.49	<.0001
Variance	Intercept	0.04683	0.01276	3.67	0.0001
SP(POW)	Intercept	0.5176	0.1620	3.20	0.0014
Residual		0.04069	0.003296	12.34	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	180.0
AIC (smaller is better)	188.0
AICC (smaller is better)	188.1
BIC (smaller is better)	196.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-6.8062	33.0780	7.3	-0.21	0.8426
season	1	-0.1314	0.09573	57.3	-1.37	0.1751
season	2	-0.1357	0.1121	67.5	-1.21	0.2303
season	3	-0.1709	0.1187	66.4	-1.44	0.1544
season	4	-0.05010	0.1224	61.2	-0.41	0.6837
season	5	-0.05626	0.1233	56.4	-0.46	0.6499
season	6	0.05951	0.1293	61.3	0.46	0.6469
season	7	0.2273	0.1227	57.8	1.85	0.0691
season	8	0.1713	0.1176	60.3	1.46	0.1503
season	9	0.2016	0.1160	70.3	1.74	0.0867
season	10	0.1326	0.1049	66.3	1.26	0.2107
season	11	-0.03435	0.09391	57.8	-0.37	0.7159
season	12	0	.	.	.	.
date1		0.004279	0.01647	7.3	0.26	0.8022
temp_dev		-0.01915	0.01851	142	-1.03	0.3026

Mixed Model With Local Nugget

The Mixed Procedure

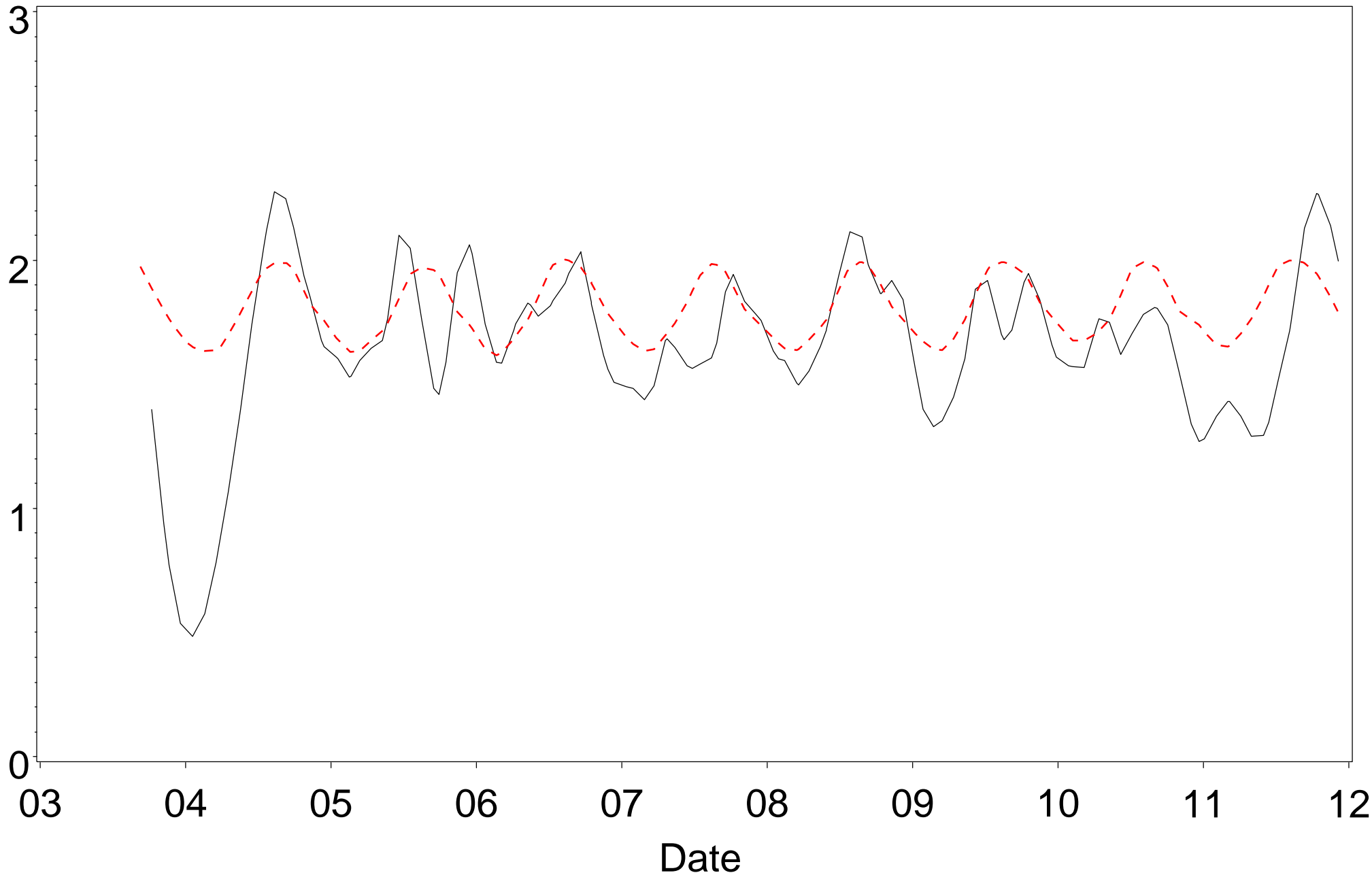
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	56.9	1.62	0.1176
date1	1	7.3	0.07	0.8022
temp_dev	1	142	1.07	0.3026

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

Log Scale
TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	874.11454792	
1	3	781.13724115	3.34591051
2	2	766.33383388	0.11136389
3	2	764.76636154	0.02145185
4	1	763.27606167	0.00169269
5	1	763.16589037	0.00001714
6	1	763.16483171	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04604	0.01474	3.12	0.0009
Variance	Intercept	0.1070	0.02288	4.68	<.0001
SP(POW)	Intercept	0.1816	0.1420	1.28	0.2008
Residual		0.1774	0.01338	13.26	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	763.2
AIC (smaller is better)	771.2
AICC (smaller is better)	771.2
BIC (smaller is better)	779.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		119.71	36.5777	23.5	3.27	0.0033
season	1	-0.2914	0.1737	66.3	-1.68	0.0981
season	2	0.06475	0.1845	83.9	0.35	0.7265
season	3	-0.4126	0.1855	82.8	-2.22	0.0289
season	4	0.1877	0.1860	82.9	1.01	0.3160
season	5	0.1691	0.1855	82	0.91	0.3648
season	6	0.2090	0.1853	81.7	1.13	0.2625
season	7	0.1144	0.1856	82.1	0.62	0.5392
season	8	0.05669	0.1851	81.8	0.31	0.7602
season	9	-0.1532	0.1805	83.7	-0.85	0.3984
season	10	0.1287	0.1787	83.6	0.72	0.4733
season	11	-0.01499	0.1736	65.2	-0.09	0.9315
season	12	0	.	.	.	.
date1		-0.06126	0.01822	23.5	-3.36	0.0026
temp_dev		0.002595	0.03277	199	0.08	0.9370

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	71	2.28	0.0192
date1	1	23.5	11.31	0.0026
temp_dev	1	199	0.01	0.9370

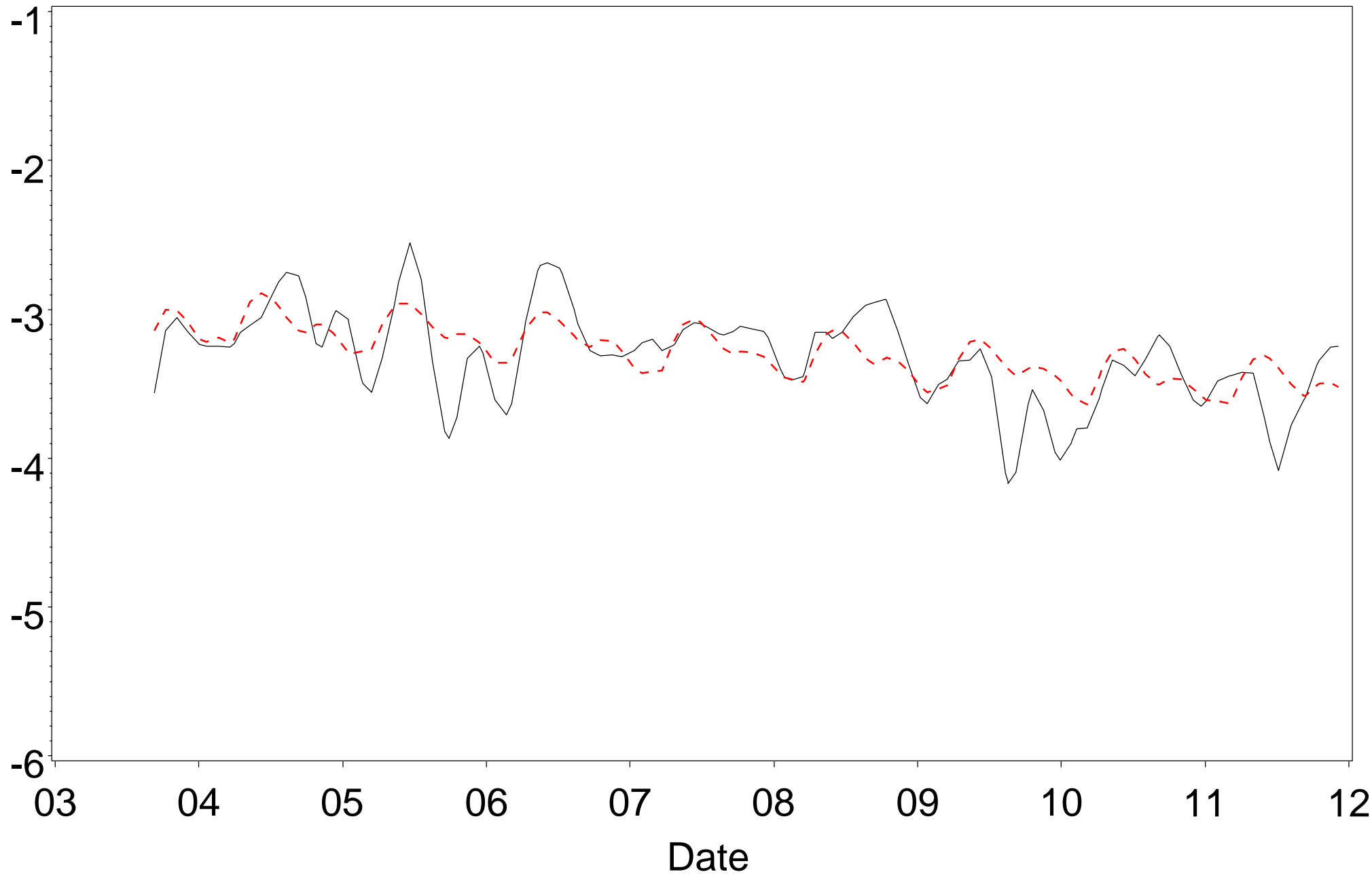
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface

Log Scale

TPO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	496
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	987.76804052	
1	2	849.55587836	53.90833072
2	2	839.02800085	0.52754996
3	2	835.48414815	0.08820073
4	1	832.97297662	0.00617428
5	1	832.79803101	0.00008763
6	1	832.79568205	0.00000002
7	1	832.79568139	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1205	0.03876	3.11	0.0009
Variance	Intercept	0.1551	0.03090	5.02	<.0001
SP(POW)	Intercept	0.1706	0.1484	1.15	0.2503
Residual		0.1825	0.01427	12.78	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	832.8
AIC (smaller is better)	840.8
AICC (smaller is better)	840.9
BIC (smaller is better)	848.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-151.33	42.3271	21.5	-3.58	0.0017
season	1	-0.01069	0.2012	57.8	-0.05	0.9578
season	2	0.1350	0.2144	81.4	0.63	0.5308
season	3	-0.00330	0.2152	81.2	-0.02	0.9878
season	4	0.09318	0.2157	81.4	0.43	0.6668
season	5	-0.04245	0.2151	80.7	-0.20	0.8440
season	6	-0.1086	0.2154	81.2	-0.50	0.6154
season	7	-0.4026	0.2151	80.7	-1.87	0.0650
season	8	-0.1382	0.2148	80.4	-0.64	0.5216
season	9	-0.1327	0.2097	82.7	-0.63	0.5286
season	10	-0.05844	0.2076	80.8	-0.28	0.7790
season	11	-0.09677	0.2012	56.7	-0.48	0.6324
season	12	0	.	.	.	.
date1		0.07672	0.02108	21.5	3.64	0.0015
temp_dev		0.03664	0.03619	215	1.01	0.3124

Mixed Model With Local Nugget

The Mixed Procedure

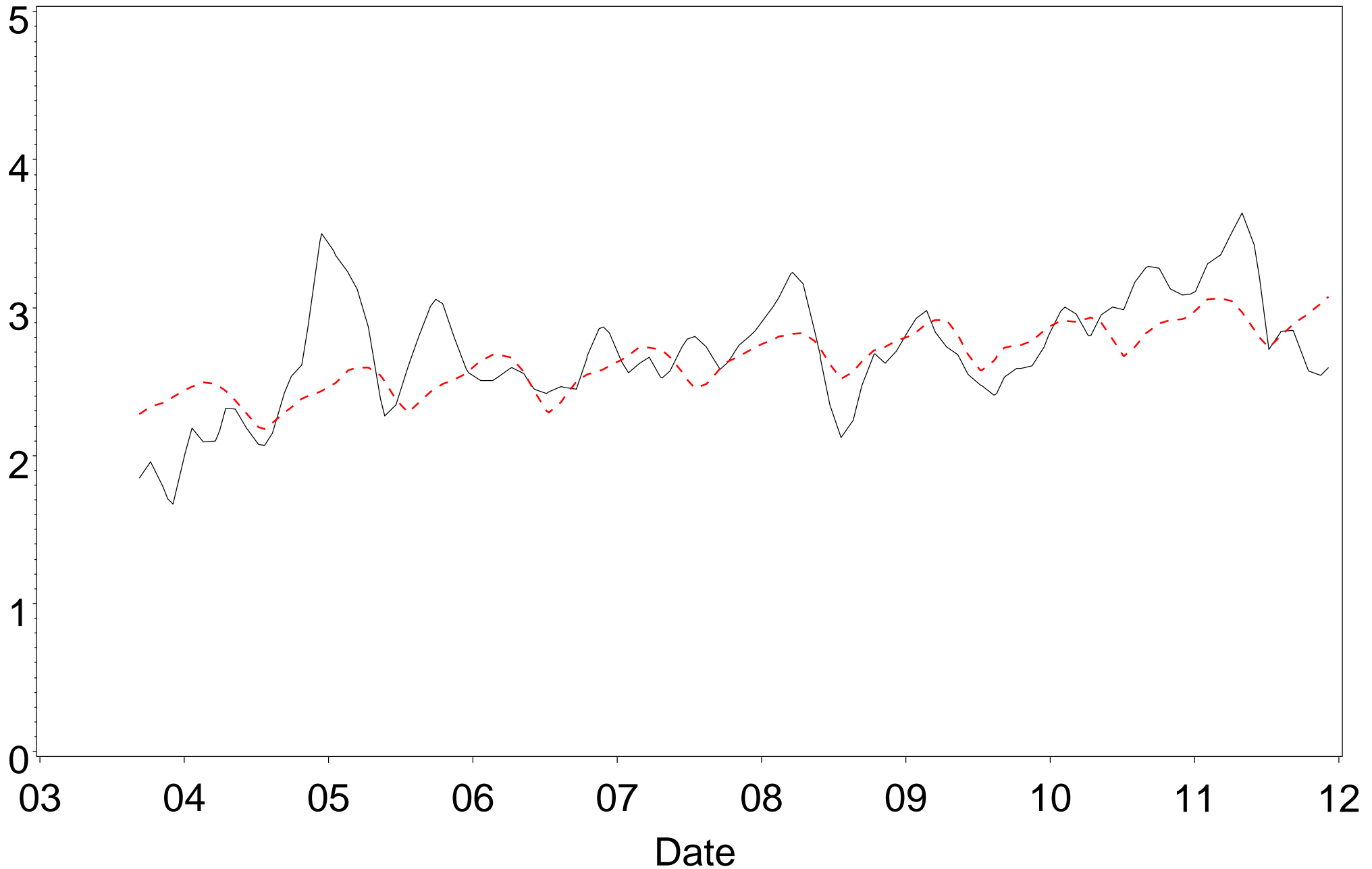
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.4	0.70	0.7351
date1	1	21.5	13.25	0.0015
temp_dev	1	215	1.03	0.3124

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Log Scale
TSS_mgl

Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	98	600 601 602 603 604 606 607 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 649 E60 E61 E63 E64 601 603 604 606 608 609 610 611 612 613 615 616 617 618 619 620 621 622 623 624 625 626 627 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 E601 E621 E625 E630 E633

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	56
Subjects	1
Max Obs Per Subject	496

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	496
Number of Observations Used	452
Number of Observations Not Used	44

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	757.22685999	
1	2	681.52915570	5.61626581
2	2	675.46790935	0.16641855
3	2	672.68379326	0.01612250
4	1	671.49282784	0.00085621
5	1	671.43277874	0.00000579
6	1	671.43239037	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02064	0.01065	1.94	0.0263
Variance	Intercept	0.1058	0.02446	4.32	<.0001
SP(POW)	Intercept	0.3014	0.1479	2.04	0.0416
Residual		0.1757	0.01405	12.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	671.4
AIC (smaller is better)	679.4
AICC (smaller is better)	679.5
BIC (smaller is better)	687.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-172.77	41.3461	20.5	-4.18	0.0004
season	1	0.2427	0.1776	63.1	1.37	0.1768
season	2	0.3499	0.1916	72.3	1.83	0.0719
season	3	0.2560	0.2008	73.5	1.27	0.2064
season	4	0.5650	0.2032	74.9	2.78	0.0069
season	5	0.1160	0.1962	72.3	0.59	0.5561
season	6	0.1624	0.1960	71.8	0.83	0.4100
season	7	0.2161	0.2101	74.1	1.03	0.3070
season	8	0.2933	0.1968	74.2	1.49	0.1404
season	9	0.2758	0.1903	74.3	1.45	0.1515
season	10	0.2970	0.1871	72.9	1.59	0.1167
season	11	0.1907	0.1902	60.5	1.00	0.3201
season	12	0	.	.	.	.
date1		0.08650	0.02060	20.5	4.20	0.0004
temp_dev		-0.02667	0.03448	195	-0.77	0.4402

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	63.8	1.02	0.4417
date1	1	20.5	17.64	0.0004
temp_dev	1	195	0.60	0.4402

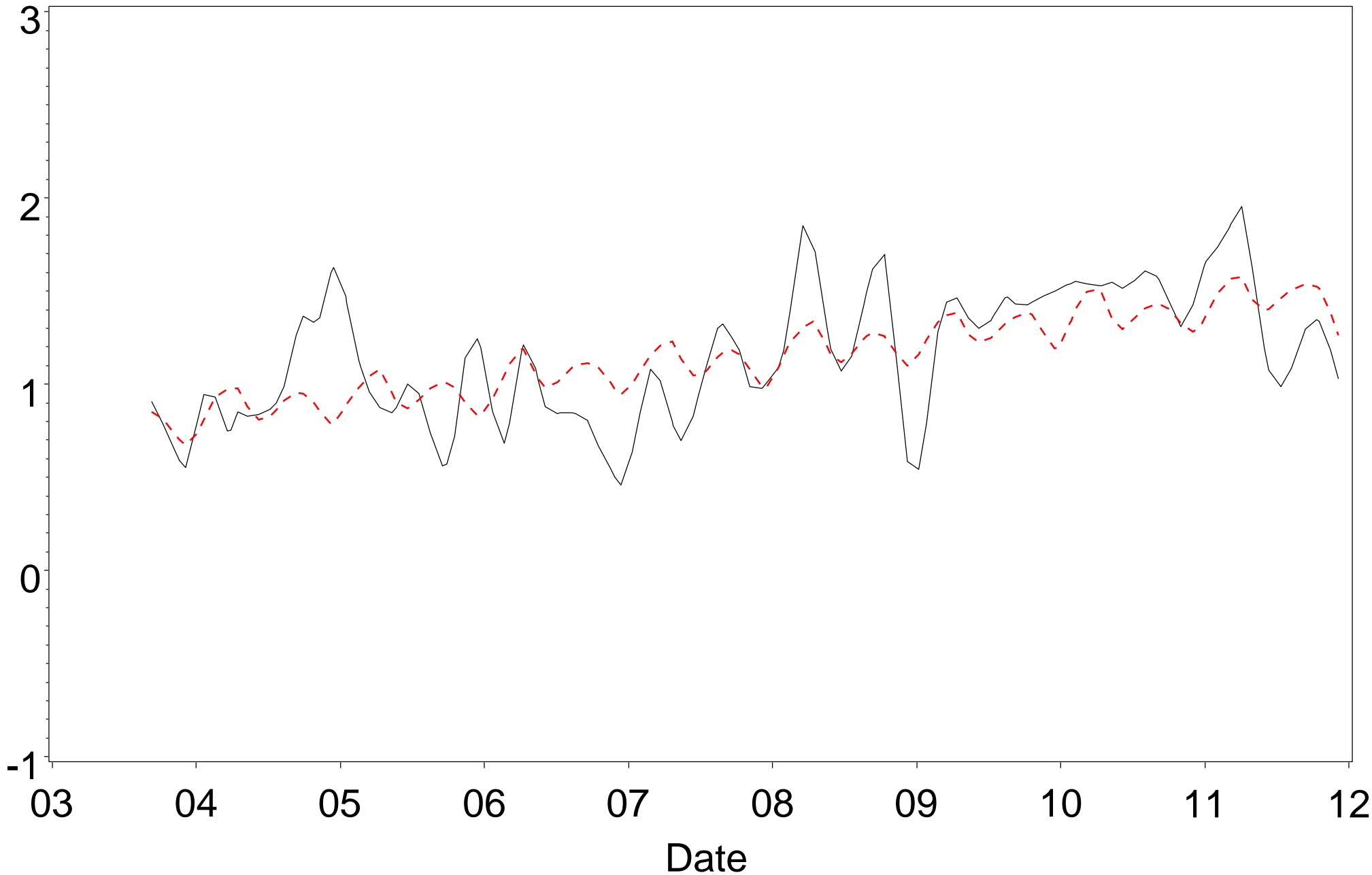
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Estero Bay

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	318
Number of Observations Not Used	18

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	622.48711314	
1	3	596.77418614	0.16154752
2	2	593.65786116	0.05962909
3	1	592.56014804	0.00057948
4	1	592.55020080	0.00000039
5	1	592.55019421	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02642	0.01443	1.83	0.0336
Variance	Intercept	0.09514	0.03267	2.91	0.0018
SP(POW)	Intercept	0.3784	0.2216	1.71	0.0877
Residual		0.2826	0.02624	10.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	592.6
AIC (smaller is better)	600.6
AICC (smaller is better)	600.7
BIC (smaller is better)	605.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-147.09	64.7071	14.2	-2.27	0.0391
season	1	0.1169	0.2225	61.5	0.53	0.6014
season	2	0.1025	0.2325	58.5	0.44	0.6610
season	3	0.3549	0.2390	61	1.49	0.1426
season	4	-0.3688	0.2388	58.2	-1.54	0.1279
season	5	0.1360	0.2344	55.1	0.58	0.5643
season	6	0.5340	0.2421	54.8	2.21	0.0316
season	7	0.7234	0.2255	56.3	3.21	0.0022
season	8	0.8173	0.2414	56	3.39	0.0013
season	9	0.8089	0.2578	78.9	3.14	0.0024
season	10	0.5588	0.2550	69.9	2.19	0.0318
season	11	0.1351	0.2440	74	0.55	0.5815
season	12	0	.	.	.	.
date1		0.07387	0.03224	14.2	2.29	0.0378
temp_dev		0.08643	0.04312	108	2.00	0.0475

Mixed Model With Local Nugget

The Mixed Procedure

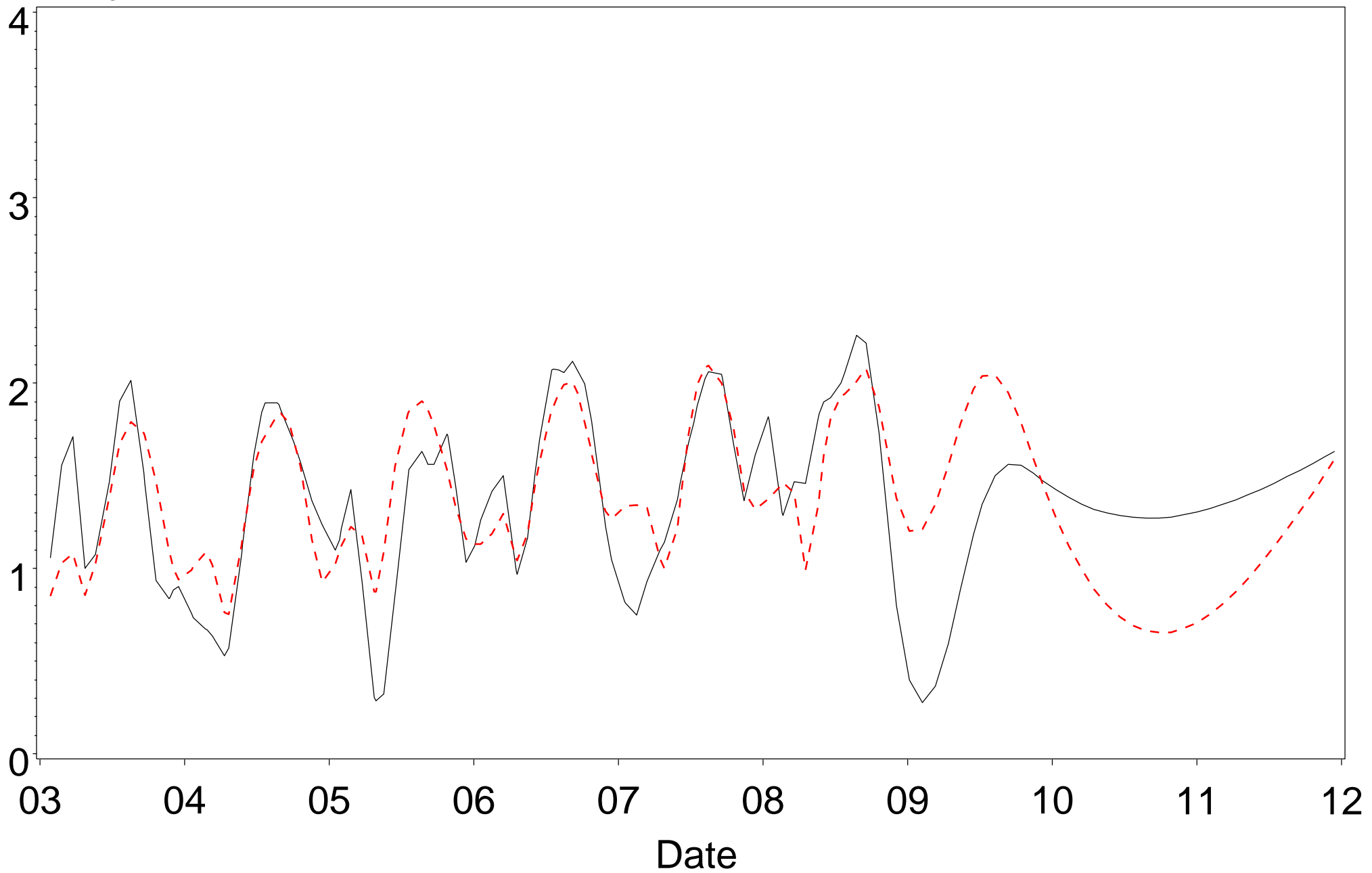
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	49.9	3.99	0.0003
date1	1	14.2	5.25	0.0378
temp_dev	1	108	4.02	0.0475

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	331
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	735.53398751	
1	2	575.23175354	0.54059502
2	1	572.74810492	0.15510732
3	2	571.96430787	0.02368659
4	1	571.83258009	0.00013034
5	1	571.83187430	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05249	0.02211	2.37	0.0088
Variance	Intercept	0.3639	0.1119	3.25	0.0006
SP(POW)	Intercept	0.6260	0.1253	5.00	<.0001
Residual		0.1960	0.01806	10.85	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	571.8
AIC (smaller is better)	579.8
AICC (smaller is better)	580.0
BIC (smaller is better)	584.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		246.40	128.01	10.9	1.92	0.0807
season	1	-0.3934	0.2792	65.3	-1.41	0.1636
season	2	-0.3938	0.3193	57.6	-1.23	0.2225
season	3	-0.02211	0.3441	56.6	-0.06	0.9490
season	4	-0.4223	0.3553	53.4	-1.19	0.2399
season	5	-0.3383	0.3561	50.5	-0.95	0.3466
season	6	-0.06457	0.3530	50.7	-0.18	0.8556
season	7	0.2332	0.3383	51.2	0.69	0.4937
season	8	0.5348	0.3408	53.6	1.57	0.1225
season	9	0.4492	0.3435	63.8	1.31	0.1956
season	10	0.3572	0.3318	64	1.08	0.2856
season	11	0.000782	0.2890	69.9	0.00	0.9978
season	12	0	.	.	.	.
date1		-0.1217	0.06377	10.9	-1.91	0.0830
temp_dev		0.07800	0.04409	161	1.77	0.0788

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	52.9	1.28	0.2636
date1	1	10.9	3.64	0.0830
temp_dev	1	161	3.13	0.0788

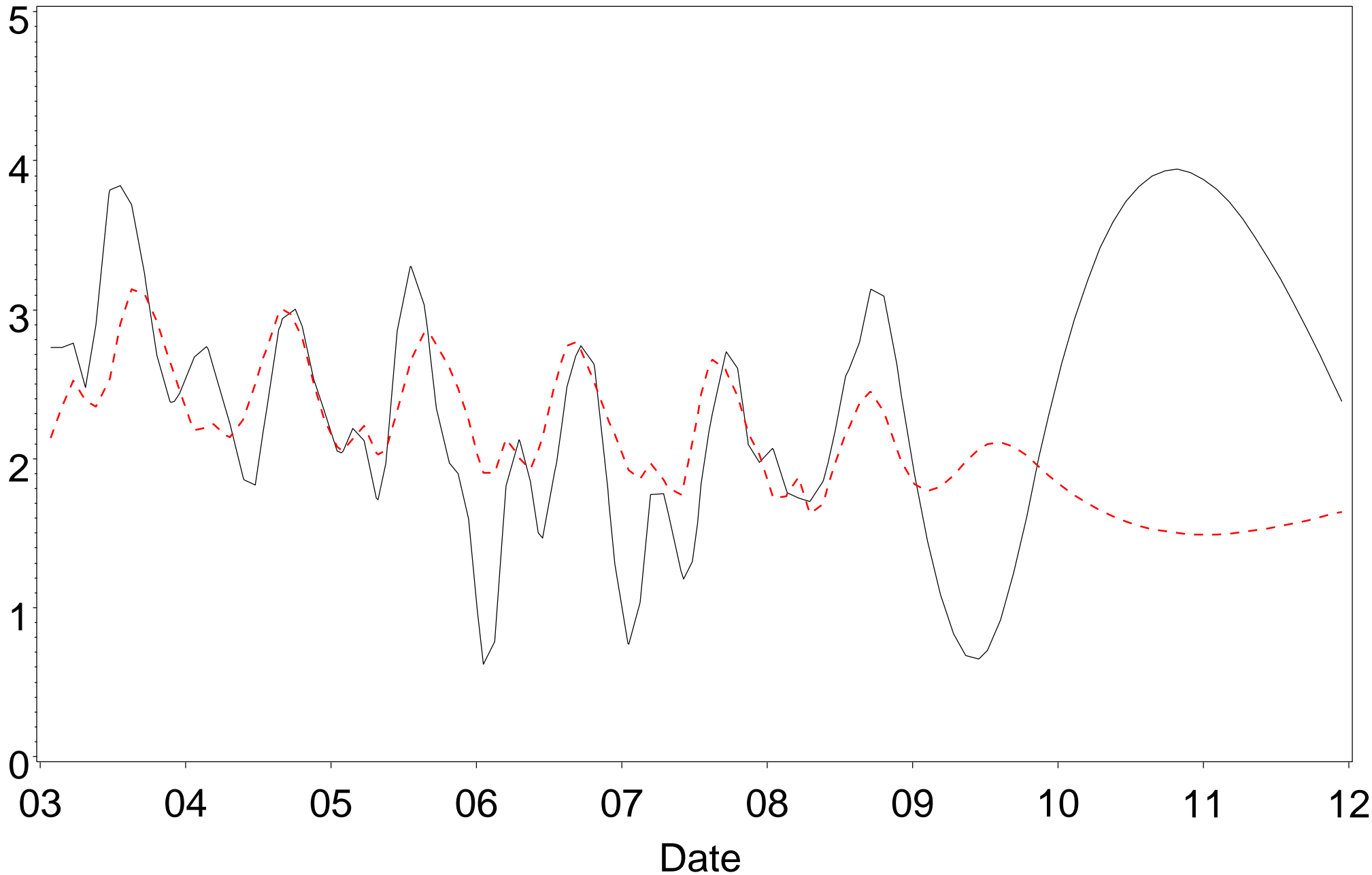
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Color (PCU) and Sample Level = Surface

Log Scale

COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-374.86624018	
1	2	-514.18383870	0.01351154
2	2	-524.16573536	0.01253026
3	2	-529.05042736	0.00579649
4	2	-532.77677442	0.00049915
5	1	-533.07828538	0.00000889
6	1	-533.08333971	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000196	0.000192	1.02	0.1533
Variance	Intercept	0.01118	0.002362	4.73	<.0001
SP(POW)	Intercept	0.1522	0.1515	1.00	0.3150
Residual		0.006197	0.000558	11.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-533.1
AIC (smaller is better)	-525.1
AICC (smaller is better)	-525.0
BIC (smaller is better)	-520.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-45.6739	16.2576	22.6	-2.81	0.0100
season	1	0.04126	0.06093	52.5	0.68	0.5013
season	2	0.04964	0.06371	61.9	0.78	0.4389
season	3	0.04870	0.06377	60.6	0.76	0.4480
season	4	0.06350	0.06348	59.7	1.00	0.3213
season	5	0.08164	0.06302	58.9	1.30	0.2002
season	6	-0.1082	0.06284	59.5	-1.72	0.0903
season	7	-0.01322	0.06047	62.2	-0.22	0.8276
season	8	-0.05022	0.06261	59.9	-0.80	0.4257
season	9	-0.00782	0.06353	63.2	-0.12	0.9025
season	10	-0.01375	0.06744	64.8	-0.20	0.8391
season	11	0.04359	0.06428	52.6	0.68	0.5007
season	12	0	.	.	.	.
date1		0.02817	0.008099	22.6	3.48	0.0021
temp_dev		0.01568	0.008171	246	1.92	0.0562

Mixed Model With Local Nugget

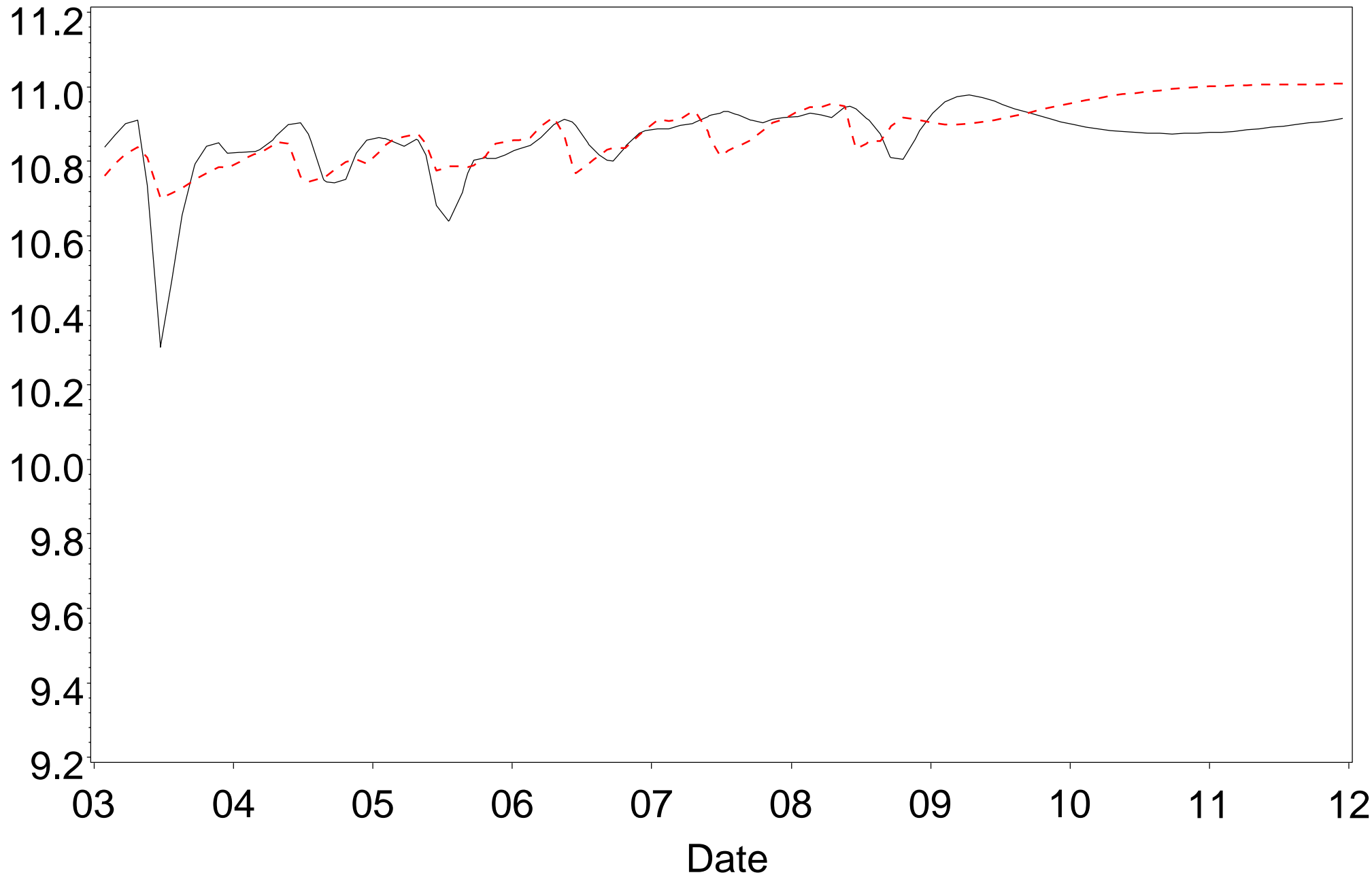
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	48.8	1.35	0.2248
date1	1	22.6	12.10	0.0021
temp_dev	1	246	3.68	0.0562

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale
COND
Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	975.98589275	
1	3	926.29692866	0.04085582
2	2	923.00372715	0.00064624
3	1	922.88896334	0.00000673
4	1	922.88782782	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2621	0.1059	2.48	0.0067
Variance	Intercept	0.2269	0.07450	3.05	0.0012
SP(POW)	Intercept	0.04651	0.2389	0.19	0.8457
Residual		0.6702	0.06183	10.84	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	922.9
AIC (smaller is better)	930.9
AICC (smaller is better)	931.0
BIC (smaller is better)	935.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		233.74	83.1653	19.2	2.81	0.0111
season	1	0.2180	0.3797	62.2	0.57	0.5680
season	2	0.2667	0.3739	66.3	0.71	0.4782
season	3	-0.4442	0.3746	68.9	-1.19	0.2397
season	4	-0.2674	0.3736	68.2	-0.72	0.4766
season	5	-0.8692	0.3658	64.6	-2.38	0.0205
season	6	-1.4103	0.3636	63.5	-3.88	0.0003
season	7	-1.7451	0.3477	61.9	-5.02	<.0001
season	8	-1.7413	0.3588	62.3	-4.85	<.0001
season	9	-2.1862	0.3843	78.3	-5.69	<.0001
season	10	-1.7635	0.4182	85.2	-4.22	<.0001
season	11	-0.06397	0.4164	72.4	-0.15	0.8783
season	12	0	.	.	.	.
date1		-0.1129	0.04143	19.2	-2.73	0.0133
temp_dev		0.09574	0.06817	133	1.40	0.1625

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	50.6	10.77	<.0001
date1	1	19.2	7.43	0.0133
temp_dev	1	133	1.97	0.1625

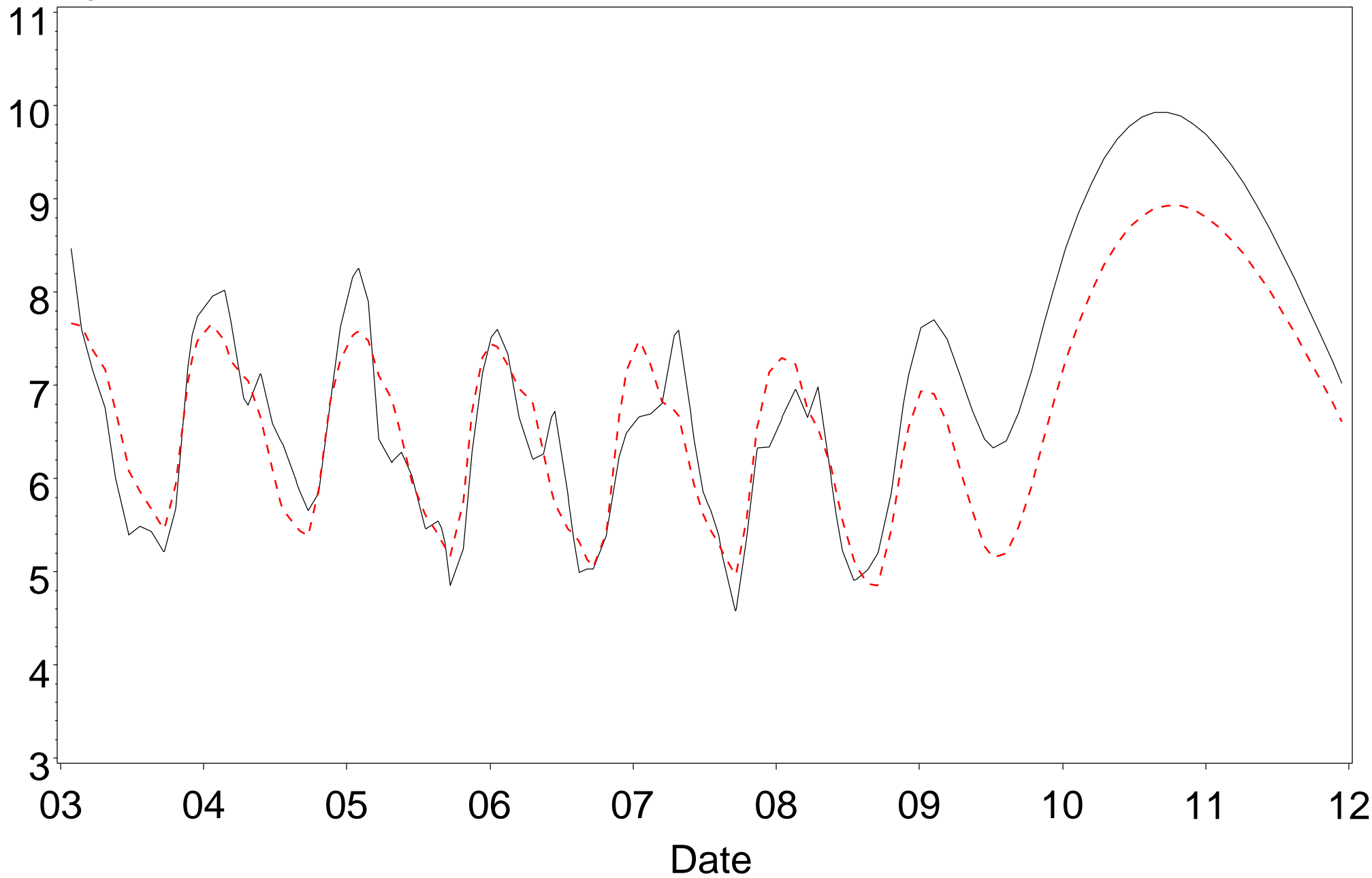
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	233
Number of Observations Not Used	103

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	410.94568378	
1	4	409.80276205	.
2	1	409.69160269	2.86502569
3	2	406.96111211	42.75942283
4	2	403.70924507	1.20273594
5	2	403.30641153	0.25473385
6	1	403.19268928	0.00917774
7	1	403.18941779	0.00001055
8	1	403.18941412	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02400	0.01876	1.28	0.1004
Variance	Intercept	0.03927	0.02371	1.66	0.0488
SP(POW)	Intercept	-0.6774	0.2315	-2.93	0.0034
Residual		0.2601	0.02857	9.10	<.0001

Fit Statistics	
-2 Res Log Likelihood	403.2
AIC (smaller is better)	411.2
AICC (smaller is better)	411.4
BIC (smaller is better)	416.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		23.1294	52.5282	132	0.44	0.6604
season	1	0.3194	0.2411	25.8	1.32	0.1970
season	2	0.07334	0.2228	71	0.33	0.7430
season	3	0.2937	0.2331	29.1	1.26	0.2176
season	4	-0.1730	0.2130	52.9	-0.81	0.4202
season	5	-0.01202	0.1970	23.1	-0.06	0.9519
season	6	0.2716	0.2190	50.5	1.24	0.2206
season	7	0.1227	0.2035	24.9	0.60	0.5520

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.3181	0.2066	44.1	1.54	0.1308
season	9	-0.00377	0.2349	28.4	-0.02	0.9873
season	10	0.4155	0.2275	69.2	1.83	0.0721
season	11	0.09625	0.2572	28.9	0.37	0.7109
season	12	0	.	.	.	.
date1		-0.01114	0.02619	132	-0.43	0.6713
temp_dev		-0.01442	0.04254	127	-0.34	0.7352

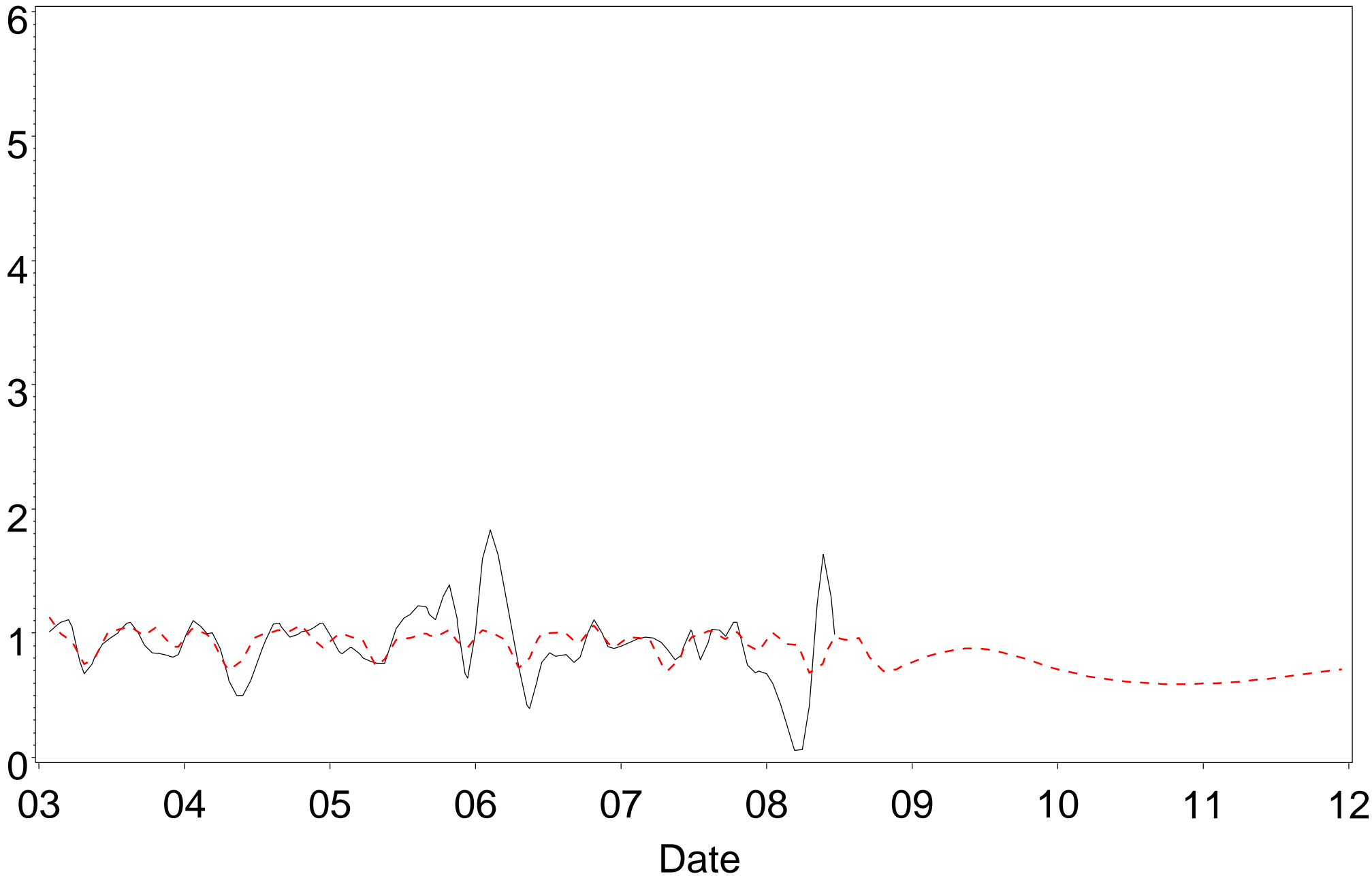
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	46.8	1.31	0.2466
date1	1	132	0.18	0.6713
temp_dev	1	127	0.11	0.7352

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	312
Number of Observations Not Used	24

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	745.06509499	
1	2	417.39267850	0.05571164
2	1	413.15075904	0.00945007
3	2	412.37644769	0.00170376
4	1	412.25047411	0.00004206
5	1	412.24758178	0.00000002
6	1	412.24758017	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.6268	0.2046	3.06	0.0011
SP(POW)	Intercept	0.6982	0.1086	6.43	<.0001
Residual		0.1207	0.01105	10.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	412.2
AIC (smaller is better)	418.2
AICC (smaller is better)	418.3
BIC (smaller is better)	422.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-540.12	168.20	8.99	-3.21	0.0107
season	1	0.1014	0.2979	48.8	0.34	0.7350
season	2	-0.1188	0.3629	50.9	-0.33	0.7448
season	3	-0.1222	0.3983	52	-0.31	0.7603
season	4	0.03059	0.4161	51	0.07	0.9417
season	5	0.1224	0.4215	49.9	0.29	0.7728
season	6	-0.06605	0.4288	51.2	-0.15	0.8782
season	7	-0.2497	0.4019	51.4	-0.62	0.5370
season	8	-0.4353	0.4113	52.6	-1.06	0.2948
season	9	-0.5986	0.3882	55.1	-1.54	0.1288
season	10	0.1503	0.3648	51.3	0.41	0.6820
season	11	0.3356	0.3001	49.2	1.12	0.2689
season	12	0	.	.	.	.
date1		0.2676	0.08380	8.99	3.19	0.0110
temp_dev		0.02102	0.03689	254	0.57	0.5693

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	45	0.86	0.5823
date1	1	8.99	10.20	0.0110
temp_dev	1	254	0.32	0.5693

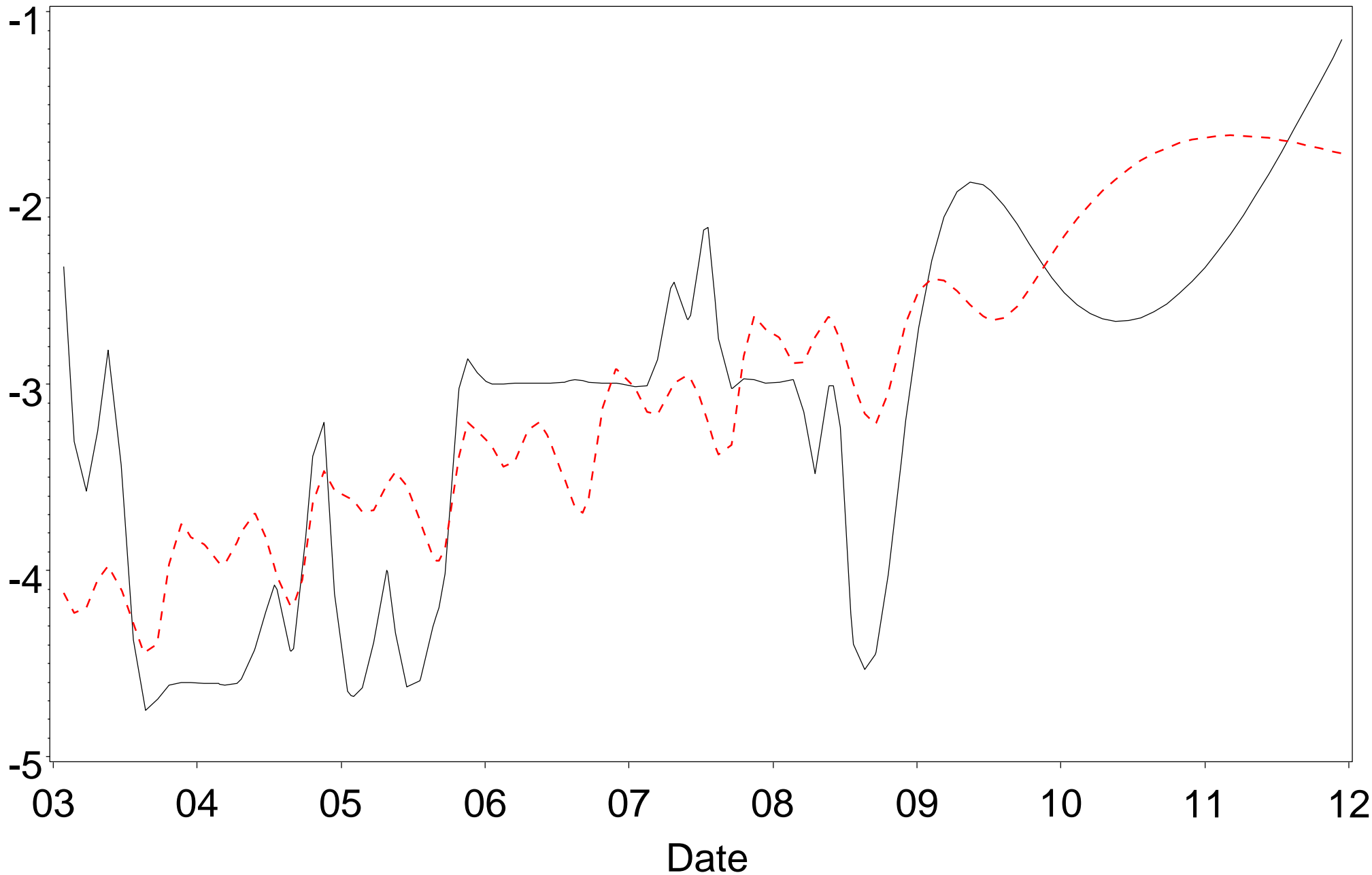
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface

NH3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-126.00605455	
1	2	-211.77069997	0.00616358
2	1	-214.69748477	0.00082342
3	1	-215.04205706	0.00001114
4	1	-215.04656096	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007007	0.002584	2.71	0.0033
Variance	Intercept	0.01234	0.003664	3.37	0.0004
SP(POW)	Intercept	0.4955	0.1613	3.07	0.0021
Residual		0.01807	0.001683	10.74	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-215.0
AIC (smaller is better)	-207.0
AICC (smaller is better)	-206.9
BIC (smaller is better)	-202.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-36.3537	23.2544	14.2	-1.56	0.1400
season	1	-0.06580	0.06662	66.1	-0.99	0.3269
season	2	-0.04740	0.07140	56.5	-0.66	0.5095
season	3	0.03617	0.07501	58.6	0.48	0.6315
season	4	0.02419	0.07605	56.5	0.32	0.7516
season	5	0.09916	0.07512	53.3	1.32	0.1925
season	6	0.01056	0.07452	53.4	0.14	0.8878
season	7	0.03732	0.07146	53.2	0.52	0.6036
season	8	0.07263	0.07291	54.2	1.00	0.3236
season	9	-0.02092	0.07548	65.6	-0.28	0.7825
season	10	-0.1228	0.07704	67.1	-1.59	0.1157
season	11	0.03534	0.07114	75.1	0.50	0.6208
season	12	0	.	.	.	.
date1		0.02203	0.01159	14.2	1.90	0.0777
temp_dev		-0.01656	0.01163	117	-1.42	0.1571

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	48.9	1.35	0.2254
date1	1	14.2	3.62	0.0777
temp_dev	1	117	2.03	0.1571

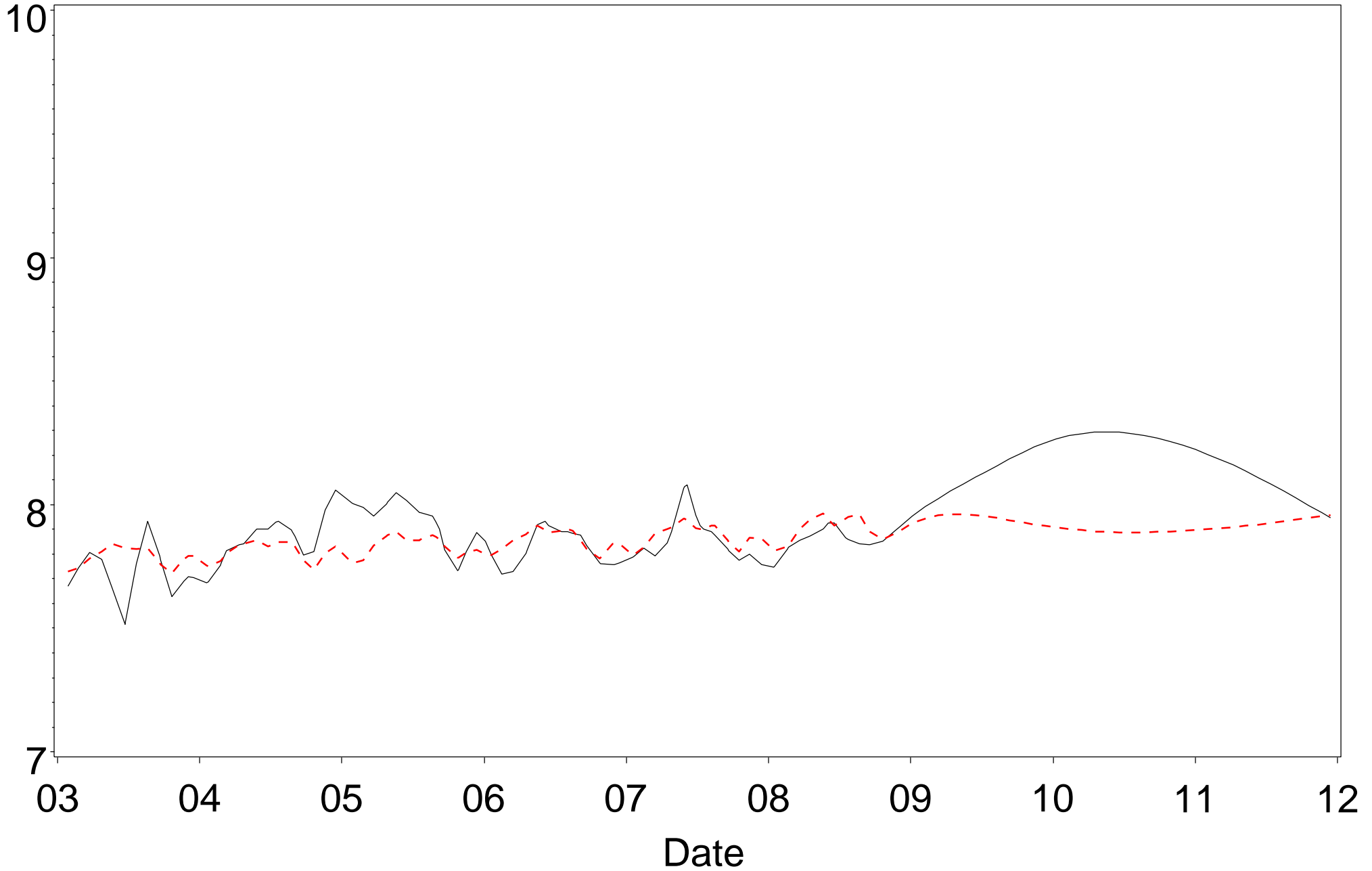
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-313.77218989	
1	2	-454.63880170	0.01456559
2	1	-464.64731158	0.01306483
3	2	-469.35307492	0.00627097
4	2	-473.16610291	0.00051799
5	1	-473.46081388	0.00000779
6	1	-473.46499792	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000252	0.000238	1.06	0.1454
Variance	Intercept	0.01358	0.002883	4.71	<.0001
SP(POW)	Intercept	0.1741	0.1510	1.15	0.2491
Residual		0.007454	0.000671	11.10	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-473.5
AIC (smaller is better)	-465.5
AICC (smaller is better)	-465.3
BIC (smaller is better)	-460.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-56.7320	18.1651	22.1	-3.12	0.0049
season	1	0.03743	0.06660	52.9	0.56	0.5765
season	2	0.04807	0.07007	61.8	0.69	0.4952
season	3	0.03996	0.07028	60.3	0.57	0.5717
season	4	0.06416	0.06998	59.1	0.92	0.3630
season	5	0.08405	0.06946	58.3	1.21	0.2311
season	6	-0.1243	0.06923	59	-1.80	0.0776
season	7	-0.02256	0.06662	61.5	-0.34	0.7361
season	8	-0.06557	0.06897	59.5	-0.95	0.3456
season	9	-0.01723	0.06999	62.9	-0.25	0.8063
season	10	-0.02385	0.07411	64.7	-0.32	0.7486
season	11	0.04189	0.07020	53	0.60	0.5532
season	12	0	.	.	.	.
date1		0.03003	0.009049	22.1	3.32	0.0031
temp_dev		0.01793	0.008968	245	2.00	0.0467

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	48.8	1.35	0.2246
date1	1	22.1	11.01	0.0031
temp_dev	1	245	4.00	0.0467

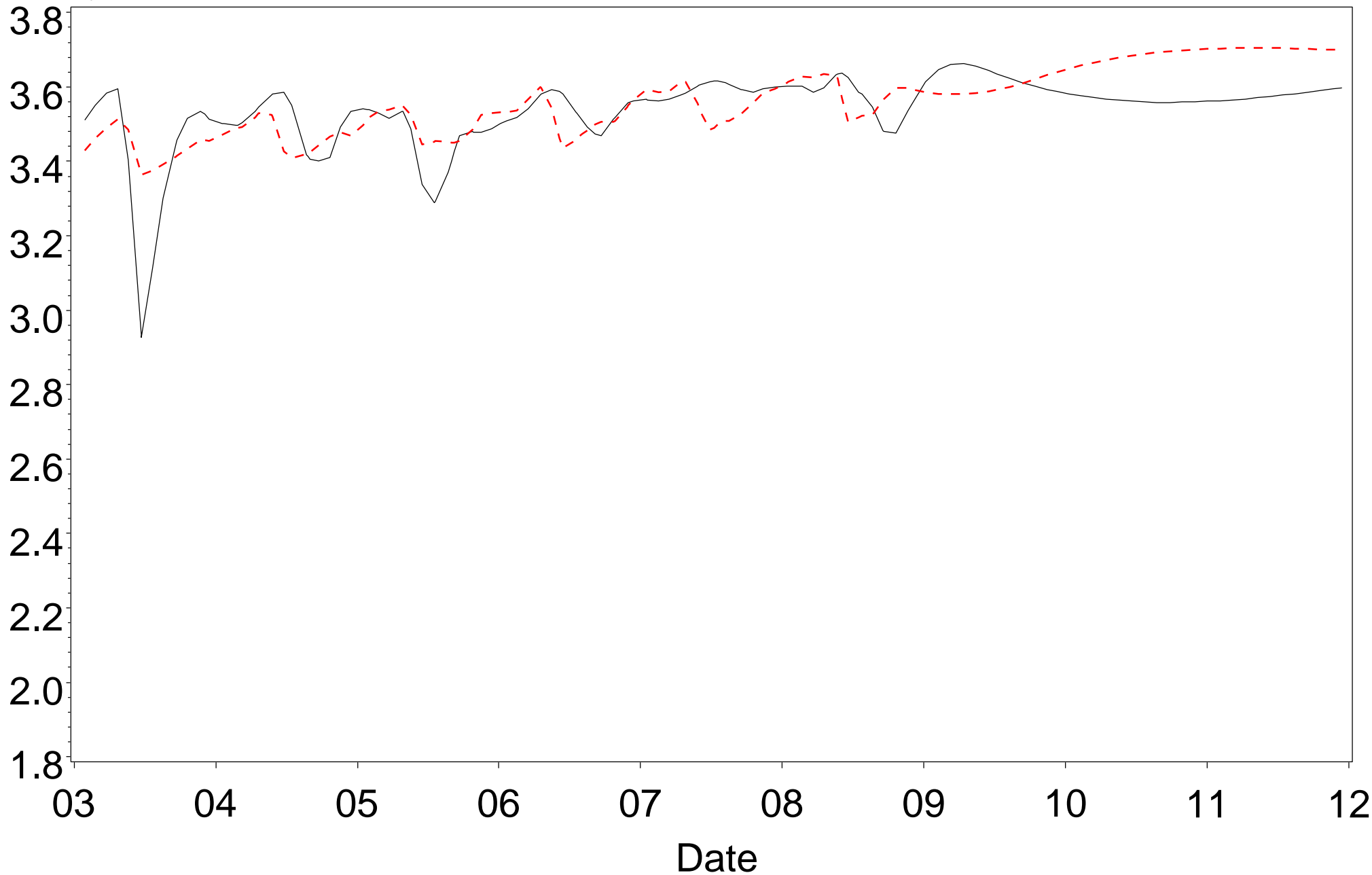
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale

Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1191.92865973	
1	3	-1496.67776884	0.01838889
2	3	-1503.61046388	0.01082799
3	1	-1517.92931556	.
4	2	-1524.77585029	0.00138635
5	2	-1526.43354416	0.00008388
6	1	-1526.52678497	0.00000060
7	1	-1526.52742025	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		1.483E-6	6.875E-6	0.22	0.4146
Variance	Intercept	0.001425	0.000277	5.14	<.0001
SP(POW)	Intercept	0.04840	0.1522	0.32	0.7506
Residual		0.000227	0.000021	10.92	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-1526.5
AIC (smaller is better)	-1518.5
AICC (smaller is better)	-1518.4
BIC (smaller is better)	-1513.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-11.2445	5.1885	22.7	-2.17	0.0410
season	1	-0.09219	0.02130	46.6	-4.33	<.0001
season	2	0.05041	0.02167	57.9	2.33	0.0235
season	3	0.1813	0.02148	57.5	8.44	<.0001
season	4	0.2178	0.02141	57.4	10.17	<.0001
season	5	0.3798	0.02134	57.2	17.80	<.0001
season	6	0.4492	0.02132	57.5	21.07	<.0001
season	7	0.4684	0.02031	58.9	23.06	<.0001
season	8	0.4931	0.02124	57.6	23.21	<.0001
season	9	0.4333	0.02130	58.3	20.35	<.0001
season	10	0.3161	0.02283	58.8	13.84	<.0001
season	11	0.1851	0.02232	44.6	8.29	<.0001
season	12	0	.	.	.	.
date1		0.007074	0.002584	22.7	2.74	0.0118
temp_dev		0.07074	0.001730	160	40.90	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.7	154.49	<.0001
date1	1	22.7	7.49	0.0118
temp_dev	1	160	1672.40	<.0001

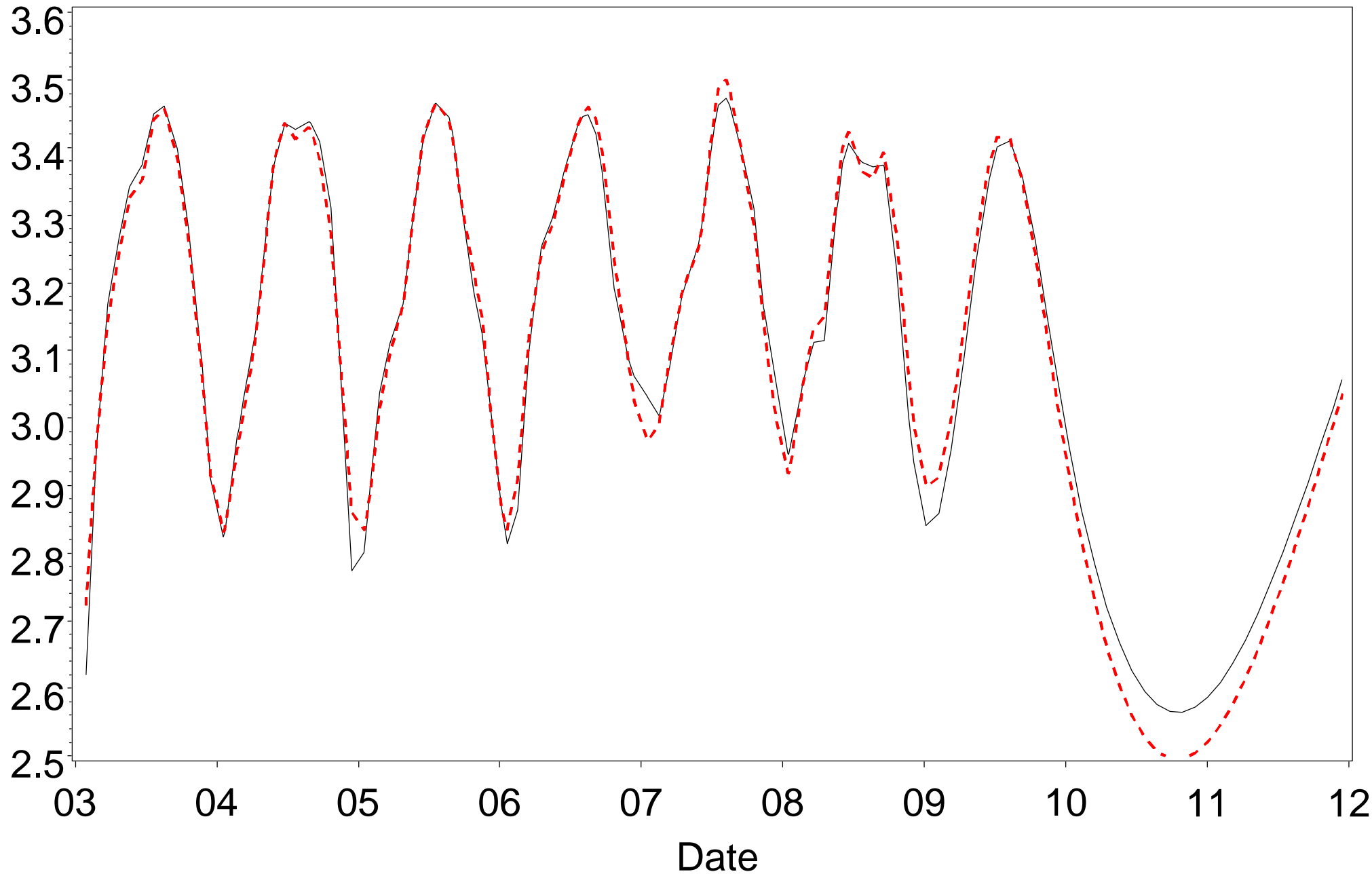
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	321
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	751.33161215	
1	2	503.03597968	0.41466120
2	1	487.58779360	0.08003984
3	1	483.89743339	0.01188770
4	1	483.38384852	0.00023469
5	1	483.37421992	0.00000012
6	1	483.37421490	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01385	0.007547	1.84	0.0332
Variance	Intercept	0.6242	0.1403	4.45	<.0001
SP(POW)	Intercept	0.3879	0.1309	2.96	0.0030
Residual		0.1313	0.01226	10.71	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	483.4
AIC (smaller is better)	491.4
AICC (smaller is better)	491.5
BIC (smaller is better)	496.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-48.7931	137.77	18.6	-0.35	0.7272
season	1	0.1310	0.3903	54.3	0.34	0.7385
season	2	0.2191	0.4370	57.8	0.50	0.6181
season	3	0.1265	0.4519	53.9	0.28	0.7805
season	4	-0.06185	0.4552	50.2	-0.14	0.8925
season	5	0.4914	0.4532	48.5	1.08	0.2836
season	6	-0.1392	0.4490	49.4	-0.31	0.7578
season	7	0.2746	0.4296	49.7	0.64	0.5256
season	8	0.2852	0.4656	54.4	0.61	0.5428
season	9	-0.2415	0.4480	58	-0.54	0.5919
season	10	-0.4622	0.4532	59.6	-1.02	0.3119
season	11	0.2876	0.4013	52.3	0.72	0.4768
season	12	0	.	.	.	.
date1		0.02385	0.06863	18.6	0.35	0.7321
temp_dev		0.03970	0.04358	272	0.91	0.3632

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.8	0.87	0.5718
date1	1	18.6	0.12	0.7321
temp_dev	1	272	0.83	0.3632

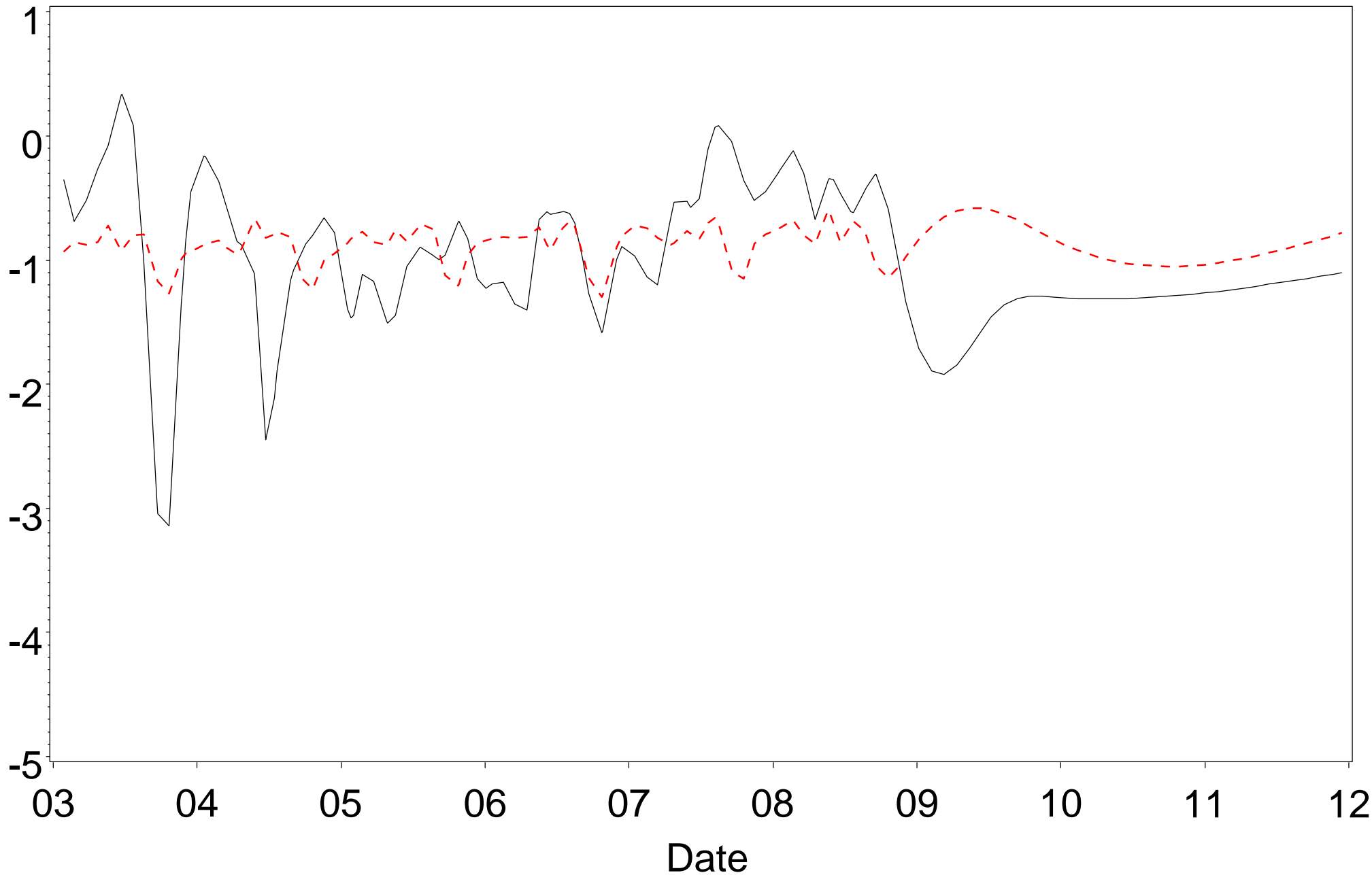
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	328
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	710.88119591	
1	2	498.33309113	0.17777105
2	1	489.84919883	0.04331180
3	2	487.63793152	0.00511821
4	1	487.39361257	0.00006094
5	1	487.39085762	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006747	0.005432	1.24	0.1071
Variance	Intercept	0.4881	0.1128	4.33	<.0001
SP(POW)	Intercept	0.3980	0.1342	2.97	0.0030
Residual		0.1399	0.01288	10.87	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	487.4
AIC (smaller is better)	495.4
AICC (smaller is better)	495.5
BIC (smaller is better)	500.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-24.3748	122.92	17.4	-0.20	0.8451
season	1	0.08816	0.3465	53.8	0.25	0.8001
season	2	0.1618	0.3894	57.5	0.42	0.6793
season	3	0.1663	0.4034	53.7	0.41	0.6818
season	4	-0.09640	0.4061	49.6	-0.24	0.8133
season	5	0.4420	0.4044	47.8	1.09	0.2799
season	6	-0.08357	0.4008	48.7	-0.21	0.8357
season	7	0.2422	0.3845	49.5	0.63	0.5316
season	8	0.2573	0.3968	51.9	0.65	0.5196
season	9	-0.07902	0.4028	59.2	-0.20	0.8451
season	10	-0.4605	0.4039	59.5	-1.14	0.2588
season	11	0.2392	0.3580	52.9	0.67	0.5069
season	12	0	.	.	.	.
date1		0.01171	0.06123	17.4	0.19	0.8506
temp_dev		0.04537	0.04218	245	1.08	0.2832

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.9	0.88	0.5653
date1	1	17.4	0.04	0.8506
temp_dev	1	245	1.16	0.2832

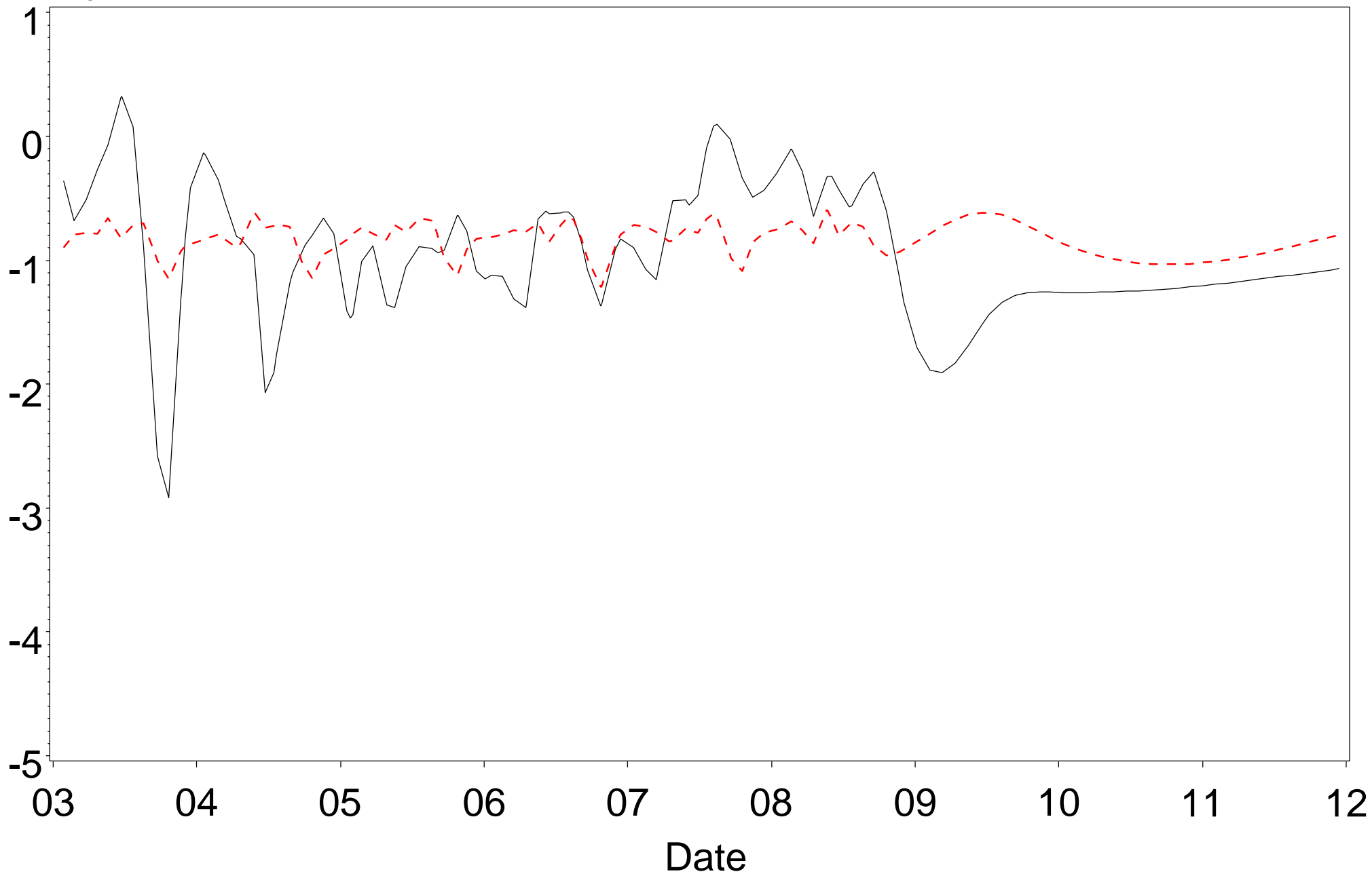
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	329
Number of Observations Not Used	7

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	628.94992202	
1	2	542.60406121	0.18068932
2	2	538.32026587	0.07073375
3	2	536.71160930	0.00721833
4	1	536.55167732	0.00004682
5	1	536.55068047	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.008275	0.007318	1.13	0.1291
Variance	Intercept	0.1984	0.05526	3.59	0.0002
SP(POW)	Intercept	0.5117	0.1309	3.91	<.0001
Residual		0.2028	0.01845	10.99	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	536.6
AIC (smaller is better)	544.6
AICC (smaller is better)	544.7
BIC (smaller is better)	549.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		184.27	90.2548	15.4	2.04	0.0587
season	1	-0.03807	0.2366	64.6	-0.16	0.8727
season	2	-0.1210	0.2636	59.5	-0.46	0.6480
season	3	0.1415	0.2770	57.1	0.51	0.6115
season	4	0.01245	0.2814	52.9	0.04	0.9649
season	5	0.09145	0.2802	50.1	0.33	0.7455
season	6	0.4948	0.2785	50.5	1.78	0.0817
season	7	0.6044	0.2696	53.2	2.24	0.0292
season	8	0.9261	0.2736	54.6	3.39	0.0013
season	9	0.7819	0.2806	64.9	2.79	0.0070
season	10	0.7838	0.2769	65.5	2.83	0.0062
season	11	0.6069	0.2526	74.2	2.40	0.0188
season	12	0	.	.	.	.
date1		-0.09137	0.04496	15.4	-2.03	0.0598
temp_dev		0.1037	0.04030	160	2.57	0.0110

Mixed Model With Local Nugget

The Mixed Procedure

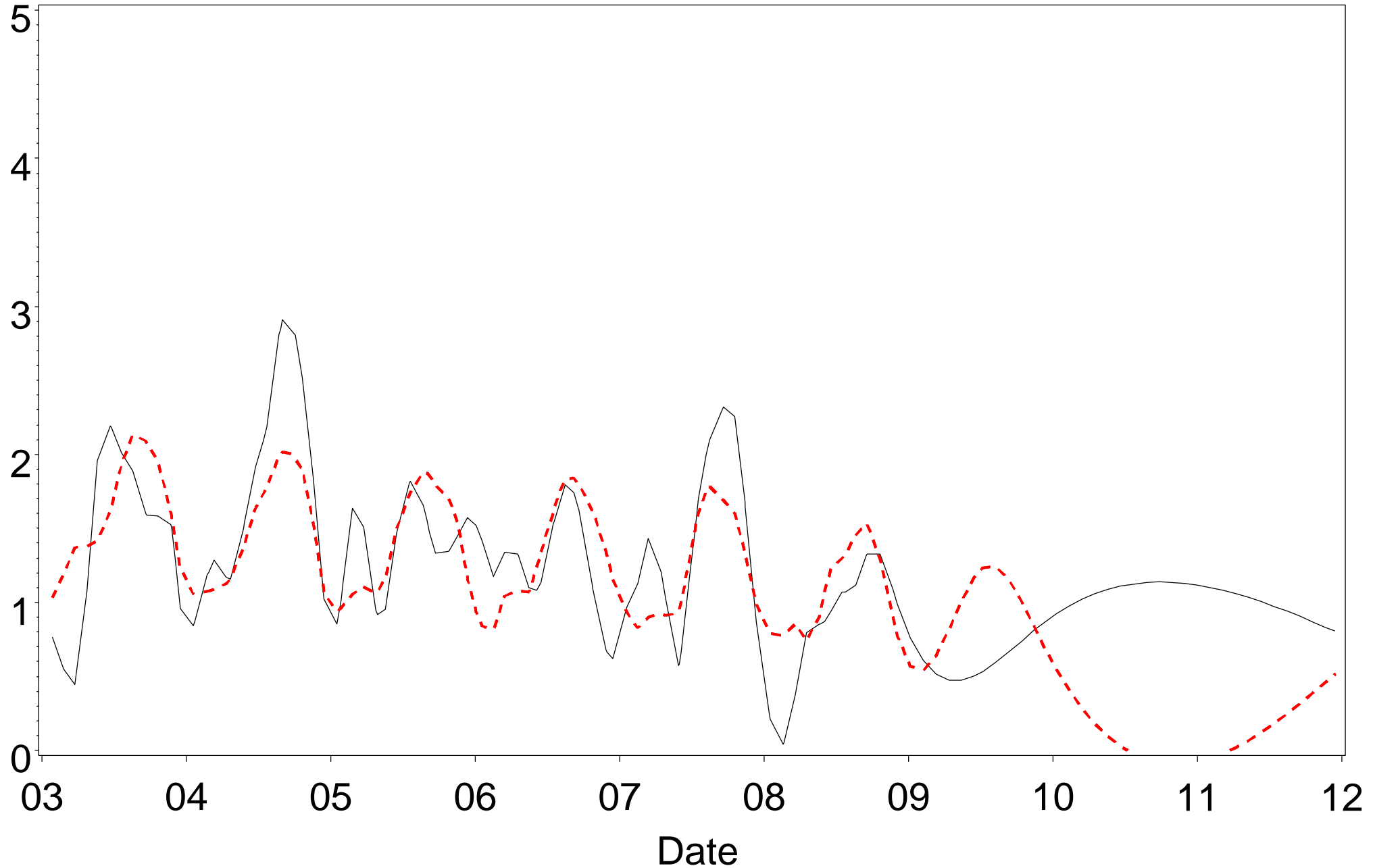
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.4	2.26	0.0235
date1	1	15.4	4.13	0.0598
temp_dev	1	160	6.62	0.0110

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	331
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	906.15903867	
1	4	732.84385877	0.35081876
2	1	701.13001829	0.08586834
3	1	695.05156283	0.02290507
4	2	693.54627488	0.00341563
5	1	693.34290214	0.00005135
6	1	693.34003137	0.00000001
7	1	693.34003072	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.8048	0.2131	3.78	<.0001
SP(POW)	Intercept	0.5532	0.1231	4.50	<.0001
Residual		0.2920	0.02577	11.33	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	693.3
AIC (smaller is better)	699.3
AICC (smaller is better)	699.4
BIC (smaller is better)	703.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		303.48	175.52	13.9	1.73	0.1059
season	1	-0.2769	0.4033	53.1	-0.69	0.4952
season	2	-0.4702	0.4719	55.6	-1.00	0.3233
season	3	-0.1450	0.5027	53.8	-0.29	0.7741
season	4	-0.1920	0.5148	50	-0.37	0.7107
season	5	0.3529	0.5163	47.6	0.68	0.4976
season	6	-0.5807	0.5116	48	-1.13	0.2620
season	7	-0.6363	0.4934	49.9	-1.29	0.2032
season	8	-0.4616	0.4997	52.3	-0.92	0.3599
season	9	-0.2247	0.4966	58.5	-0.45	0.6525
season	10	-0.4770	0.4824	56.8	-0.99	0.3269
season	11	-0.5115	0.4135	53.6	-1.24	0.2215
season	12	0	.	.	.	.
date1		-0.1525	0.08744	13.9	-1.74	0.1033
temp_dev		0.09526	0.05375	242	1.77	0.0776

Mixed Model With Local Nugget

The Mixed Procedure

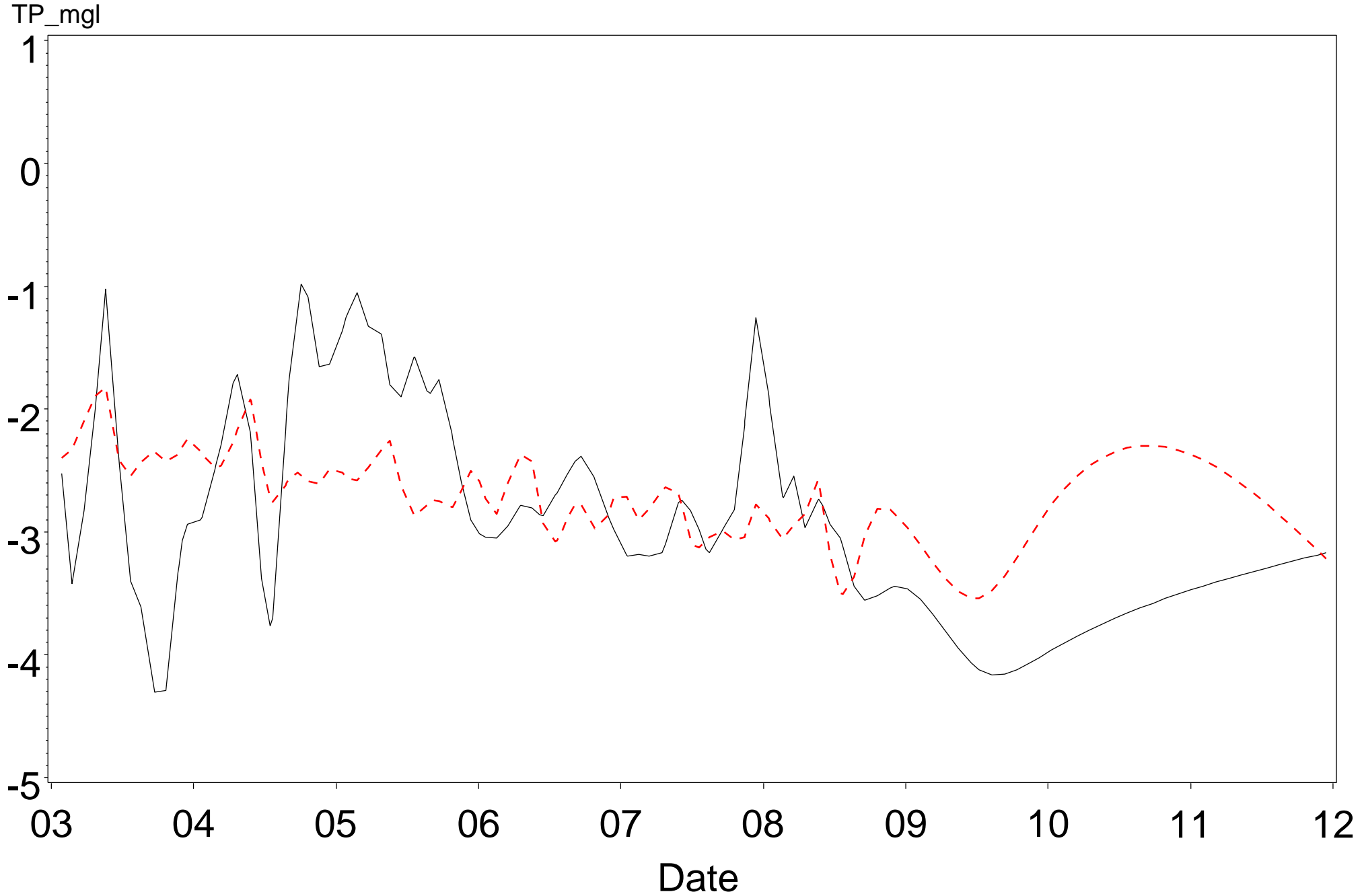
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.8	0.92	0.5317
date1	1	13.9	3.04	0.1033
temp_dev	1	242	3.14	0.0776

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	329
Number of Observations Not Used	7

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	878.87947382	
1	4	710.10572285	.
2	2	709.18980496	0.03308457
3	1	706.70546558	0.00319936
4	1	706.48233903	0.00008785
5	1	706.47660758	0.00000011
6	1	706.47660039	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.009208	0.009294	0.99	0.1609
Variance	Intercept	0.6709	0.1866	3.59	0.0002
SP(POW)	Intercept	0.5564	0.1349	4.13	<.0001
Residual		0.3146	0.02846	11.06	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	706.5
AIC (smaller is better)	714.5
AICC (smaller is better)	714.6
BIC (smaller is better)	719.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-29.9433	162.48	12.2	-0.18	0.8568
season	1	0.6788	0.3818	56.1	1.78	0.0809
season	2	0.6233	0.4421	57.5	1.41	0.1639
season	3	0.05602	0.4699	55	0.12	0.9055
season	4	0.5863	0.4812	50.7	1.22	0.2287
season	5	-0.1552	0.4818	47.8	-0.32	0.7488
season	6	-0.06111	0.4778	48.2	-0.13	0.8988
season	7	-0.2827	0.4602	49.9	-0.61	0.5418
season	8	-0.1369	0.4661	52.8	-0.29	0.7702
season	9	-0.4091	0.4670	61	-0.88	0.3845
season	10	-0.05041	0.4543	59.6	-0.11	0.9120
season	11	0.1110	0.3943	57.4	0.28	0.7793
season	12	0	.	.	.	.
date1		0.01603	0.08095	12.2	0.20	0.8463
temp_dev		-0.07087	0.05611	188	-1.26	0.2082

Mixed Model With Local Nugget

The Mixed Procedure

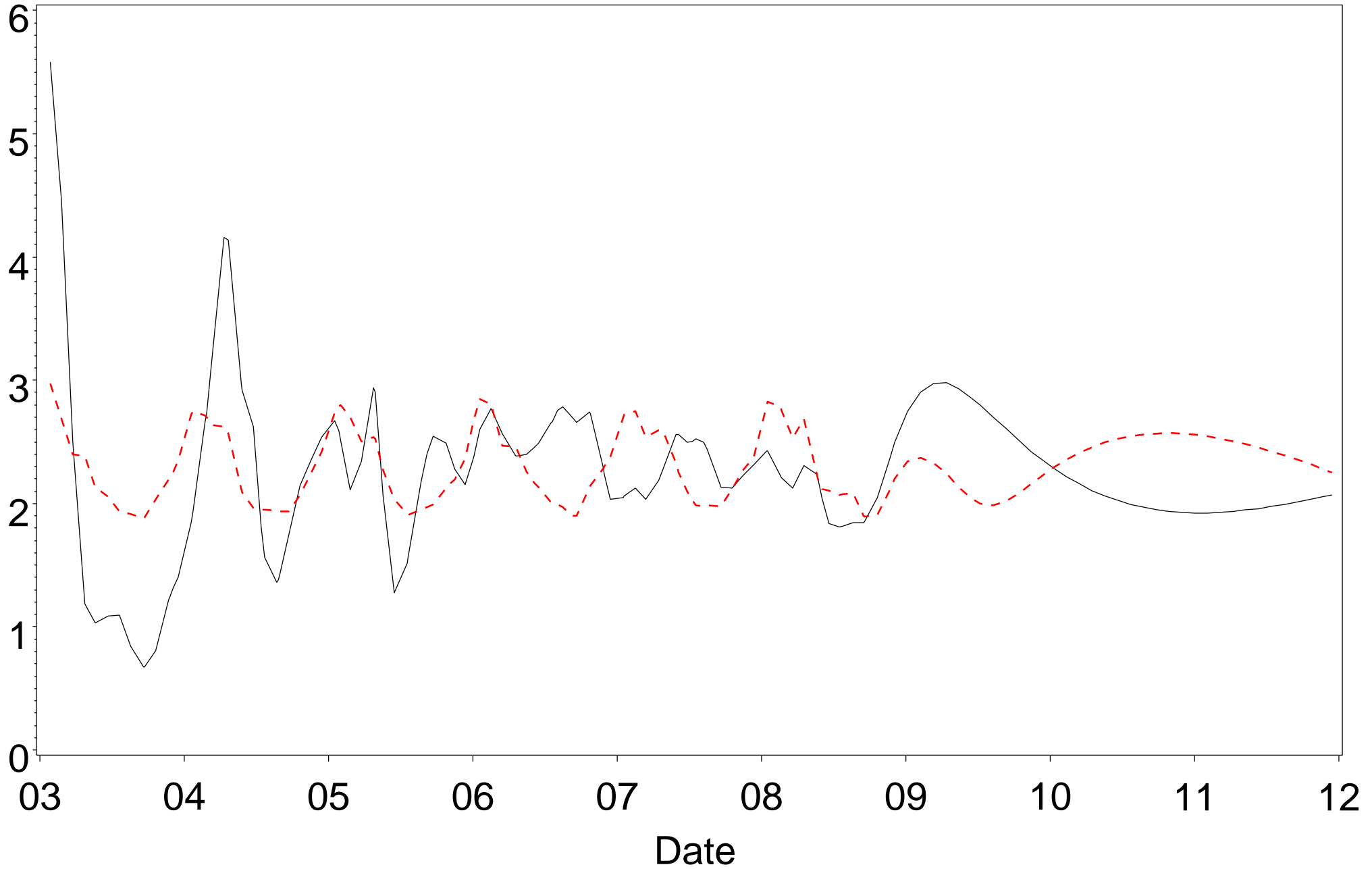
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	48.9	1.16	0.3359
date1	1	12.2	0.04	0.8463
temp_dev	1	188	1.59	0.2082

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface

TSS_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	26	085 086 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 85

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	26
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	331
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	652.65865929	
1	2	558.50533014	0.15112969
2	1	556.36472408	0.01893350
3	1	556.08251849	0.00117648
4	1	556.06634729	0.00000444
5	1	556.06628823	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03003	0.01611	1.86	0.0312
Variance	Intercept	0.2142	0.08213	2.61	0.0045
SP(POW)	Intercept	0.7498	0.1208	6.20	<.0001
Residual		0.2162	0.02003	10.79	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	556.1
AIC (smaller is better)	564.1
AICC (smaller is better)	564.2
BIC (smaller is better)	569.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-124.61	112.56	8.05	-1.11	0.3002
season	1	0.8110	0.2179	66.3	3.72	0.0004
season	2	0.7043	0.2418	45.4	2.91	0.0055
season	3	0.4638	0.2624	44.3	1.77	0.0840
season	4	0.2839	0.2726	43	1.04	0.3036
season	5	0.1956	0.2739	41.6	0.71	0.4792
season	6	0.1107	0.2727	42.2	0.41	0.6869
season	7	0.09723	0.2619	42.4	0.37	0.7123
season	8	0.1047	0.2608	42.2	0.40	0.6900
season	9	-0.3079	0.2670	53.7	-1.15	0.2540
season	10	-0.05892	0.2556	56.2	-0.23	0.8186
season	11	0.2544	0.2306	82.8	1.10	0.2731
season	12	0	.	.	.	.
date1		0.06265	0.05608	8.05	1.12	0.2961
temp_dev		-0.04256	0.03809	113	-1.12	0.2663

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47	2.21	0.0299
date1	1	8.05	1.25	0.2961
temp_dev	1	113	1.25	0.2663

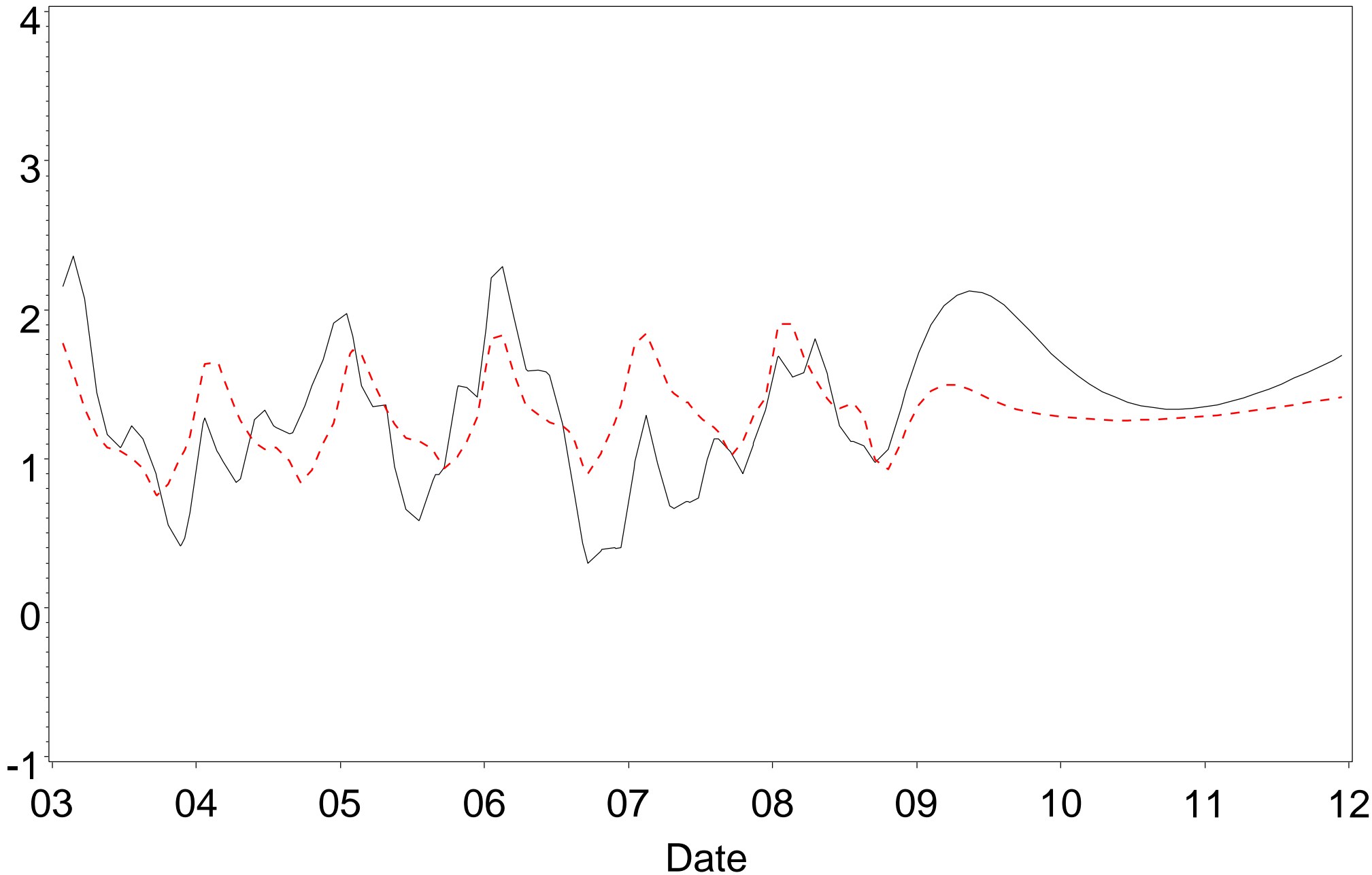
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Lower Lemon Bay

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	338
Number of Observations Not Used	188

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	867.69286509	
1	3	634.16905263	0.24068059
2	1	628.37336949	0.16806627
3	2	627.14982469	0.12300878
4	1	624.92837092	0.00975620
5	1	624.77449731	0.00016091
6	1	624.77210102	0.00000011
7	1	624.77209943	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03607	0.01722	2.10	0.0181
Variance	Intercept	0.5757	0.1482	3.88	<.0001
SP(POW)	Intercept	0.5299	0.1199	4.42	<.0001
Residual		0.2100	0.01918	10.95	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	624.8
AIC (smaller is better)	632.8
AICC (smaller is better)	632.9
BIC (smaller is better)	638.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		50.6291	161.27	11.9	0.31	0.7590
season	1	0.07335	0.3223	45.1	0.23	0.8210
season	2	-0.00033	0.4009	50.4	-0.00	0.9993
season	3	-0.7070	0.4261	50	-1.66	0.1033
season	4	-0.1253	0.4557	48.8	-0.28	0.7844
season	5	0.2957	0.4509	46.9	0.66	0.5152
season	6	1.0750	0.4482	44.7	2.40	0.0207
season	7	1.1107	0.4659	47.3	2.38	0.0212
season	8	0.8108	0.4607	48.8	1.76	0.0847
season	9	1.2678	0.4296	50	2.95	0.0048
season	10	0.6475	0.4030	50.2	1.61	0.1144
season	11	0.07965	0.3420	45.3	0.23	0.8169
season	12	0	.	.	.	.
date1		-0.02487	0.08036	11.9	-0.31	0.7623
temp_dev		0.1012	0.06372	119	1.59	0.1150

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.3	2.60	0.0120
date1	1	11.9	0.10	0.7623
temp_dev	1	119	2.52	0.1150

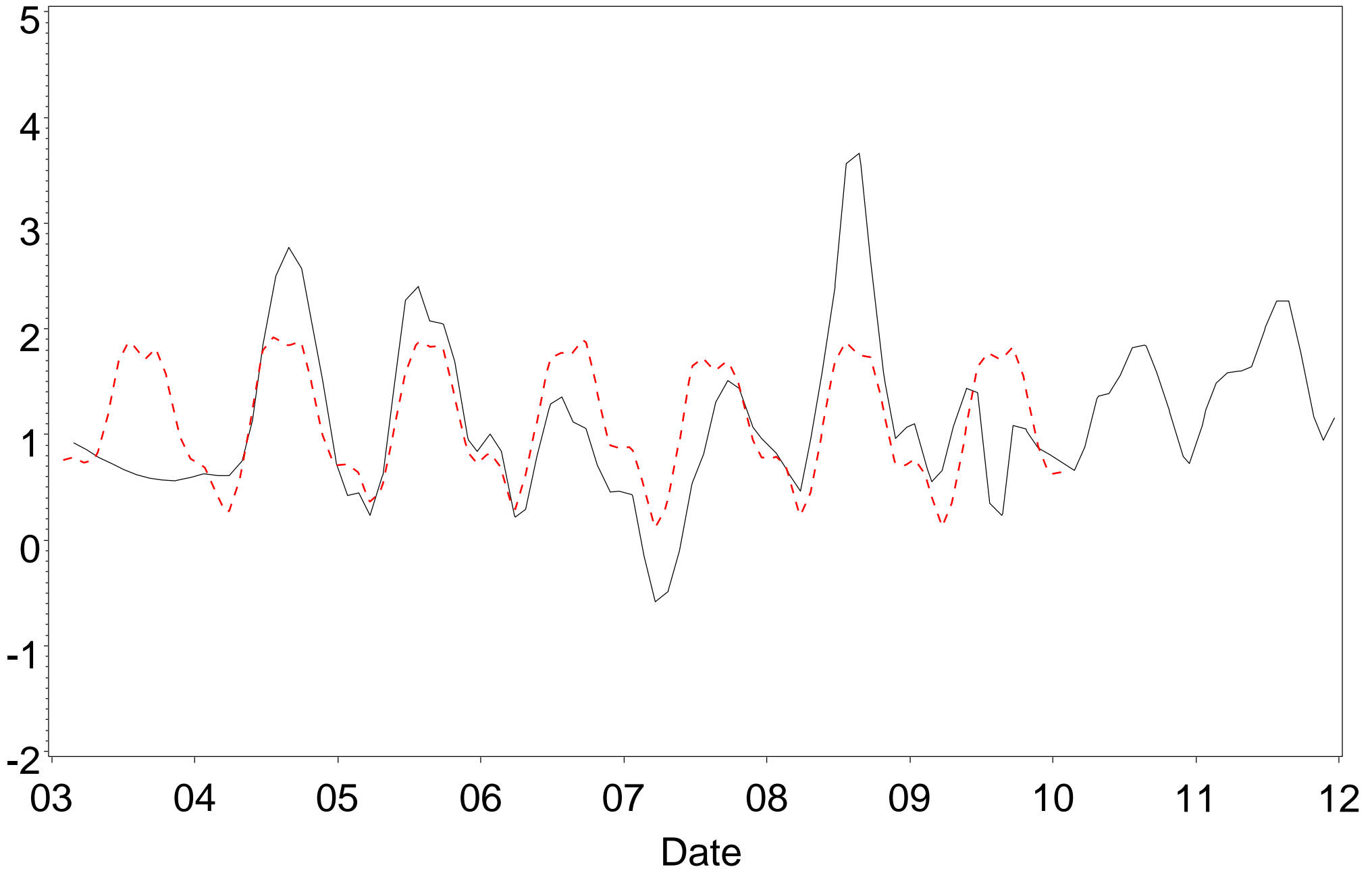
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	385
Number of Observations Not Used	141

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	595.69834050	
1	4	108.44928714	.
2	1	104.52114116	16.53487372
3	1	102.66185496	0.01890223
4	4	101.38272099	0.00112331
5	1	101.01438683	0.00008176
6	1	100.98931494	0.00000067
7	1	100.98911938	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.003134	0.002032	1.54	0.0615
Variance	Intercept	0.2402	0.06088	3.94	<.0001
SP(POW)	Intercept	0.5937	0.1040	5.71	<.0001
Residual		0.03671	0.003138	11.70	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	101.0
AIC (smaller is better)	109.0
AICC (smaller is better)	109.1
BIC (smaller is better)	114.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		75.1302	94.7901	8.96	0.79	0.4485
season	1	-0.09042	0.1962	56.5	-0.46	0.6467
season	2	-0.2614	0.2447	61.6	-1.07	0.2895
season	3	0.03354	0.2637	62.7	0.13	0.8992
season	4	-0.1117	0.2678	59.7	-0.42	0.6780
season	5	-0.1110	0.2727	57.5	-0.41	0.6857
season	6	0.1523	0.2735	56.4	0.56	0.5799
season	7	0.6169	0.2718	57.5	2.27	0.0270
season	8	0.5090	0.2726	61	1.87	0.0666
season	9	0.4947	0.2623	62.9	1.89	0.0639
season	10	0.3687	0.2362	61.2	1.56	0.1237
season	11	0.2881	0.1967	53.8	1.46	0.1488
season	12	0	.	.	.	.
date1		-0.03603	0.04724	8.96	-0.76	0.4653
temp_dev		-0.02310	0.02827	245	-0.82	0.4147

Mixed Model With Local Nugget

The Mixed Procedure

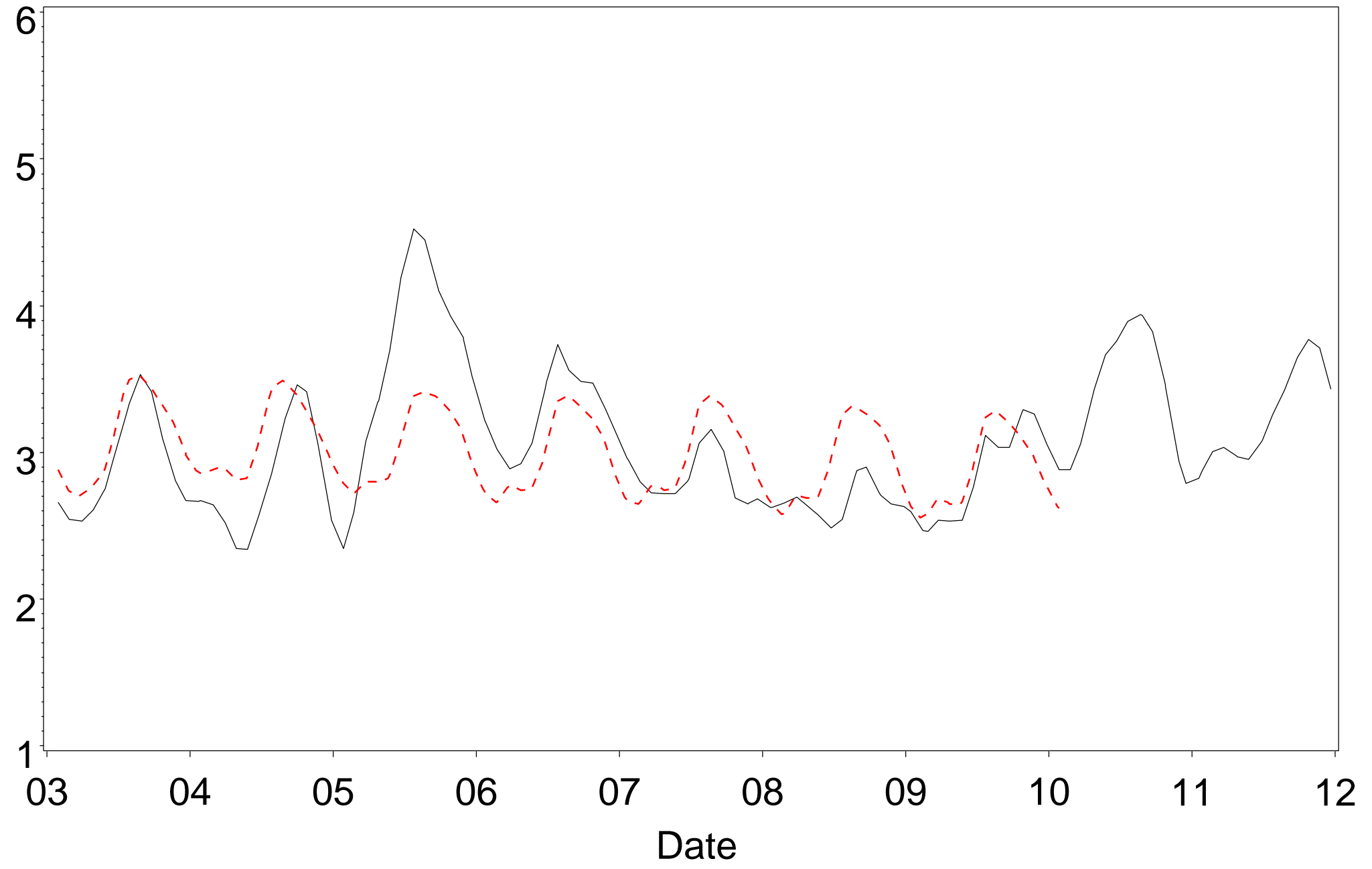
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	54.1	1.70	0.0990
date1	1	8.96	0.58	0.4653
temp_dev	1	245	0.67	0.4147

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
COLOR

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	409
Number of Observations Not Used	117

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	174.06419934	
1	3	-200.31686772	0.07273080
2	1	-241.12115630	0.01551310
3	1	-250.27161414	0.00764757
4	2	-253.40182517	0.00711811
5	1	-257.50044310	0.00091668
6	1	-257.99142563	0.00002056
7	1	-258.00168871	0.00000001
8	1	-258.00169387	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002447	0.001079	2.27	0.0117
Variance	Intercept	0.07185	0.01573	4.57	<.0001
SP(POW)	Intercept	0.4636	0.1137	4.08	<.0001
Residual		0.01454	0.001191	12.22	<.0001

Fit Statistics	
-2 Res Log Likelihood	-258.0
AIC (smaller is better)	-250.0
AICC (smaller is better)	-249.9
BIC (smaller is better)	-244.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-163.75	44.8816	11.9	-3.65	0.0034
season	1	-0.00154	0.1089	58	-0.01	0.9887
season	2	0.05067	0.1376	66.2	0.37	0.7138
season	3	0.01212	0.1455	64.2	0.08	0.9339
season	4	0.06024	0.1445	57.7	0.42	0.6783
season	5	0.07836	0.1456	54.4	0.54	0.5927
season	6	-0.1167	0.1458	53.4	-0.80	0.4269
season	7	-0.4440	0.1454	54.7	-3.05	0.0035

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.6572	0.1441	58.5	-4.56	<.0001
season	9	-0.4963	0.1404	63.7	-3.53	0.0008
season	10	-0.2496	0.1317	65.9	-1.89	0.0625
season	11	-0.1321	0.1100	55.3	-1.20	0.2349
season	12	0	.	.	.	.
date1		0.08690	0.02237	11.9	3.89	0.0022
temp_dev		-0.04475	0.01757	258	-2.55	0.0114

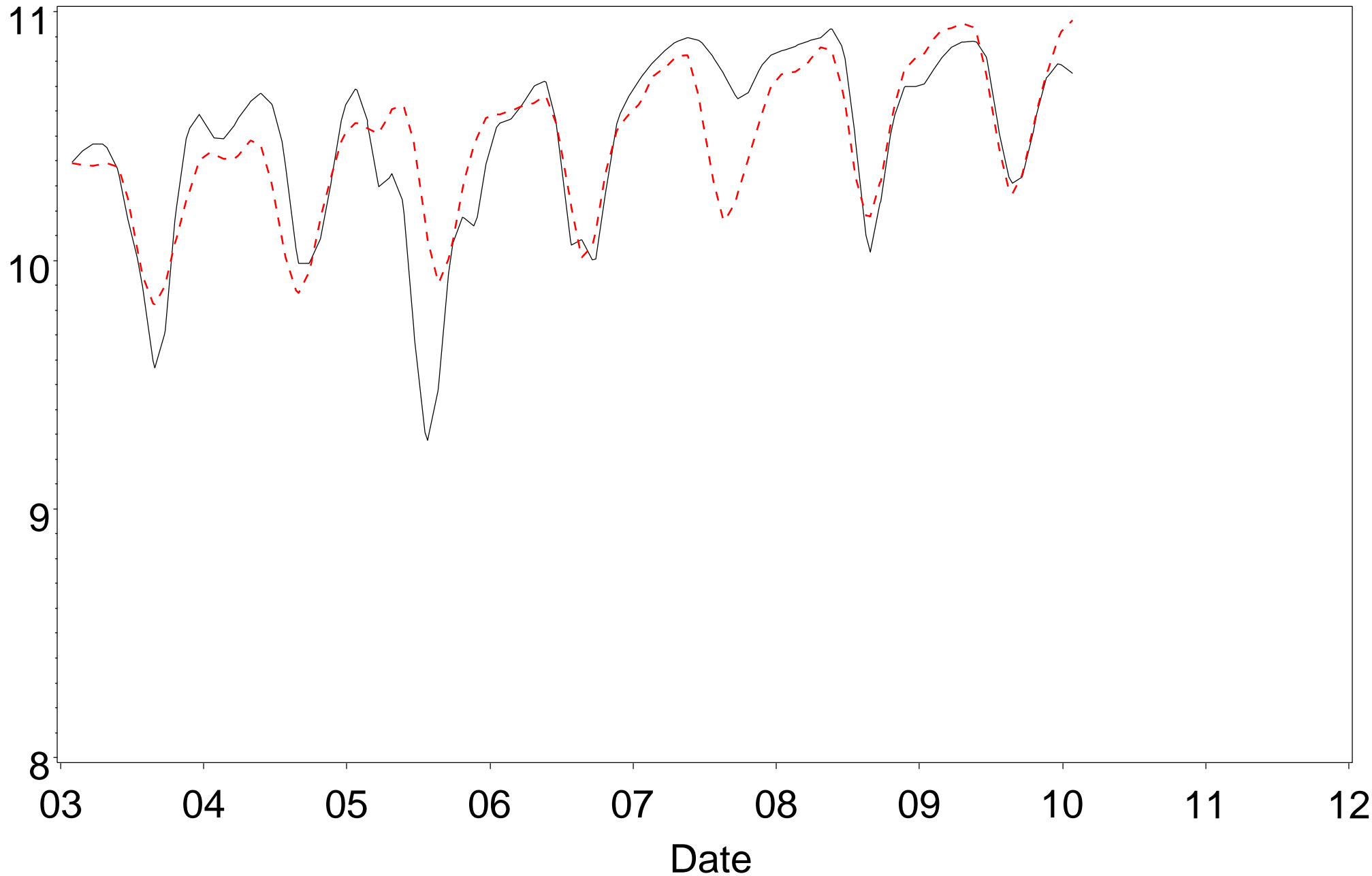
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.8	3.61	0.0007
date1	1	11.9	15.10	0.0022
temp_dev	1	258	6.49	0.0114

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
COND

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	407
Number of Observations Not Used	119

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1181.90549913	
1	3	1067.24039121	4.93615149
2	2	1058.10377567	0.49021727
3	2	1051.57529179	0.00767791
4	2	1050.24009434	0.00009816
5	1	1050.22365578	0.00000012
6	1	1050.22363551	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1369	0.05143	2.66	0.0039
Variance	Intercept	0.5110	0.1198	4.27	<.0001
SP(POW)	Intercept	0.08957	0.1425	0.63	0.5297
Residual		0.4859	0.04062	11.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1050.2
AIC (smaller is better)	1058.2
AICC (smaller is better)	1058.3
BIC (smaller is better)	1063.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		207.24	91.2629	21.3	2.27	0.0337
season	1	-0.4177	0.3945	43.8	-1.06	0.2955
season	2	-0.5852	0.4398	54	-1.33	0.1889
season	3	-0.4140	0.4375	53.6	-0.95	0.3482
season	4	-0.9687	0.4200	53.3	-2.31	0.0250
season	5	-1.5812	0.4203	53.7	-3.76	0.0004
season	6	-2.4200	0.4200	53.6	-5.76	<.0001
season	7	-2.6326	0.4199	53.7	-6.27	<.0001
season	8	-2.5192	0.4257	55.5	-5.92	<.0001
season	9	-2.4608	0.4199	53.6	-5.86	<.0001
season	10	-1.4518	0.4212	53.9	-3.45	0.0011
season	11	-0.9057	0.4040	41.4	-2.24	0.0304
season	12	0	.	.	.	.
date1		-0.09963	0.04547	21.3	-2.19	0.0397
temp_dev		-0.06667	0.07716	118	-0.86	0.3893

Mixed Model With Local Nugget

The Mixed Procedure

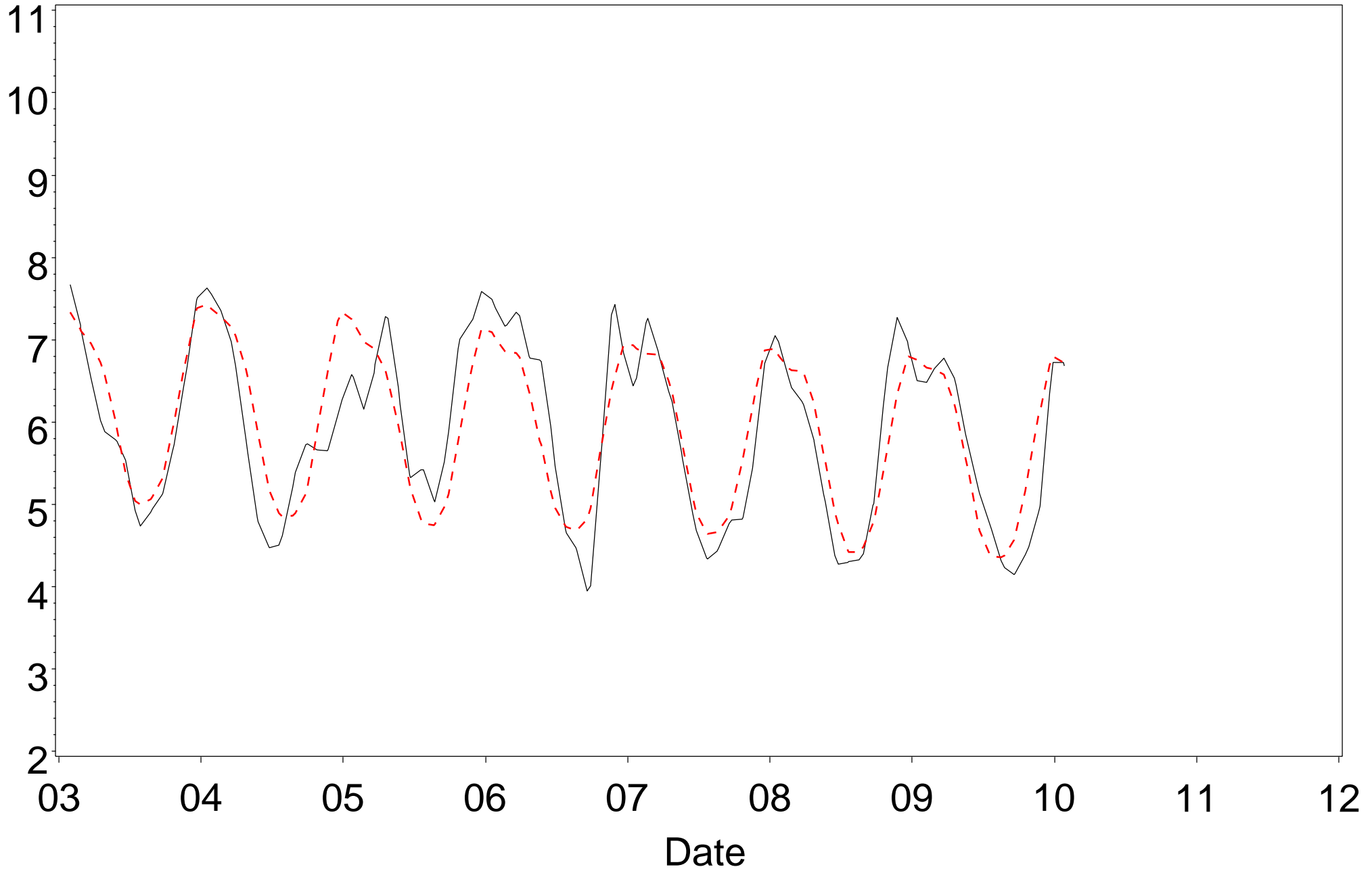
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	45.5	9.02	<.0001
date1	1	21.3	4.80	0.0397
temp_dev	1	118	0.75	0.3893

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
DO_mgl

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	401
Number of Observations Not Used	125

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	311.01359893	
1	4	-118.94171822	0.10451653
2	1	-172.53332802	.
3	1	-187.90431236	0.01239130
4	2	-195.51132088	0.01211686
5	2	-202.39613167	0.00397705
6	1	-204.47481405	0.00027288
7	1	-204.60575923	0.00000167
8	1	-204.60652914	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000184	0.000383	0.48	0.3158
Variance	Intercept	0.1119	0.02078	5.38	<.0001
SP(POW)	Intercept	0.2231	0.1306	1.71	0.0877
Residual		0.01596	0.001309	12.19	<.0001

Fit Statistics	
-2 Res Log Likelihood	-204.6
AIC (smaller is better)	-196.6
AICC (smaller is better)	-196.5
BIC (smaller is better)	-191.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		21.9268	44.8398	17.2	0.49	0.6310
season	1	-0.1557	0.1660	54.1	-0.94	0.3525
season	2	-0.2707	0.1932	68.6	-1.40	0.1657
season	3	-0.2693	0.1953	67	-1.38	0.1725
season	4	-0.2735	0.1887	64.4	-1.45	0.1521
season	5	-0.2732	0.1886	63.9	-1.45	0.1525
season	6	-0.04320	0.1886	63.8	-0.23	0.8195
season	7	0.09177	0.1886	63.9	0.49	0.6282

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.2710	0.1888	64.8	-1.44	0.1561
season	9	-0.00302	0.1886	66.6	-0.02	0.9873
season	10	-0.2673	0.1860	68.6	-1.44	0.1552
season	11	-0.00493	0.1693	51	-0.03	0.9769
season	12	0	.	.	.	.
date1		-0.01263	0.02235	17.2	-0.57	0.5792
temp_dev		-0.01270	0.01928	331	-0.66	0.5105

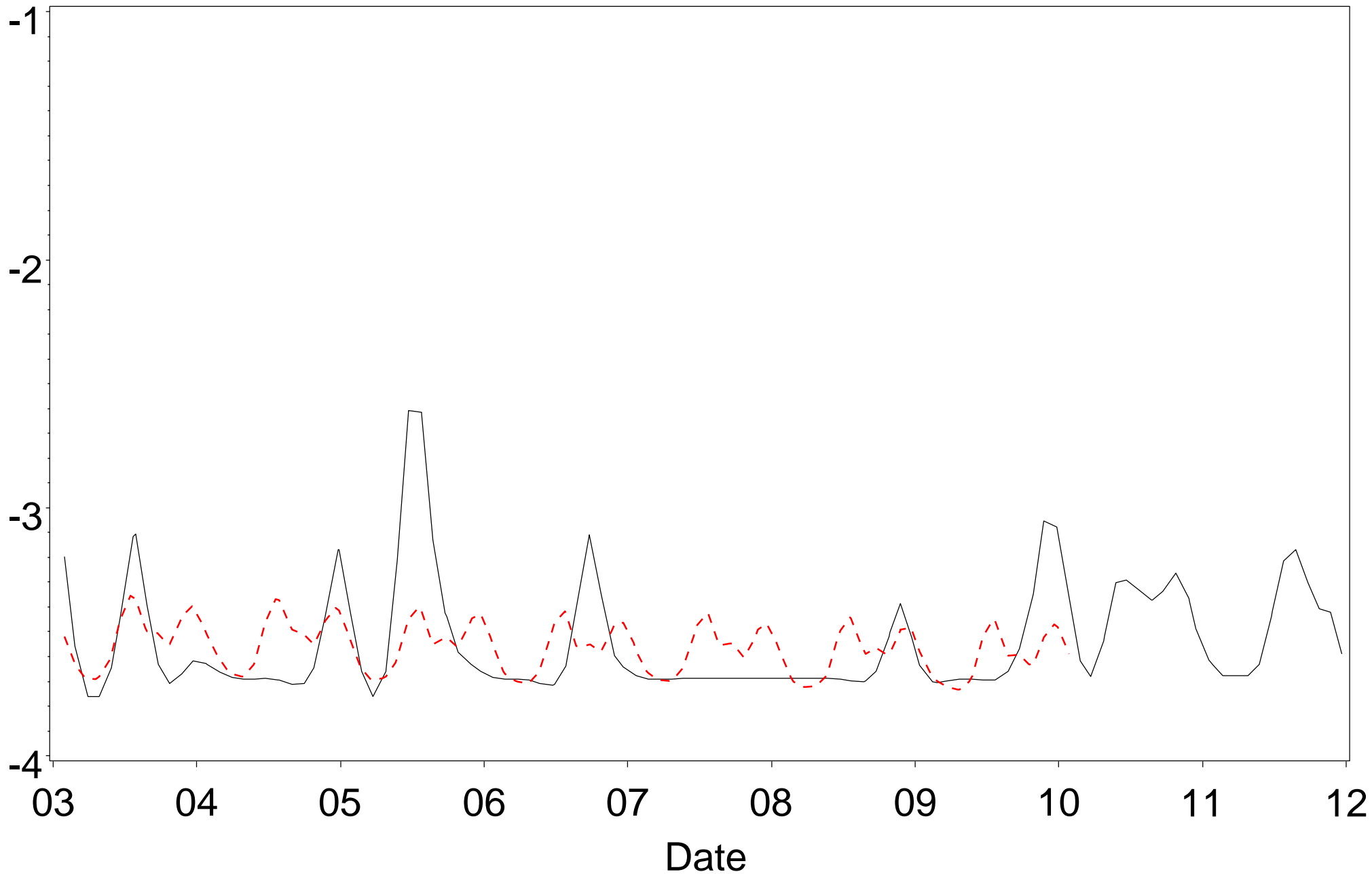
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.2	1.30	0.2500
date1	1	17.2	0.32	0.5792
temp_dev	1	331	0.43	0.5105

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale Parameter = Dissolved Orthophosphate (mg/L) and Sample Level = Surface

DPO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	208
Number of Observations Not Used	318

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1046.20335890	
1	4	1046.20335890	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	1.29E-17	.	.	.
SP(POW)	Intercept	0.8636	1.3199E8	0.00	1.0000
Residual		10.1782	1.0334	9.85	<.0001

Fit Statistics	
-2 Res Log Likelihood	1046.2
AIC (smaller is better)	1050.2
AICC (smaller is better)	1050.3
BIC (smaller is better)	1052.9

Mixed Model With Local Nugget

The Mixed Procedure

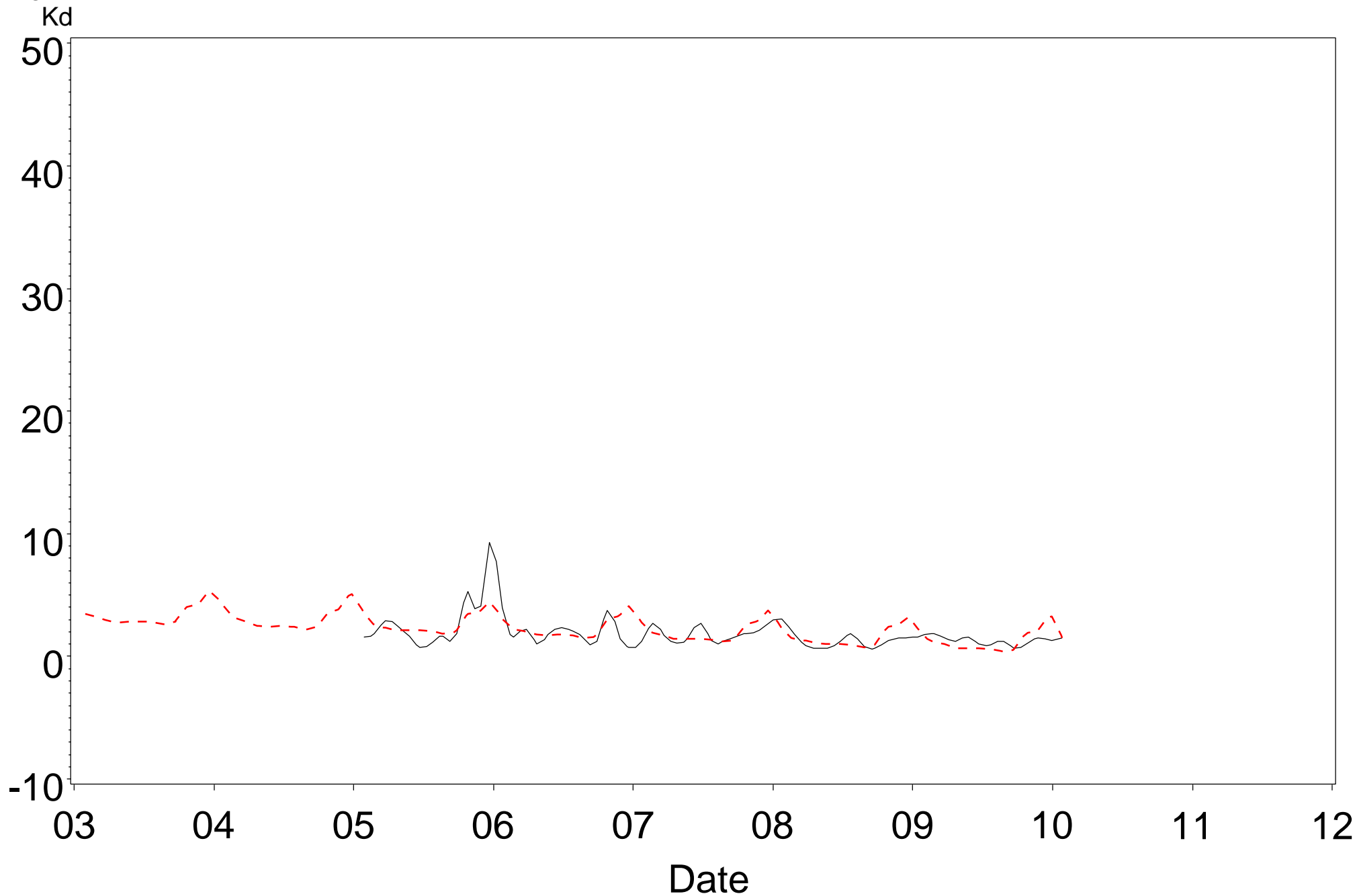
Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		729.74	0	0	.	.
season	1	-3.7144	1.3160	194	-2.82	0.0053
season	2	-3.8161	1.5377	194	-2.48	0.0139
season	3	-3.7784	1.5302	194	-2.47	0.0144
season	4	-4.3685	1.4889	194	-2.93	0.0037
season	5	-4.1342	1.4763	194	-2.80	0.0056
season	6	-4.1370	1.6777	194	-2.47	0.0145
season	7	-4.1694	1.4775	194	-2.82	0.0053
season	8	-4.1288	1.5586	194	-2.65	0.0087
season	9	-4.7852	1.3956	194	-3.43	0.0007
season	10	-1.6735	1.4715	194	-1.14	0.2568
season	11	-3.9538	1.2735	194	-3.10	0.0022
season	12	0	.	.	.	.
date1		-0.3608	0	0	.	.
temp_dev		-0.02283	0.2826	194	-0.08	0.9357

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	194	1.78	0.0591
date1	1	194	Infty	<.0001
temp_dev	1	194	0.01	0.9357

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	401
Number of Observations Not Used	125

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	296.88427538	
1	2	163.47634666	0.02027919
2	2	160.27951164	0.01463075
3	3	155.73766574	.
4	1	155.63102062	0.00001046
5	1	155.62806910	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000028	0.001188	0.02	0.4905
Variance	Intercept	0.06153	0.01394	4.42	<.0001
SP(POW)	Intercept	0.3774	0.1553	2.43	0.0151
Residual		0.05582	0.004570	12.21	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	155.6
AIC (smaller is better)	163.6
AICC (smaller is better)	163.7
BIC (smaller is better)	169.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-130.45	39.3900	12.4	-3.31	0.0059
season	1	0.03697	0.1250	45.8	0.30	0.7688
season	2	-0.01260	0.1484	56.6	-0.08	0.9326
season	3	0.1870	0.1528	60.9	1.22	0.2256
season	4	0.08191	0.1494	60.3	0.55	0.5855
season	5	0.2004	0.1498	59.6	1.34	0.1860
season	6	0.08342	0.1497	59.1	0.56	0.5794
season	7	0.04698	0.1496	59.5	0.31	0.7546
season	8	0.3162	0.1497	61.2	2.11	0.0388
season	9	-0.00263	0.1478	60.9	-0.02	0.9858
season	10	0.1323	0.1426	55.7	0.93	0.3575
season	11	0.01026	0.1258	41.5	0.08	0.9354
season	12	0	.	.	.	.
date1		0.06353	0.01963	12.4	3.24	0.0069
temp_dev		0.04096	0.02445	120	1.67	0.0965

Mixed Model With Local Nugget

The Mixed Procedure

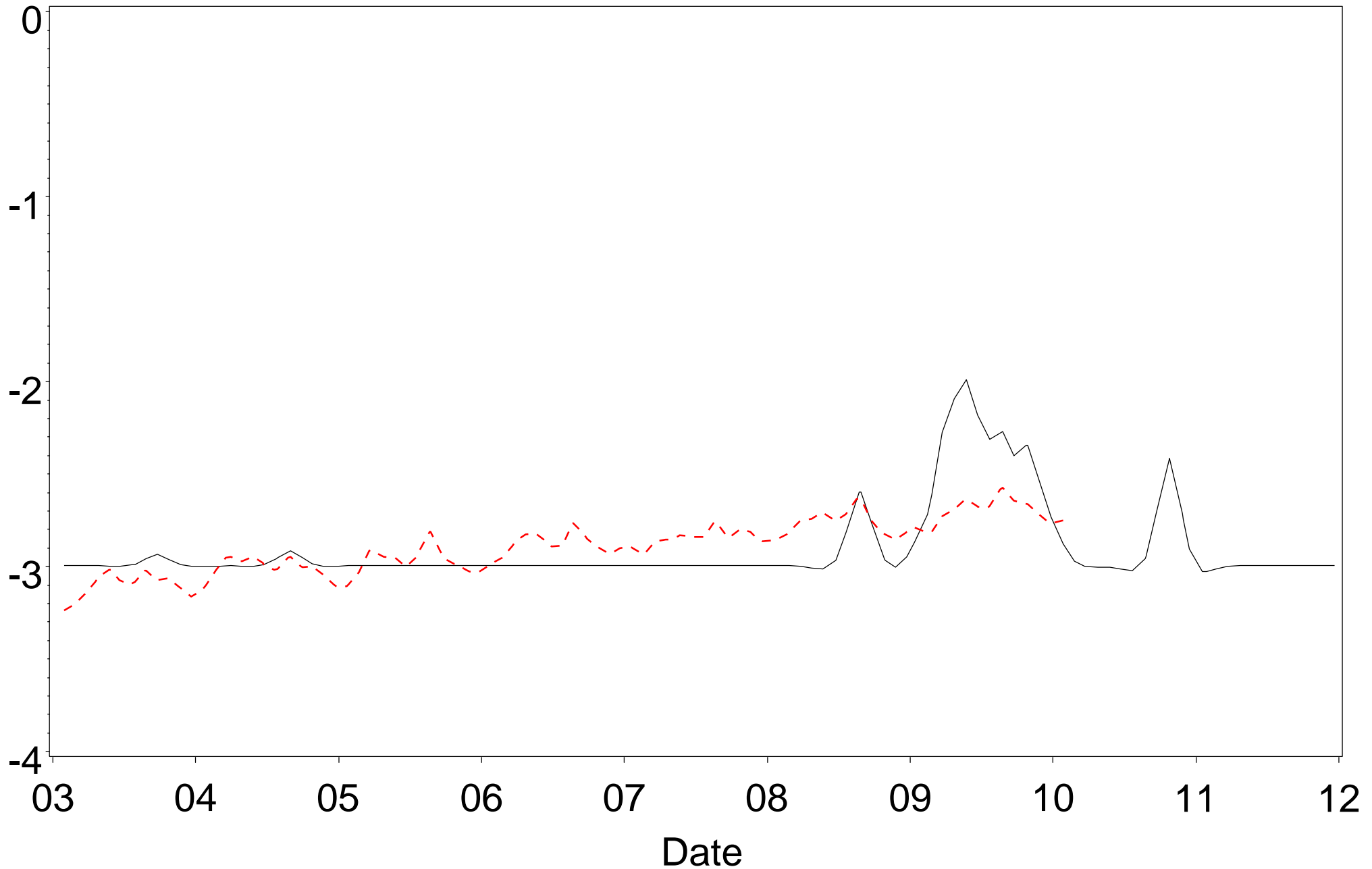
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	46.5	1.31	0.2497
date1	1	12.4	10.47	0.0069
temp_dev	1	120	2.81	0.0965

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	395
Number of Observations Not Used	131

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1142.04759530	
1	4	602.42500148	135.63357992
2	2	601.74022831	0.00715690
3	1	601.34954854	0.00141198
4	2	601.27526703	0.00086611
5	1	601.22198039	0.00049370
6	2	601.20260211	0.00041719
7	1	601.17875584	0.00021816
8	4	601.17108368	0.00010928
9	1	601.16400160	0.00007172
10	1	601.15938161	0.00004802
11	1	601.15625152	0.00003280
12	1	601.15415113	0.00002273
13	1	601.15265614	0.00001604
14	1	601.15165674	0.00001150
15	1	601.15089406	0.00000846
16	1	601.15043537	0.00000685
17	1	601.15000189	0.00000541

Mixed Model With Local Nugget

The Mixed Procedure

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
18	2	601.14980684	0.00000327
19	1	601.14959597	0.00000234
20	1	601.14944233	0.00000167
21	1	601.14933589	0.00000119
22	1	601.14925747	0.00000084
23	1	601.14920727	0.00000059
24	1	601.14916862	0.00000041
25	1	601.14914998	0.00000034
26	1	601.14913009	0.00000019
27	2	601.14912338	0.00000009
28	1	601.14911793	0.00000004
29	1	601.14911537	0.00000002
30	1	601.14911444	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	7.3706	95.8679	0.08	0.4694
SP(POW)	Intercept	0.9925	0.09713	10.22	<.0001
Residual		0.1894	0.01516	12.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	601.1
AIC (smaller is better)	607.1
AICC (smaller is better)	607.2
BIC (smaller is better)	611.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-98.5840	9556.01	1	-0.01	0.9934
season	1	0.1052	1.7607	80.8	0.06	0.9525
season	2	0.004148	2.2538	56.9	0.00	0.9985
season	3	0.008330	2.5595	47.9	0.00	0.9974
season	4	0.03508	2.7662	44.9	0.01	0.9899
season	5	0.1517	2.8435	42.1	0.05	0.9577
season	6	-0.07201	2.8820	41.3	-0.02	0.9802
season	7	-0.2268	2.8426	41.8	-0.08	0.9368
season	8	0.2066	2.7229	44	0.08	0.9399
season	9	0.1124	2.5075	46.8	0.04	0.9644
season	10	-0.1052	2.1729	55.5	-0.05	0.9616
season	11	0.1922	1.6450	82.6	0.12	0.9073
season	12	0	.	.	.	.
date1		0.04744	4.7624	1	0.01	0.9937
temp_dev		0.03062	0.3039	135	0.10	0.9199

Mixed Model With Local Nugget

The Mixed Procedure

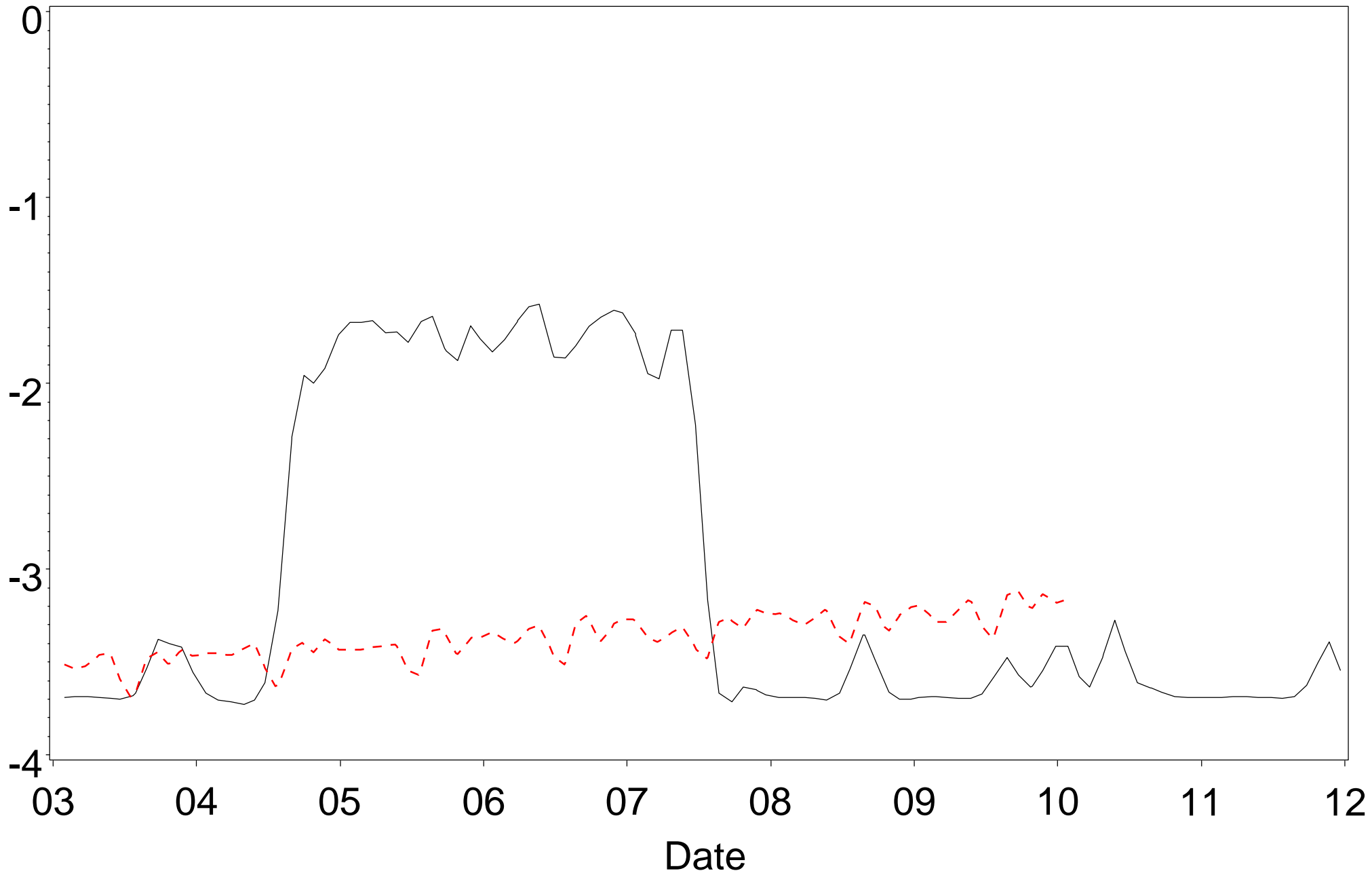
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.3	0.02	1.0000
date1	1	1	0.00	0.9937
temp_dev	1	135	0.01	0.9199

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

Log Scale
NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	399
Number of Observations Not Used	127

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	389.42098193	
1	2	-86.34726987	0.04172786
2	1	-106.73089745	0.01129642
3	1	-112.57892490	0.00678583
4	2	-114.96846830	0.00317787
5	1	-116.44438887	0.00017389
6	1	-116.51909505	0.00000082
7	1	-116.51943535	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.1654	0.03730	4.43	<.0001
SP(POW)	Intercept	0.4260	0.1336	3.19	0.0014
Residual		0.02022	0.001619	12.49	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-116.5
AIC (smaller is better)	-110.5
AICC (smaller is better)	-110.5
BIC (smaller is better)	-106.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-92.0066	64.4183	9.76	-1.43	0.1844
season	1	0.1015	0.1680	50.8	0.60	0.5484
season	2	0.04248	0.2116	62.1	0.20	0.8415
season	3	0.2145	0.2222	59.2	0.97	0.3384
season	4	-0.01633	0.2192	51.9	-0.07	0.9409
season	5	0.01302	0.2202	48.5	0.06	0.9531
season	6	0.1554	0.2202	47.5	0.71	0.4838
season	7	0.005011	0.2277	50.6	0.02	0.9825
season	8	-0.07562	0.2264	54.2	-0.33	0.7397
season	9	-0.4056	0.2143	58.6	-1.89	0.0633
season	10	-0.04913	0.2026	62	-0.24	0.8092
season	11	-0.1423	0.1700	48.1	-0.84	0.4069
season	12	0	.	.	.	.
date1		0.04977	0.03210	9.76	1.55	0.1528
temp_dev		0.04320	0.02195	347	1.97	0.0498

Mixed Model With Local Nugget

The Mixed Procedure

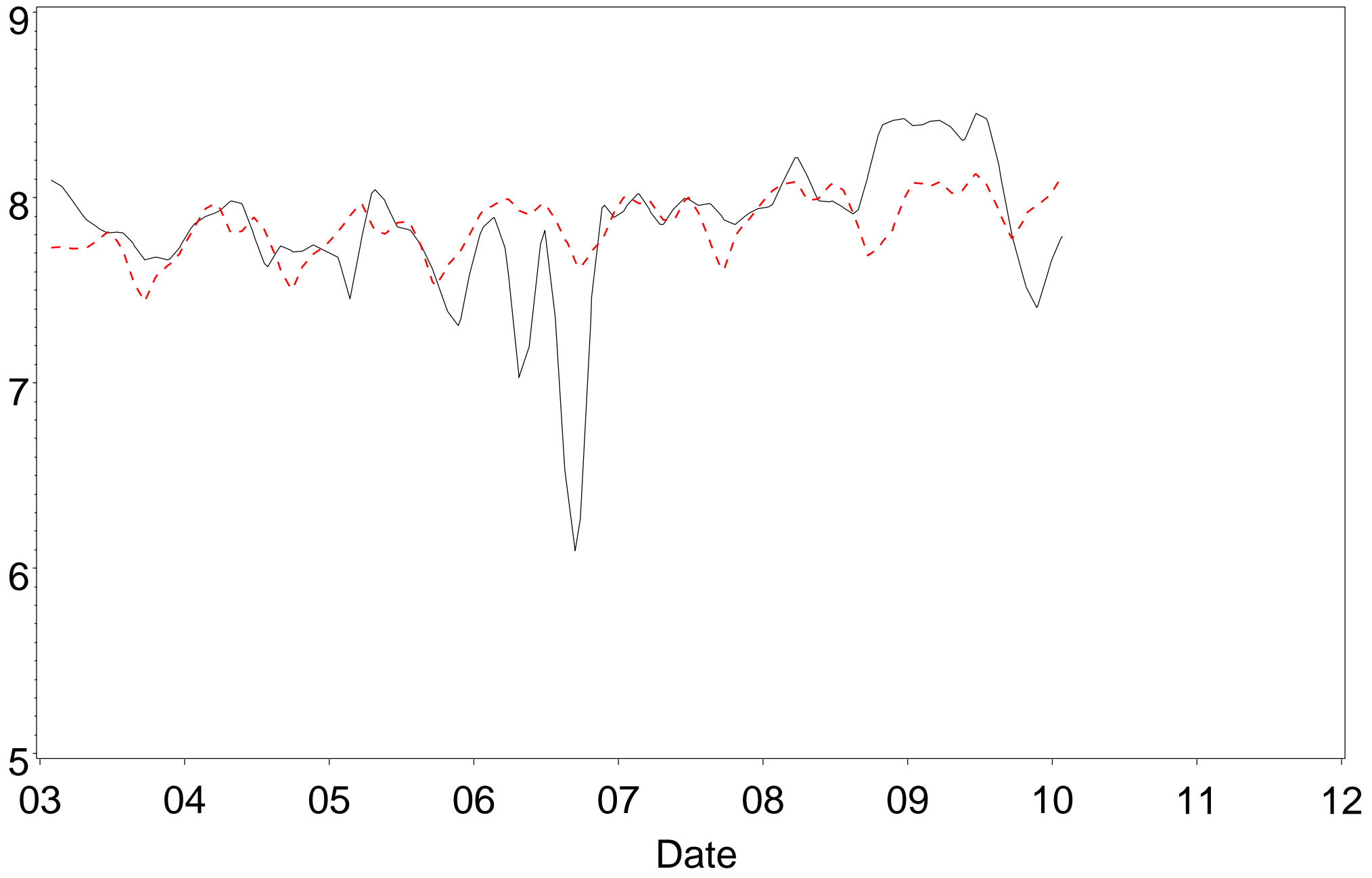
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	49.5	1.12	0.3673
date1	1	9.76	2.40	0.1528
temp_dev	1	347	3.87	0.0498

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Parameter = pH (SU) and Sample Level = Surface

Log Scale
PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	408
Number of Observations Not Used	118

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	246.54542456	
1	3	-131.96878151	0.07394979
2	1	-170.32378629	0.01586667
3	1	-179.00478244	0.00851614
4	2	-181.90573344	0.00788082
5	1	-186.10242036	0.00100583
6	1	-186.60143964	0.00002286
7	1	-186.61200156	0.00000001
8	1	-186.61200688	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.003139	0.001361	2.31	0.0106
Variance	Intercept	0.08643	0.01889	4.57	<.0001
SP(POW)	Intercept	0.4616	0.1139	4.05	<.0001
Residual		0.01729	0.001418	12.19	<.0001

Fit Statistics	
-2 Res Log Likelihood	-186.6
AIC (smaller is better)	-178.6
AICC (smaller is better)	-178.5
BIC (smaller is better)	-173.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-187.94	49.1194	11.9	-3.83	0.0024
season	1	0.000525	0.1196	57.9	0.00	0.9965
season	2	0.05932	0.1510	66.2	0.39	0.6957
season	3	0.01952	0.1597	64.1	0.12	0.9031
season	4	0.07147	0.1585	57.7	0.45	0.6538
season	5	0.09635	0.1598	54.5	0.60	0.5490
season	6	-0.1252	0.1599	53.4	-0.78	0.4371
season	7	-0.4804	0.1594	54.7	-3.01	0.0039

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.7172	0.1580	58.5	-4.54	<.0001
season	9	-0.5461	0.1540	63.6	-3.55	0.0007
season	10	-0.2719	0.1446	65.8	-1.88	0.0645
season	11	-0.1436	0.1208	55.2	-1.19	0.2396
season	12	0	.	.	.	.
date1		0.09529	0.02448	11.9	3.89	0.0022
temp_dev		-0.04988	0.01929	258	-2.59	0.0103

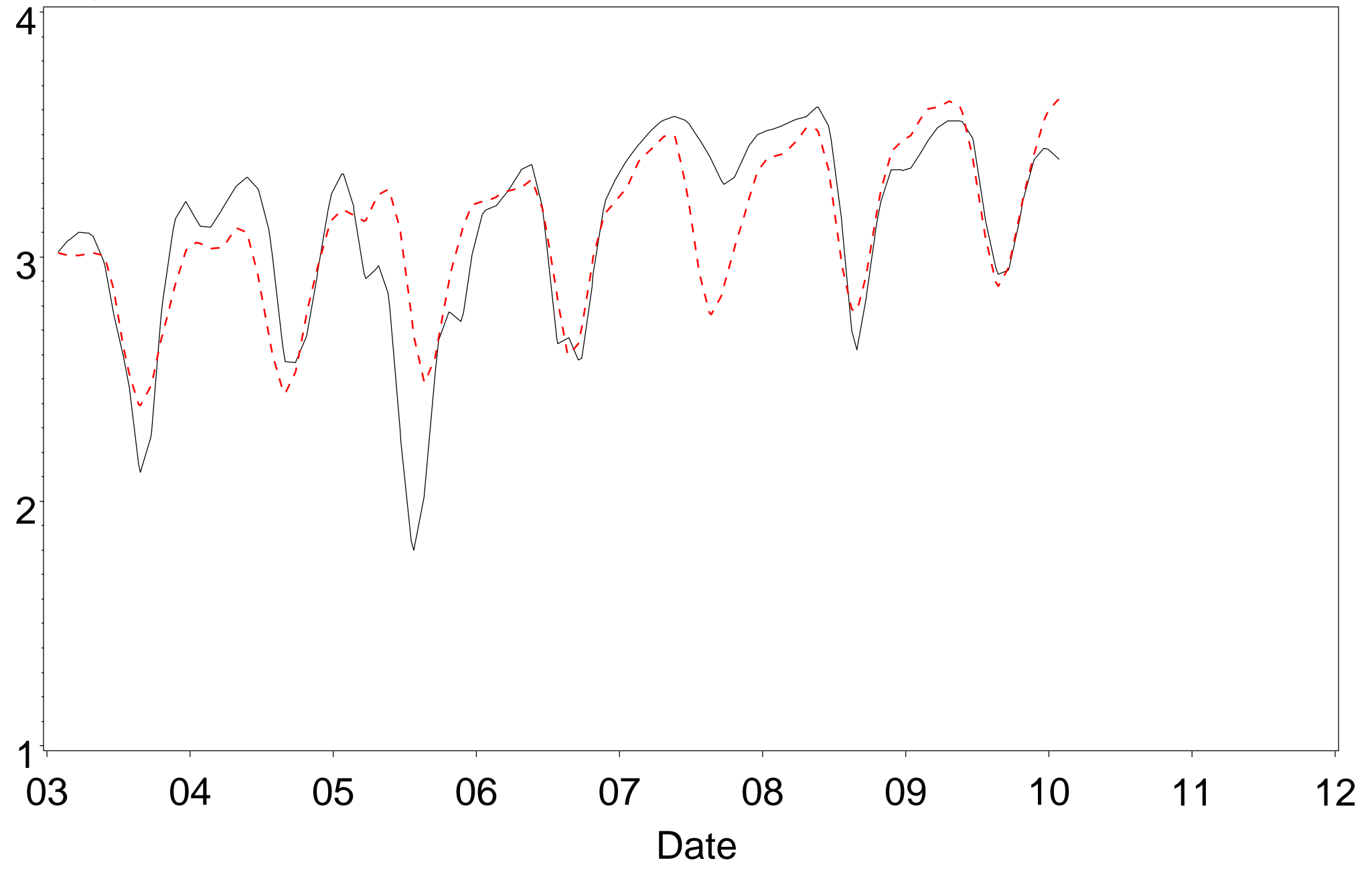
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.8	3.64	0.0007
date1	1	11.9	15.16	0.0022
temp_dev	1	258	6.69	0.0103

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	409
Number of Observations Not Used	117

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1145.63048105	
1	4	-1719.00993554	.
2	1	-1782.57910481	0.01402054
3	1	-1804.56367886	0.00504314
4	2	-1812.55482529	0.00122133
5	1	-1814.25343617	0.00004734
6	1	-1814.31572481	0.00000016
7	1	-1814.31592540	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000012	8.293E-6	1.48	0.0688
Variance	Intercept	0.003667	0.000673	5.45	<.0001
SP(POW)	Intercept	0.1912	0.1219	1.57	0.1167
Residual		0.000233	0.000019	12.20	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-1814.3
AIC (smaller is better)	-1806.3
AICC (smaller is better)	-1806.2
BIC (smaller is better)	-1800.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-0.00399	7.7926	18.7	-0.00	0.9996
season	1	0.2037	0.02877	52.2	7.08	<.0001
season	2	0.3251	0.03368	66	9.65	<.0001
season	3	0.2935	0.03394	64	8.65	<.0001
season	4	0.4463	0.03269	62	13.66	<.0001
season	5	0.5636	0.03265	61.6	17.26	<.0001
season	6	0.6302	0.03263	61.5	19.32	<.0001
season	7	0.6489	0.03262	61.6	19.90	<.0001
season	8	0.6604	0.03263	62.1	20.24	<.0001
season	9	0.5996	0.03261	63.6	18.38	<.0001
season	10	0.3859	0.03225	65.9	11.96	<.0001
season	11	0.3321	0.02944	49.6	11.28	<.0001
season	12	0	.	.	.	.
date1		0.001376	0.003883	18.7	0.35	0.7270
temp_dev		0.05796	0.002556	360	22.67	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	54	63.24	<.0001
date1	1	18.7	0.13	0.7270
temp_dev	1	360	514.13	<.0001

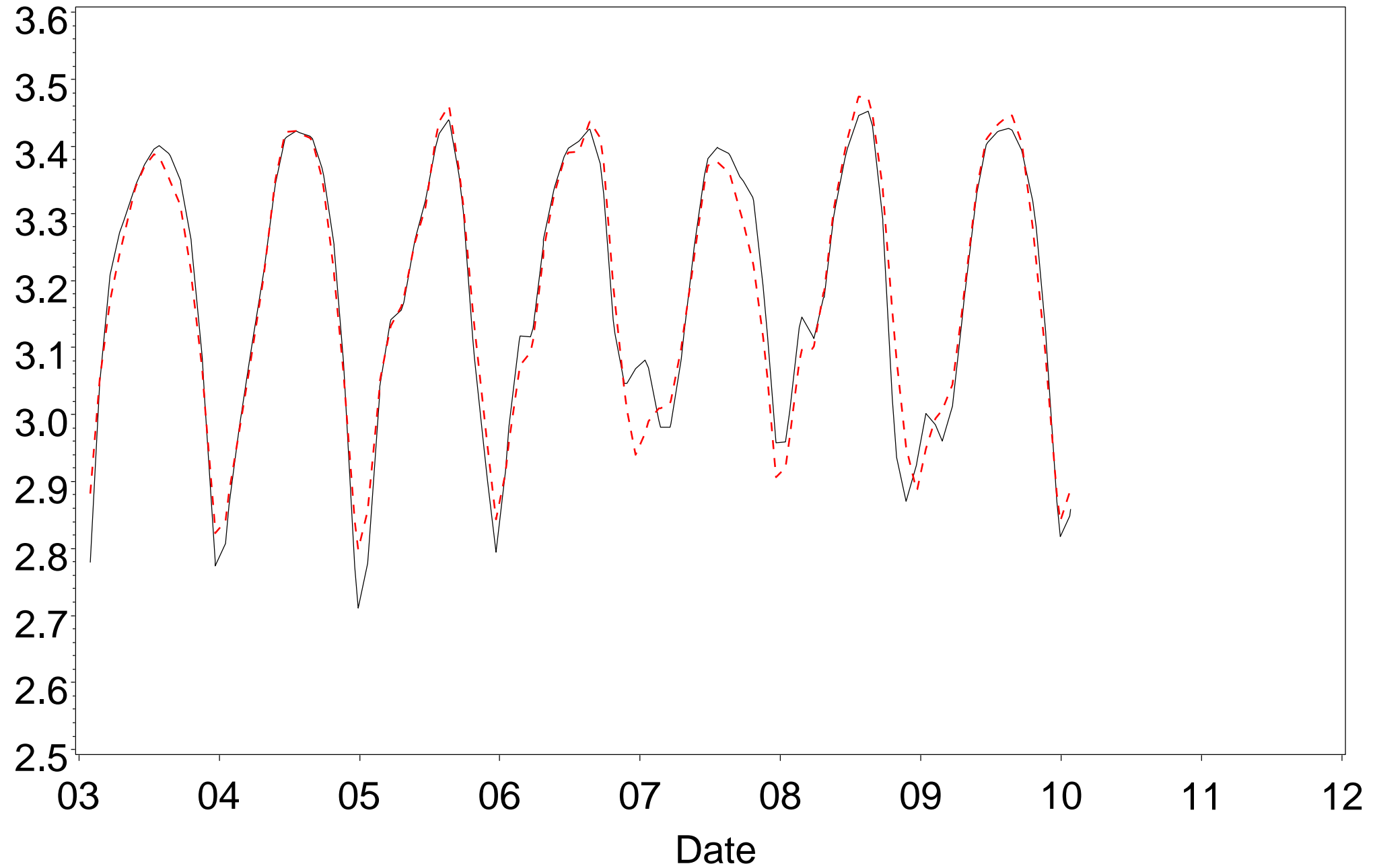
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale

Parameter = Temperature (Degree C) and Sample Level = Surface

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	398
Number of Observations Not Used	128

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1108.28498895	
1	4	889.29547605	0.46981135
2	1	838.76660683	0.11841542
3	1	828.68849925	0.10184925
4	2	824.76657524	0.06018226
5	1	820.60287779	0.00611018
6	1	820.22419187	0.00010879
7	1	820.21788145	0.00000005
8	1	820.21787883	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.7734	0.1504	5.14	<.0001
SP(POW)	Intercept	0.2282	0.1403	1.63	0.1037
Residual		0.2679	0.02136	12.54	<.0001

Fit Statistics	
-2 Res Log Likelihood	820.2
AIC (smaller is better)	826.2
AICC (smaller is better)	826.3
BIC (smaller is better)	830.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-51.4246	119.82	16.3	-0.43	0.6734
season	1	0.4980	0.4467	52.2	1.11	0.2701
season	2	-0.1558	0.5185	67	-0.30	0.7647
season	3	0.3131	0.5240	66	0.60	0.5522
season	4	0.3767	0.5062	63.5	0.74	0.4595
season	5	0.2091	0.5076	63.8	0.41	0.6817
season	6	0.4720	0.5056	62.9	0.93	0.3541
season	7	0.6074	0.5057	63.1	1.20	0.2342

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.9280	0.5068	64.1	1.83	0.0717
season	9	0.7813	0.5059	65.6	1.54	0.1273
season	10	0.7649	0.4993	66.8	1.53	0.1303
season	11	0.5037	0.4548	48.7	1.11	0.2735
season	12	0	.	.	.	.
date1		0.02470	0.05972	16.3	0.41	0.6845
temp_dev		0.02681	0.06832	271	0.39	0.6950

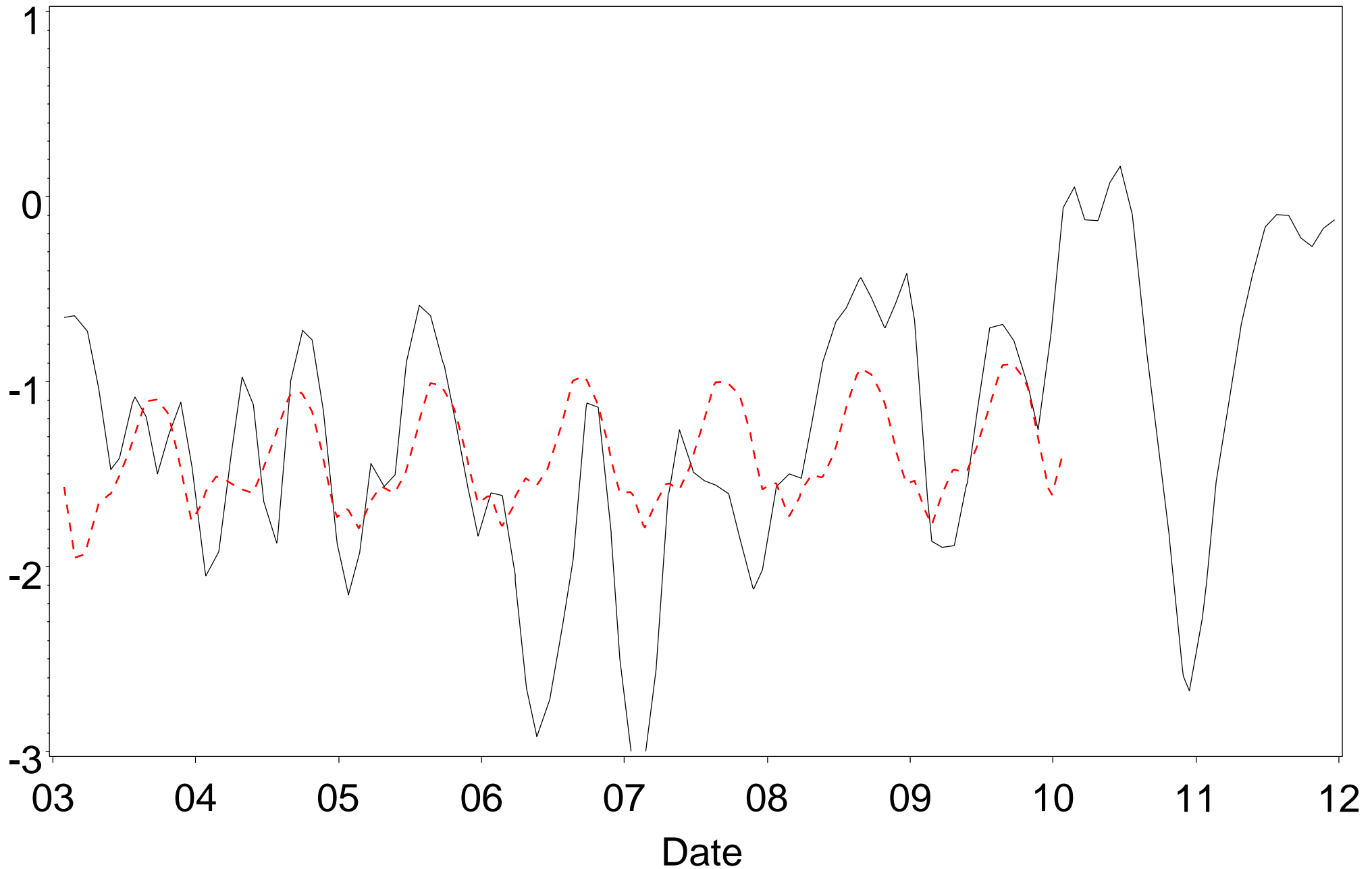
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	53.6	0.72	0.7145
date1	1	16.3	0.17	0.6845
temp_dev	1	271	0.15	0.6950

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	391
Number of Observations Not Used	135

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	852.98093367	
1	4	715.27368225	4.80507086
2	1	656.07601251	0.39160261
3	2	645.86547057	0.39448888
4	2	639.18035581	0.17537407
5	2	633.71302924	0.01550048
6	1	633.21615523	0.00032629
7	1	633.20624854	0.00000025
8	1	633.20624107	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		5.58E-20	.	.	.
Variance	Intercept	0.3612	0.06971	5.18	<.0001
SP(POW)	Intercept	0.09001	0.1410	0.64	0.5231
Residual		0.1789	0.01436	12.46	<.0001

Fit Statistics	
-2 Res Log Likelihood	633.2
AIC (smaller is better)	639.2
AICC (smaller is better)	639.3
BIC (smaller is better)	643.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		24.0036	75.6826	22.3	0.32	0.7541
season	1	0.5565	0.3416	52.3	1.63	0.1093
season	2	-0.1848	0.3668	66.2	-0.50	0.6161
season	3	0.04257	0.3657	65.7	0.12	0.9077
season	4	0.1387	0.3653	65.5	0.38	0.7053
season	5	0.1308	0.3532	66.5	0.37	0.7122
season	6	0.2154	0.3514	65.3	0.61	0.5422
season	7	0.2205	0.3515	65.3	0.63	0.5326

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.6265	0.3523	65.8	1.78	0.0800
season	9	0.3997	0.3522	65.5	1.13	0.2606
season	10	0.3642	0.3537	66.1	1.03	0.3069
season	11	0.2147	0.3387	47.1	0.63	0.5291
season	12	0	.	.	.	.
date1		-0.01257	0.03772	22.3	-0.33	0.7421
temp_dev		0.02276	0.05260	229	0.43	0.6657

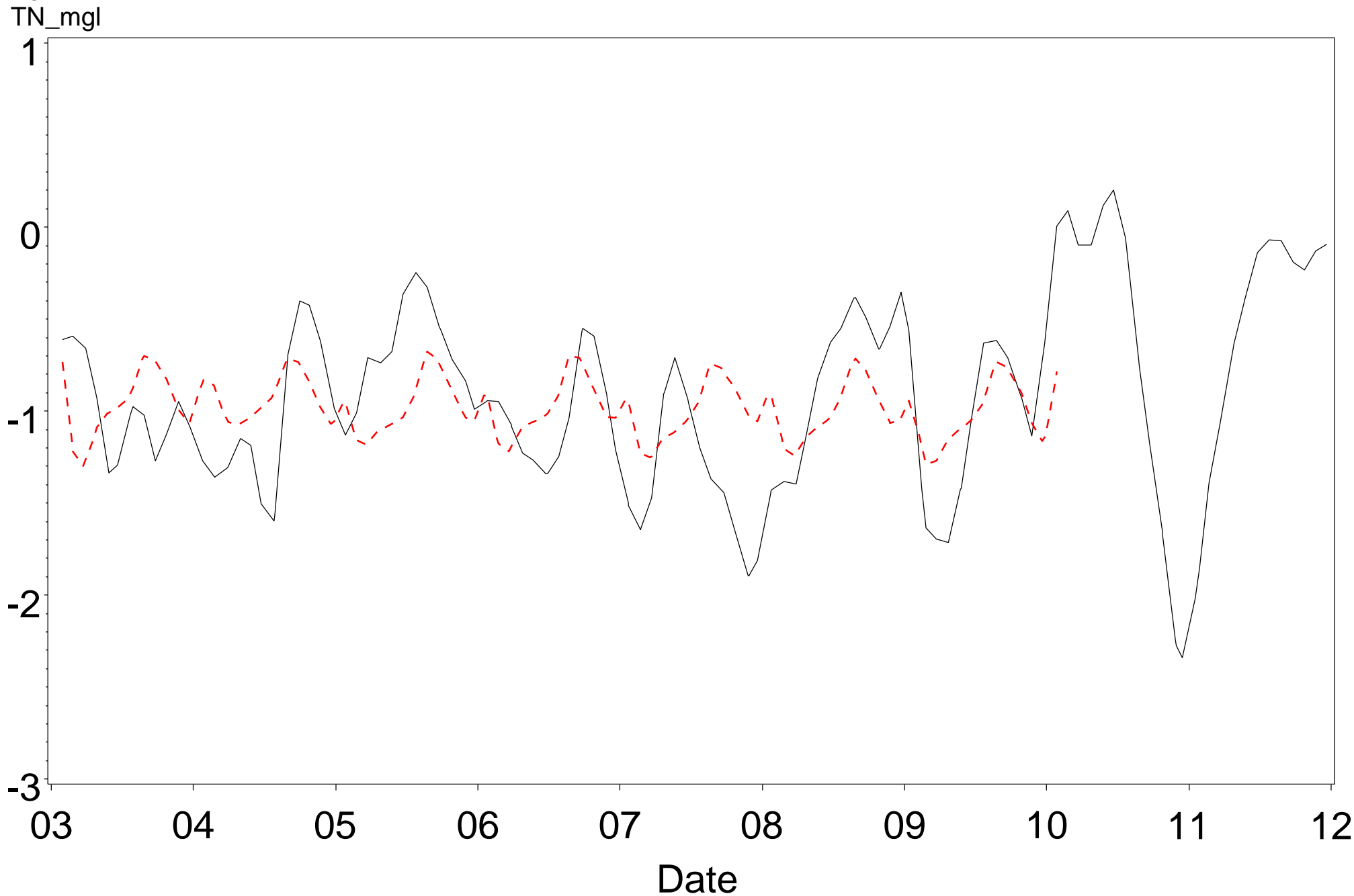
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	53.6	0.87	0.5742
date1	1	22.3	0.11	0.7421
temp_dev	1	229	0.19	0.6657

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	385
Number of Observations Not Used	141

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	923.94567135	
1	4	623.92127937	1.50294948
2	1	571.12831860	0.18876968
3	1	558.13077163	0.10066960
4	2	552.09587785	0.08260358
5	2	545.51041086	0.01874780
6	2	544.05931323	0.00122510
7	1	543.97082212	0.00000743
8	1	543.97030782	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		5.11E-19	.	.	.
Variance	Intercept	0.5658	0.1072	5.28	<.0001
SP(POW)	Intercept	0.1655	0.1591	1.04	0.2982
Residual		0.1271	0.01030	12.34	<.0001

Fit Statistics	
-2 Res Log Likelihood	544.0
AIC (smaller is better)	550.0
AICC (smaller is better)	550.0
BIC (smaller is better)	554.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		64.4468	97.4697	16	0.66	0.5179
season	1	0.2356	0.3892	44.9	0.61	0.5481
season	2	0.1130	0.4454	64.5	0.25	0.8005
season	3	0.1310	0.4463	64	0.29	0.7700
season	4	0.2832	0.4457	63.3	0.64	0.5274
season	5	0.04442	0.4299	62.9	0.10	0.9180
season	6	0.4262	0.4287	62.4	0.99	0.3241
season	7	0.8011	0.4288	62.4	1.87	0.0665

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.7282	0.4462	63.5	1.63	0.1076
season	9	0.7264	0.4303	63.7	1.69	0.0963
season	10	0.4287	0.4289	64.4	1.00	0.3213
season	11	0.6672	0.4166	44.1	1.60	0.1164
season	12	0	.	.	.	.
date1		-0.03134	0.04858	16	-0.65	0.5280
temp_dev		-0.00214	0.05159	328	-0.04	0.9669

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	49.2	0.82	0.6203
date1	1	16	0.42	0.5280
temp_dev	1	328	0.00	0.9669

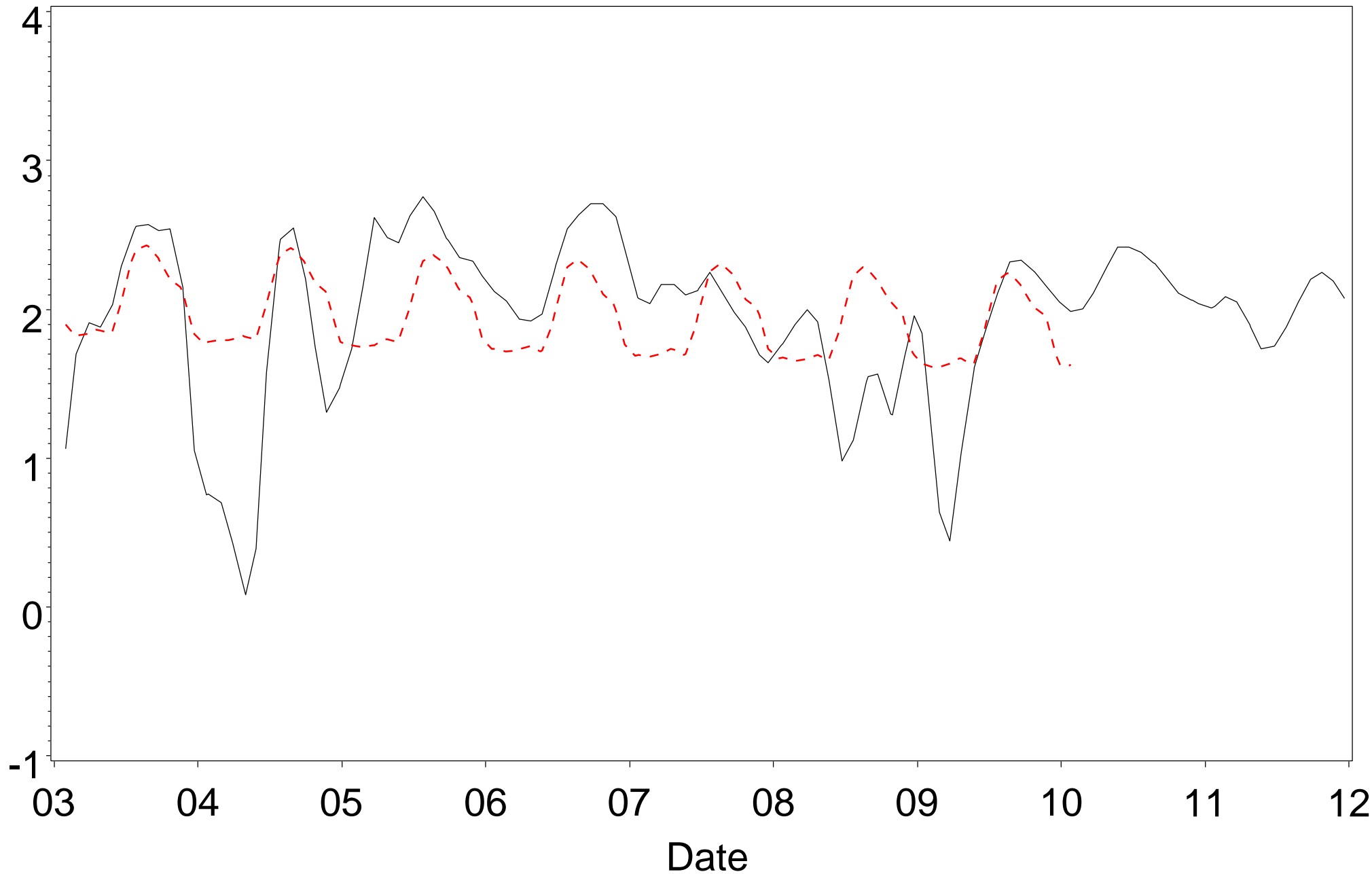
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	401
Number of Observations Not Used	125

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	705.62111904	
1	4	444.06443622	0.13628979
2	1	422.83617997	0.01955856
3	1	419.21393282	0.01280788
4	2	418.29487745	0.00783026
5	1	417.02063336	0.00035201
6	1	416.96606166	0.00000337
7	1	416.96556137	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.2548	0.06624	3.85	<.0001
SP(POW)	Intercept	0.5883	0.1106	5.32	<.0001
Residual		0.1005	0.007991	12.58	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	417.0
AIC (smaller is better)	423.0
AICC (smaller is better)	423.0
BIC (smaller is better)	427.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		165.67	97.2486	8.6	1.70	0.1242
season	1	-0.4313	0.2014	59.2	-2.14	0.0363
season	2	-0.7899	0.2528	61.5	-3.12	0.0027
season	3	-0.5368	0.2722	61.8	-1.97	0.0531
season	4	-0.6359	0.2756	58.3	-2.31	0.0246
season	5	-0.4990	0.2804	55.7	-1.78	0.0805
season	6	-0.4637	0.2813	54.7	-1.65	0.1050
season	7	-0.1339	0.2796	55.9	-0.48	0.6338
season	8	-0.06350	0.2748	59.1	-0.23	0.8181
season	9	0.2671	0.2636	61.5	1.01	0.3148
season	10	-0.2165	0.2430	61	-0.89	0.3764
season	11	-0.3424	0.2015	55.7	-1.70	0.0949
season	12	0	.	.	.	.
date1		-0.08397	0.04846	8.6	-1.73	0.1188
temp_dev		0.03112	0.03633	162	0.86	0.3929

Mixed Model With Local Nugget

The Mixed Procedure

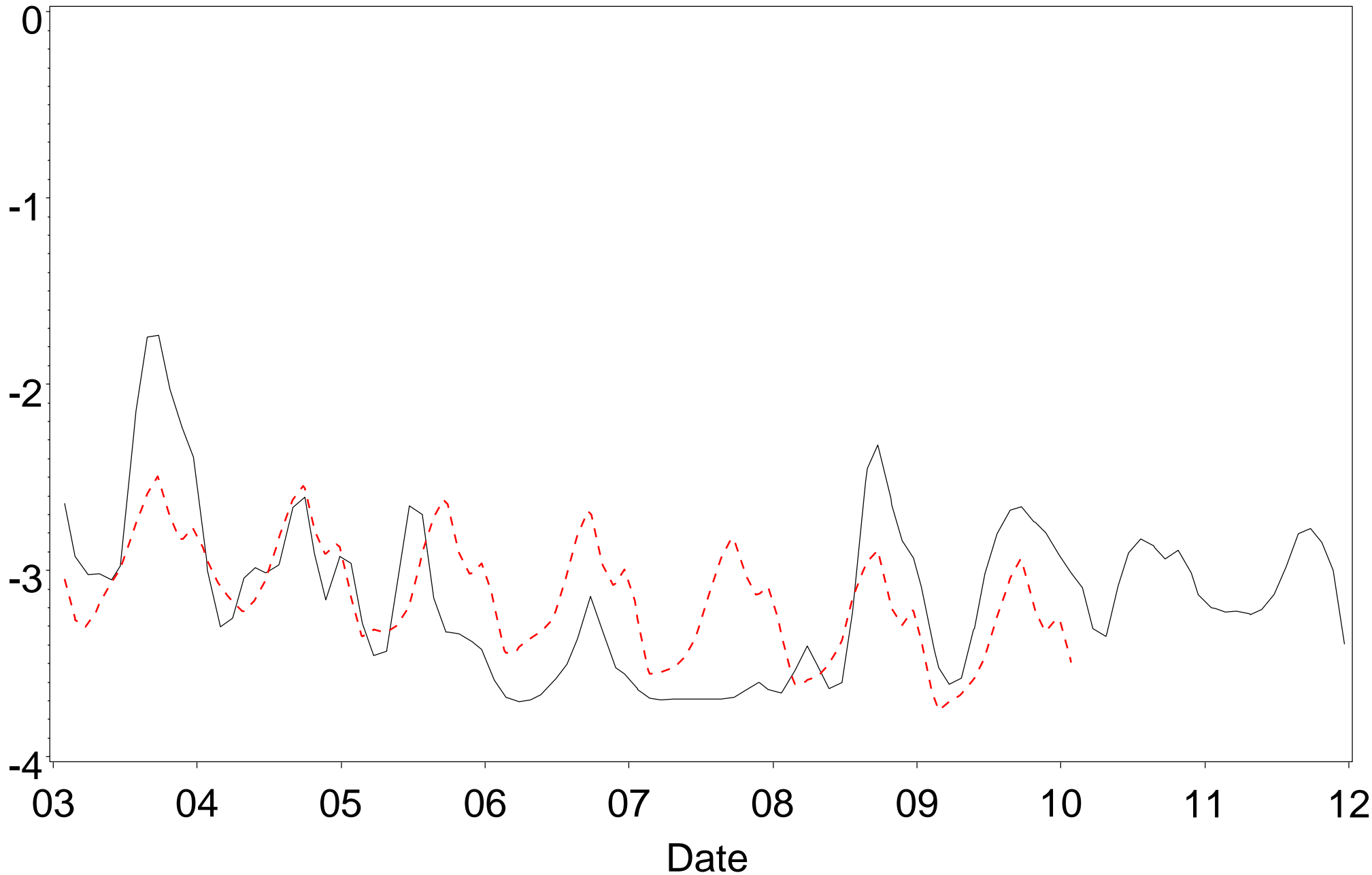
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.4	2.20	0.0271
date1	1	8.6	3.00	0.1188
temp_dev	1	162	0.73	0.3929

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
TPO4_mgl

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	401
Number of Observations Not Used	125

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	705.62111904	
1	4	444.06443622	0.13628979
2	1	422.83617997	0.01955856
3	1	419.21393282	0.01280788
4	2	418.29487745	0.00783026
5	1	417.02063336	0.00035201
6	1	416.96606166	0.00000337
7	1	416.96556137	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.2548	0.06624	3.85	<.0001
SP(POW)	Intercept	0.5883	0.1106	5.32	<.0001
Residual		0.1005	0.007991	12.58	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	417.0
AIC (smaller is better)	423.0
AICC (smaller is better)	423.0
BIC (smaller is better)	427.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		165.67	97.2486	8.6	1.70	0.1242
season	1	-0.4313	0.2014	59.2	-2.14	0.0363
season	2	-0.7899	0.2528	61.5	-3.12	0.0027
season	3	-0.5368	0.2722	61.8	-1.97	0.0531
season	4	-0.6359	0.2756	58.3	-2.31	0.0246
season	5	-0.4990	0.2804	55.7	-1.78	0.0805
season	6	-0.4637	0.2813	54.7	-1.65	0.1050
season	7	-0.1339	0.2796	55.9	-0.48	0.6338
season	8	-0.06350	0.2748	59.1	-0.23	0.8181
season	9	0.2671	0.2636	61.5	1.01	0.3148
season	10	-0.2165	0.2430	61	-0.89	0.3764
season	11	-0.3424	0.2015	55.7	-1.70	0.0949
season	12	0	.	.	.	.
date1		-0.08397	0.04846	8.6	-1.73	0.1188
temp_dev		0.03112	0.03633	162	0.86	0.3929

Mixed Model With Local Nugget

The Mixed Procedure

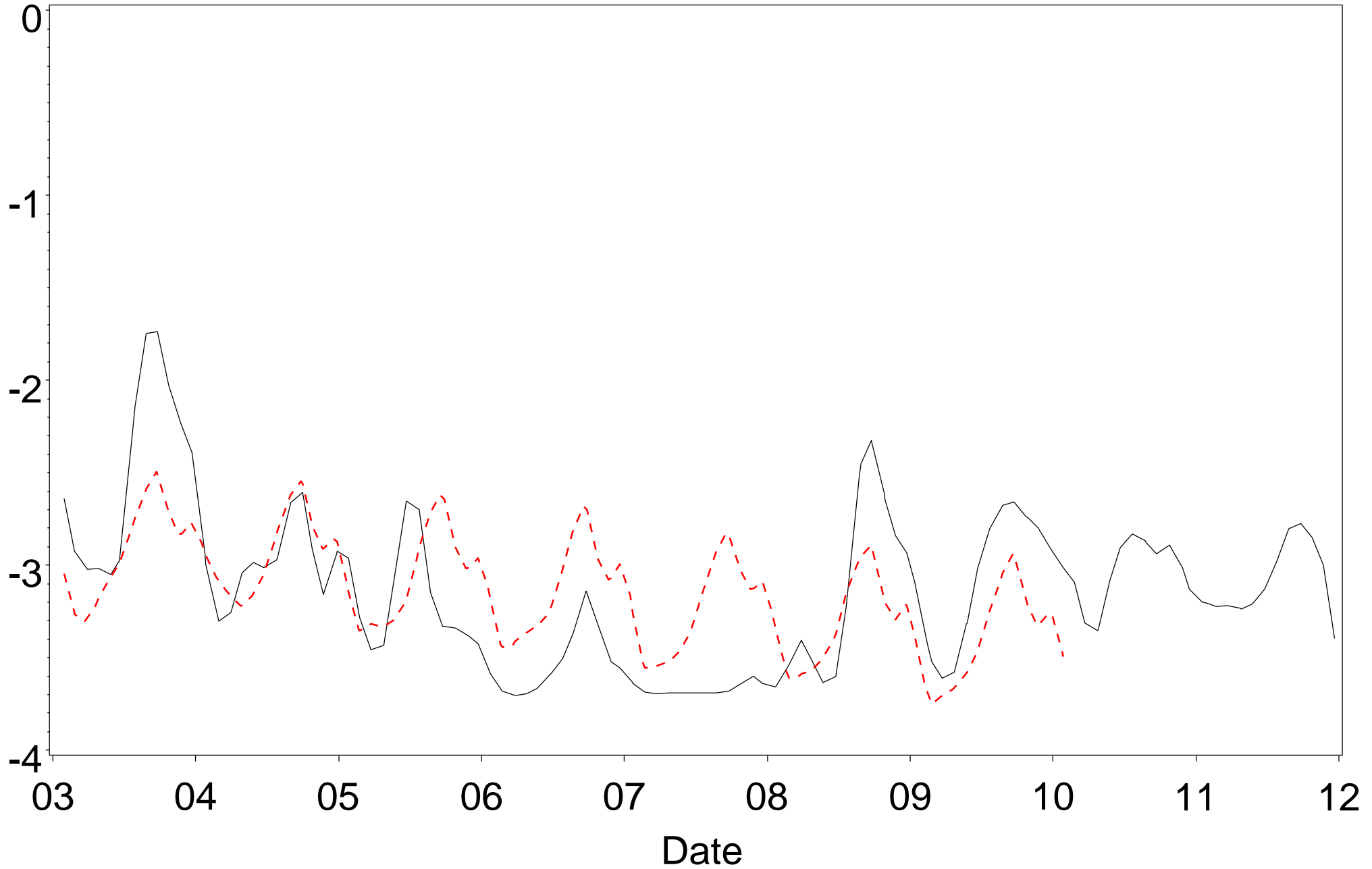
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.4	2.20	0.0271
date1	1	8.6	3.00	0.1188
temp_dev	1	162	0.73	0.3929

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale
TP_mgl

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	398
Number of Observations Not Used	128

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1056.83680337	
1	4	850.68607588	.
2	2	844.19500183	0.05530470
3	2	842.38110496	0.03716210
4	1	839.49093349	0.00258577
5	1	839.30767836	0.00002744
6	1	839.30582714	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006905	0.008484	0.81	0.2079
Variance	Intercept	0.5991	0.1371	4.37	<.0001
SP(POW)	Intercept	0.4306	0.1348	3.20	0.0014
Residual		0.3007	0.02480	12.12	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	839.3
AIC (smaller is better)	847.3
AICC (smaller is better)	847.4
BIC (smaller is better)	852.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-5.0151	126.65	10.9	-0.04	0.9691
season	1	0.2004	0.3577	55.4	0.56	0.5774
season	2	0.08154	0.4338	63.7	0.19	0.8515
season	3	-0.1647	0.4523	63.5	-0.36	0.7169
season	4	-0.3224	0.4460	58.5	-0.72	0.4727
season	5	-0.4689	0.4501	56.8	-1.04	0.3020
season	6	-0.1722	0.4485	55	-0.38	0.7025
season	7	-0.3420	0.4478	56.1	-0.76	0.4482
season	8	-0.4979	0.4462	59.5	-1.12	0.2690
season	9	-0.4026	0.4377	63.1	-0.92	0.3613
season	10	-0.2699	0.4170	63.2	-0.65	0.5198
season	11	-0.2951	0.3600	51.3	-0.82	0.4161
season	12	0	.	.	.	.
date1		0.003551	0.06312	10.9	0.06	0.9562
temp_dev		0.01835	0.06502	164	0.28	0.7782

Mixed Model With Local Nugget

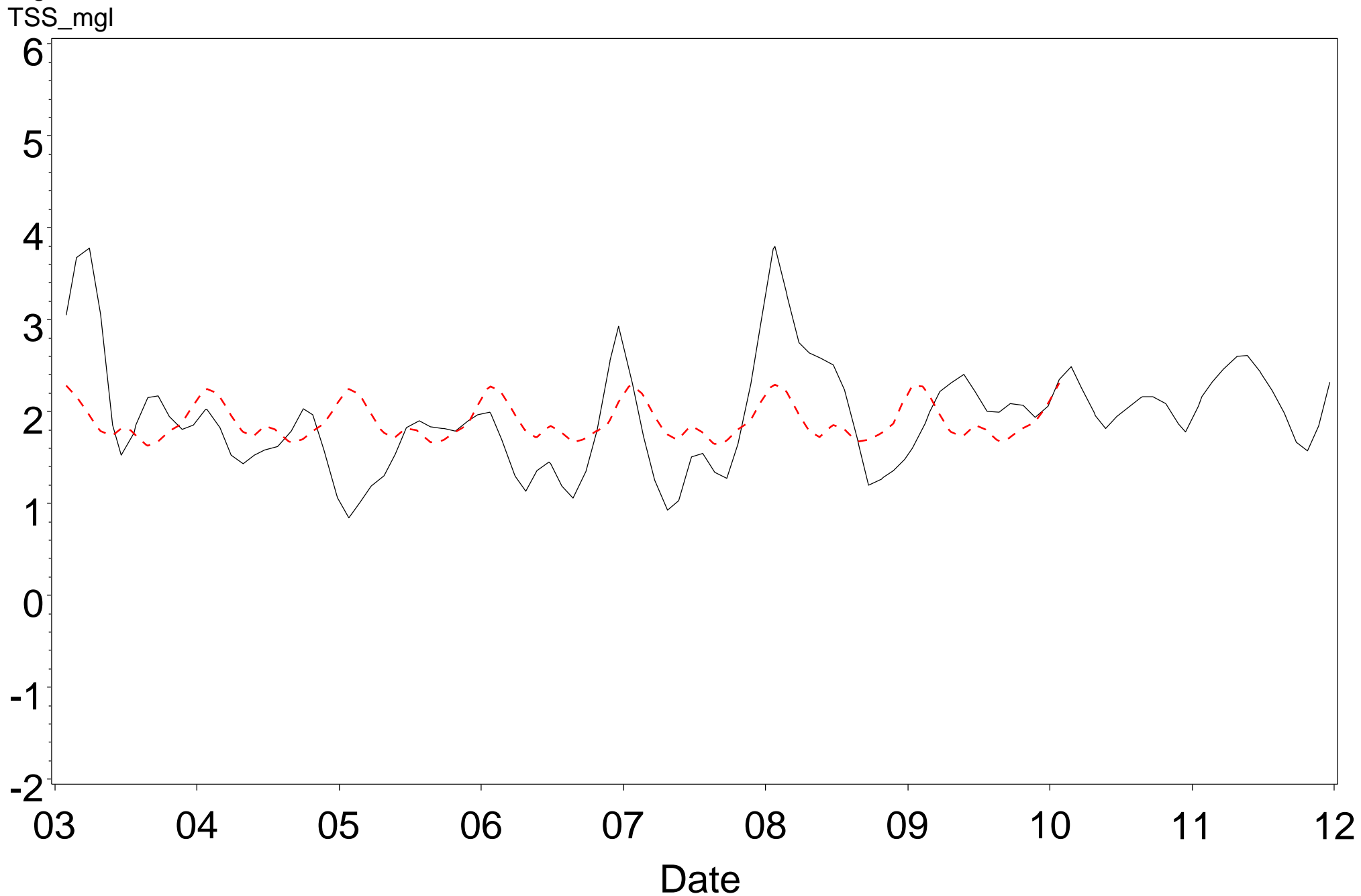
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	53.5	0.41	0.9462
date1	1	10.9	0.00	0.9562
temp_dev	1	164	0.08	0.7782

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	29	211 212 213 214 222 223 224 232 233 234 244 245 246 247 257 258 268 269 270 279 280 281 289 290 291 301 302 311 312

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	29
Subjects	1
Max Obs Per Subject	526

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	526
Number of Observations Used	390
Number of Observations Not Used	136

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1023.69700935	
1	2	856.49348492	0.07358853
2	1	848.63715757	0.07185596
3	2	845.54420355	0.04229104
4	1	841.80614129	0.00322846
5	1	841.54780851	0.00003262
6	1	841.54533574	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.009806	0.01014	0.97	0.1668
Variance	Intercept	0.5265	0.1127	4.67	<.0001
SP(POW)	Intercept	0.3168	0.1470	2.16	0.0311
Residual		0.3204	0.02685	11.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	841.5
AIC (smaller is better)	849.5
AICC (smaller is better)	849.7
BIC (smaller is better)	855.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-19.6892	108.37	13.7	-0.18	0.8585
season	1	0.2712	0.3646	51	0.74	0.4605
season	2	-0.04688	0.4300	63.3	-0.11	0.9135
season	3	0.2074	0.4393	63.7	0.47	0.6384
season	4	-0.1612	0.4271	60.7	-0.38	0.7072
season	5	0.3705	0.4294	60.7	0.86	0.3916
season	6	0.9692	0.4271	59.2	2.27	0.0269
season	7	0.4404	0.4271	59.6	1.03	0.3066
season	8	0.1984	0.4418	62.3	0.45	0.6550
season	9	0.8445	0.4400	64.1	1.92	0.0594
season	10	0.4311	0.4136	62.8	1.04	0.3012
season	11	0.2231	0.3687	46.9	0.61	0.5480
season	12	0	.	.	.	.
date1		0.009697	0.05401	13.7	0.18	0.8601
temp_dev		0.02903	0.06757	163	0.43	0.6681

Mixed Model With Local Nugget

The Mixed Procedure

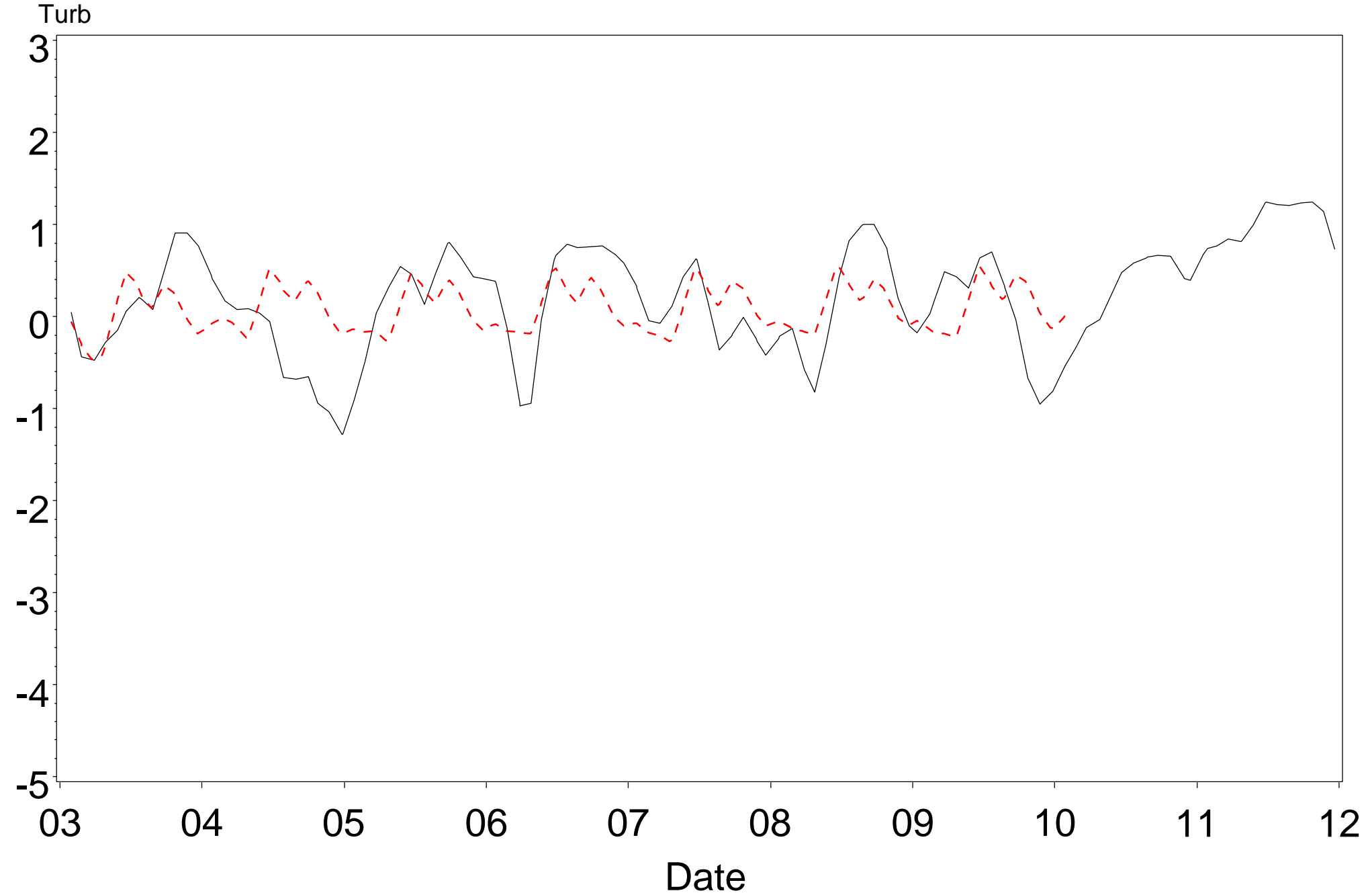
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	51.7	1.27	0.2687
date1	1	13.7	0.03	0.8601
temp_dev	1	163	0.18	0.6681

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Matlacha Pass

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	508
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	649.81461534	
1	2	551.92689762	1.85051476
2	2	546.16166395	1.40458750
3	2	540.99197678	0.00504340
4	1	540.00454895	0.00008754
5	1	539.98813159	0.00000009
6	1	539.98811519	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01647	0.006589	2.50	0.0062
Variance	Intercept	0.07665	0.01605	4.77	<.0001
SP(POW)	Intercept	0.2646	0.1423	1.86	0.0629
Residual		0.1095	0.008598	12.73	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	540.0
AIC (smaller is better)	548.0
AICC (smaller is better)	548.1
BIC (smaller is better)	558.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-64.2003	32.1914	19.4	-1.99	0.0604
season	1	0.06639	0.1383	62	0.48	0.6328
season	2	-0.01287	0.1569	80.5	-0.08	0.9348
season	3	0.07212	0.1534	80.7	0.47	0.6394
season	4	0.2217	0.1540	79.6	1.44	0.1538
season	5	0.2604	0.1539	78.7	1.69	0.0946
season	6	0.3919	0.1536	77.9	2.55	0.0127
season	7	0.5487	0.1537	78.4	3.57	0.0006
season	8	0.4290	0.1539	80.2	2.79	0.0066
season	9	0.5543	0.1488	80.9	3.72	0.0004
season	10	0.2859	0.1512	81	1.89	0.0623
season	11	0.1570	0.1340	61.4	1.17	0.2458
season	12	0	.	.	.	.
date1		0.03209	0.01603	19.4	2.00	0.0595
temp_dev		0.07879	0.02771	126	2.84	0.0052

Mixed Model With Local Nugget

The Mixed Procedure

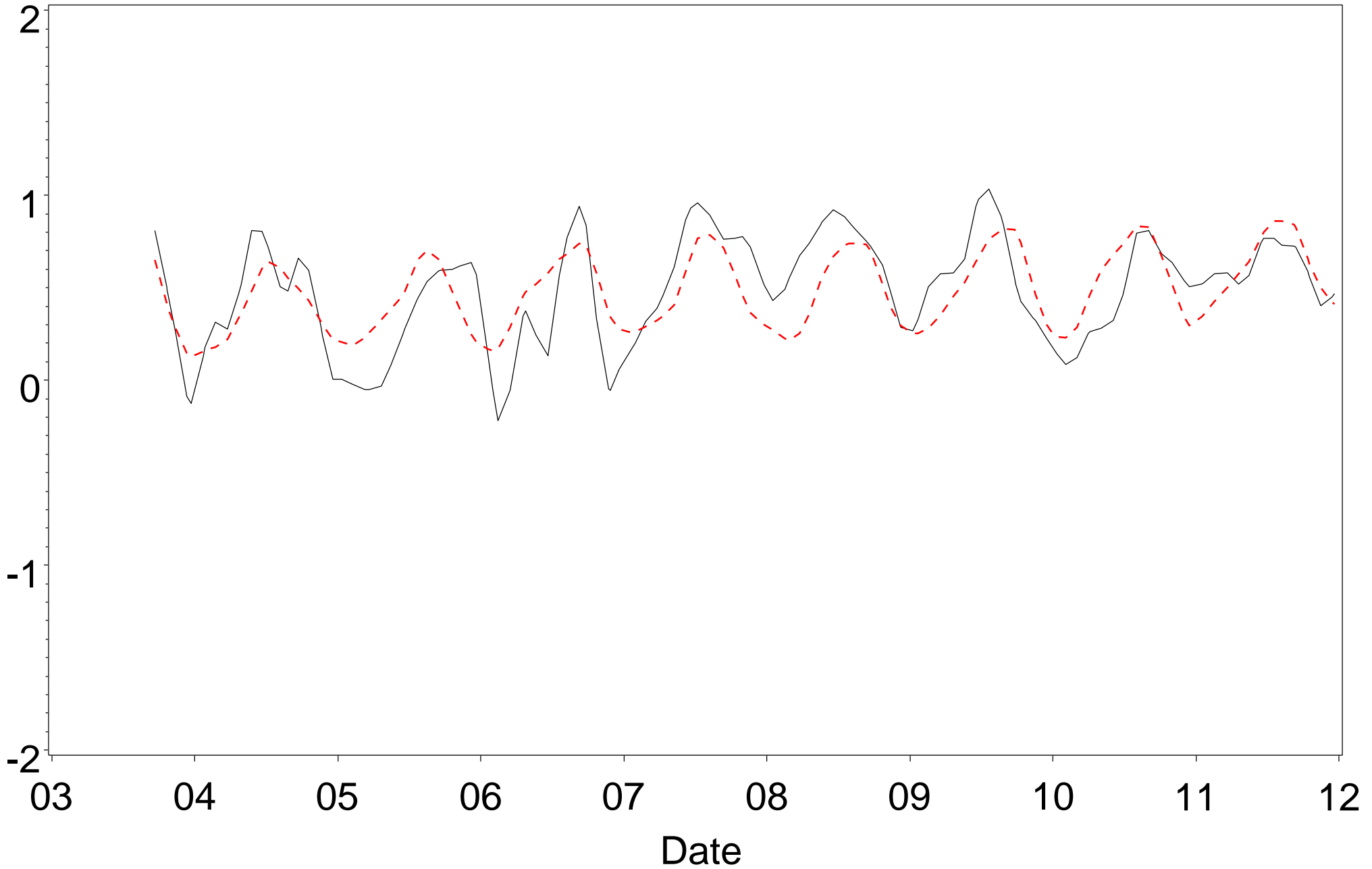
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68	2.54	0.0094
date1	1	19.4	4.01	0.0595
temp_dev	1	126	8.08	0.0052

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

Log Scale
BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1289.51591049	
1	4	1167.74614562	.
2	2	1164.16862865	0.03246919
3	1	1159.65357239	0.00257851
4	1	1159.32496196	0.00002625
5	1	1159.32178595	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.008064	0.01510	0.53	0.2967
Variance	Intercept	0.3236	0.07265	4.45	<.0001
SP(POW)	Intercept	0.4428	0.1277	3.47	0.0005
Residual		0.4029	0.03089	13.04	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1159.3
AIC (smaller is better)	1167.3
AICC (smaller is better)	1167.4
BIC (smaller is better)	1178.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		271.29	75.8193	12.9	3.58	0.0034
season	1	-0.2172	0.2526	70.3	-0.86	0.3928
season	2	-0.1912	0.2991	78.3	-0.64	0.5245
season	3	0.03293	0.3021	76.6	0.11	0.9135
season	4	0.02928	0.3074	72.1	0.10	0.9244
season	5	0.4425	0.3094	68.9	1.43	0.1571
season	6	1.0060	0.3094	67.6	3.25	0.0018
season	7	0.9656	0.3089	69.1	3.13	0.0026
season	8	1.0974	0.3066	73.7	3.58	0.0006
season	9	1.0837	0.2927	77	3.70	0.0004
season	10	0.6937	0.2789	77.4	2.49	0.0150
season	11	0.4836	0.2430	69.2	1.99	0.0505
season	12	0	.	.	.	.
date1		-0.1348	0.03776	12.9	-3.57	0.0034
temp_dev		0.007390	0.05070	125	0.15	0.8844

Mixed Model With Local Nugget

The Mixed Procedure

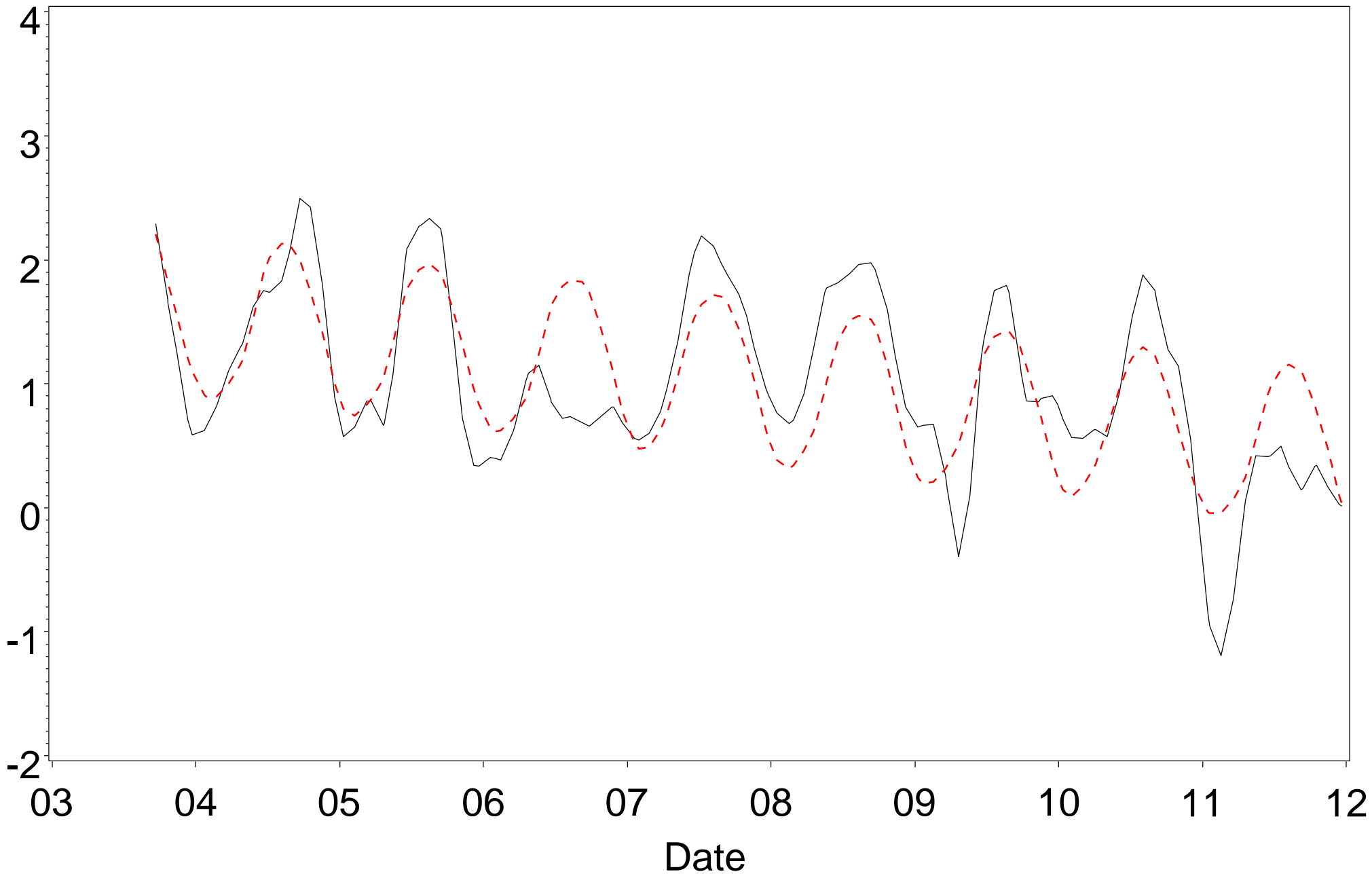
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.9	3.26	0.0012
date1	1	12.9	12.75	0.0034
temp_dev	1	125	0.02	0.8844

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1447.20420588	
1	2	1123.90127304	0.03238878
2	1	1119.89748995	0.01041255
3	2	1118.90045585	0.00181613
4	1	1118.71093015	0.00001011
5	1	1118.70991389	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1604	0.03423	4.69	<.0001
Variance	Intercept	0.6315	0.1604	3.94	<.0001
SP(POW)	Intercept	0.6452	0.09588	6.73	<.0001
Residual		0.2677	0.02153	12.43	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1118.7
AIC (smaller is better)	1126.7
AICC (smaller is better)	1126.8
BIC (smaller is better)	1137.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		212.88	130.33	8.78	1.63	0.1377
season	1	-0.3291	0.2684	67.9	-1.23	0.2243
season	2	-0.1936	0.3388	69.3	-0.57	0.5695
season	3	-0.3334	0.3608	69	-0.92	0.3586
season	4	0.05061	0.3790	67.1	0.13	0.8942
season	5	-0.07918	0.3876	64.7	-0.20	0.8388
season	6	0.1885	0.3897	63.8	0.48	0.6302
season	7	0.3643	0.3861	65.2	0.94	0.3489
season	8	0.7453	0.3749	68.1	1.99	0.0508
season	9	0.9136	0.3480	69.1	2.63	0.0106
season	10	0.5090	0.3162	68.8	1.61	0.1120
season	11	0.5845	0.2579	69	2.27	0.0266
season	12	0	.	.	.	.
date1		-0.1052	0.06491	8.78	-1.62	0.1405
temp_dev		0.01717	0.05016	137	0.34	0.7326

Mixed Model With Local Nugget

The Mixed Procedure

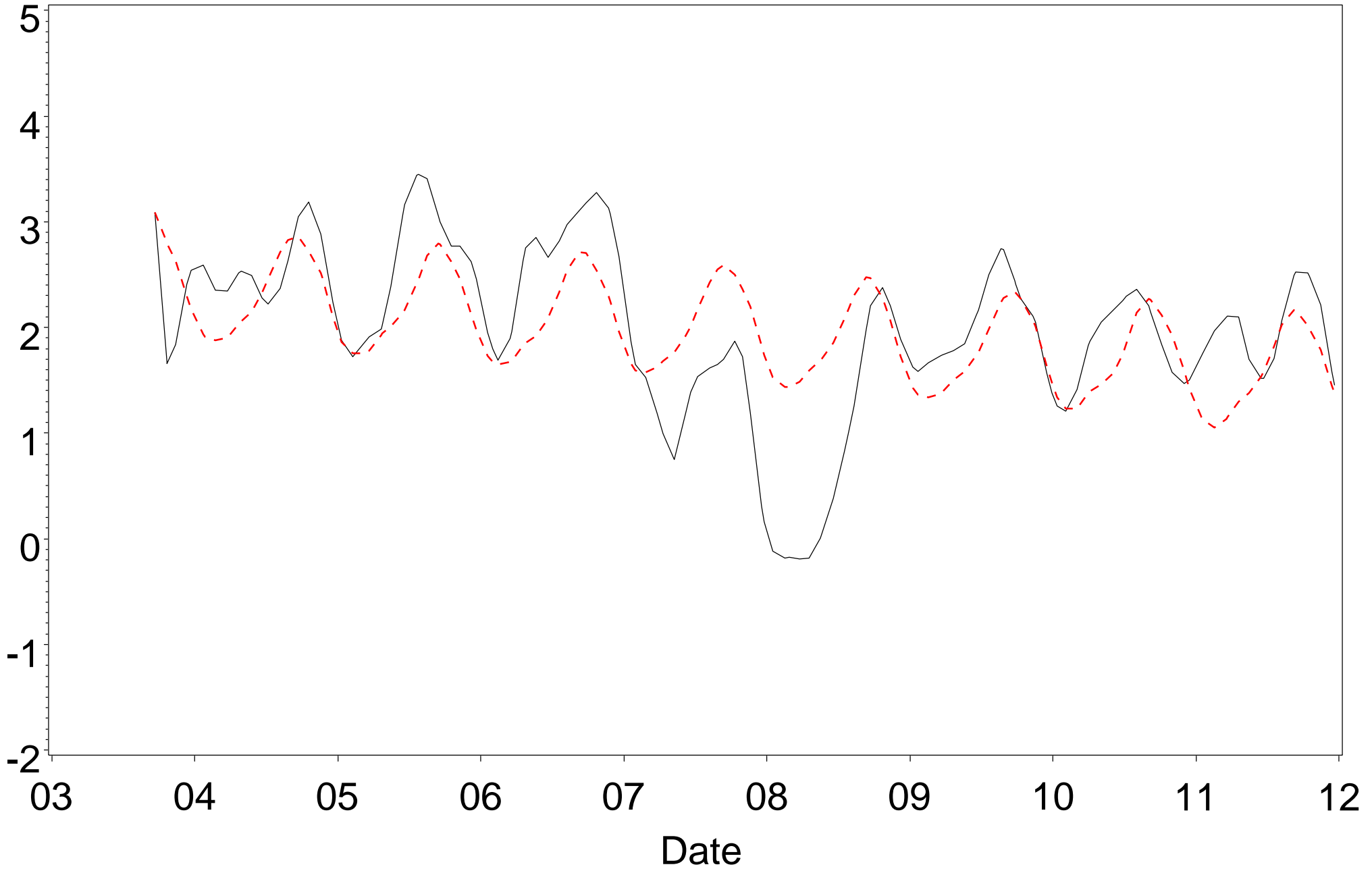
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.8	1.62	0.1140
date1	1	8.78	2.62	0.1405
temp_dev	1	137	0.12	0.7326

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale
COLOR

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-499.03054354	
1	2	-799.55207595	0.00455530
2	1	-804.42544568	0.00202951
3	2	-805.80915856	0.00071581
4	1	-806.47298549	0.00001361
5	1	-806.48501000	0.00000002
6	1	-806.48503139	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.003284	0.000768	4.28	<.0001
Variance	Intercept	0.01217	0.002961	4.11	<.0001
SP(POW)	Intercept	0.6138	0.1011	6.07	<.0001
Residual		0.005777	0.000473	12.22	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-806.5
AIC (smaller is better)	-798.5
AICC (smaller is better)	-798.4
BIC (smaller is better)	-787.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-41.6334	17.3870	9.38	-2.39	0.0392
season	1	0.01803	0.03889	68.8	0.46	0.6444
season	2	0.05700	0.04869	72.1	1.17	0.2456
season	3	0.05591	0.05147	71.9	1.09	0.2809
season	4	0.05697	0.05381	69.2	1.06	0.2934
season	5	0.08214	0.05487	66.2	1.50	0.1392
season	6	0.06590	0.05513	65.1	1.20	0.2363
season	7	0.02944	0.05470	66.8	0.54	0.5922
season	8	-0.08266	0.05330	70.5	-1.55	0.1254
season	9	-0.07261	0.04968	72.1	-1.46	0.1482
season	10	0.003699	0.04546	71.6	0.08	0.9354
season	11	-0.01081	0.03740	69.6	-0.29	0.7735
season	12	0	.	.	.	.
date1		0.02610	0.008659	9.38	3.01	0.0139
temp_dev		0.000693	0.007319	136	0.09	0.9247

Mixed Model With Local Nugget

The Mixed Procedure

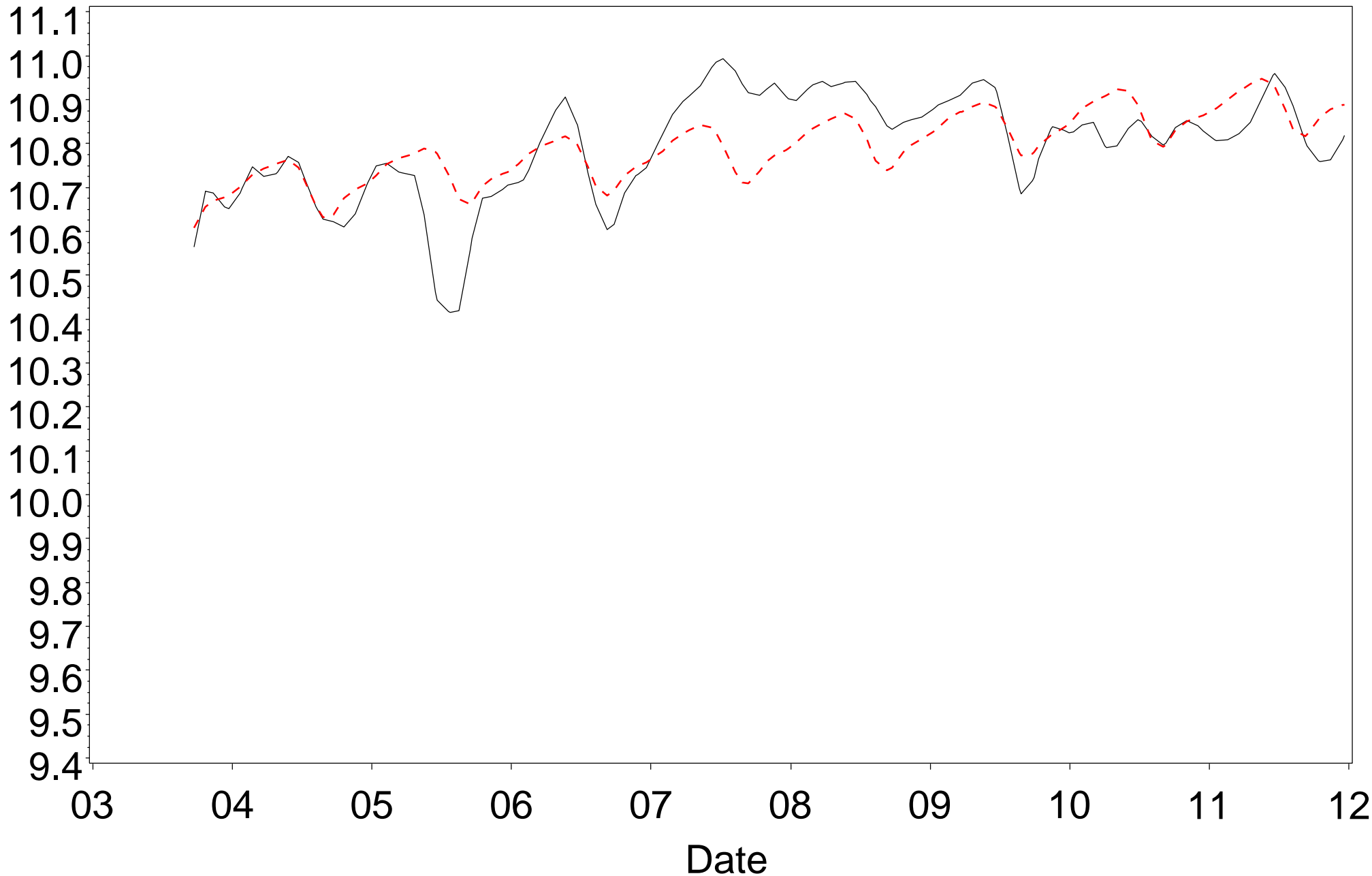
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67	1.51	0.1488
date1	1	9.38	9.09	0.0139
temp_dev	1	136	0.01	0.9247

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface

Log Scale
COND



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1536.83474665	
1	3	1497.36515110	0.22695972
2	2	1487.95545869	0.00211562
3	2	1487.43723270	0.00007498
4	1	1487.41534702	0.00000014
5	1	1487.41530602	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.09219	0.04208	2.19	0.0142
Variance	Intercept	0.3030	0.07737	3.92	<.0001
SP(POW)	Intercept	-0.08797	0.1698	-0.52	0.6044
Residual		0.7799	0.06176	12.63	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1487.4
AIC (smaller is better)	1495.4
AICC (smaller is better)	1495.5
BIC (smaller is better)	1506.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		159.15	54.5362	35.5	2.92	0.0061
season	1	0.3205	0.3403	48.8	0.94	0.3508
season	2	-0.4000	0.3477	76.1	-1.15	0.2536
season	3	-0.08304	0.3307	74.4	-0.25	0.8024
season	4	-0.9052	0.3325	75.5	-2.72	0.0081
season	5	-1.5059	0.3323	75.6	-4.53	<.0001
season	6	-2.2985	0.3316	74.8	-6.93	<.0001
season	7	-2.1886	0.3318	75	-6.60	<.0001
season	8	-2.6932	0.3329	75.7	-8.09	<.0001
season	9	-2.1692	0.3209	74.6	-6.76	<.0001
season	10	-2.0598	0.3252	76.8	-6.33	<.0001
season	11	-0.9958	0.3323	48.2	-3.00	0.0043
season	12	0	.	.	.	.
date1		-0.07536	0.02716	35.5	-2.77	0.0088
temp_dev		-0.1252	0.06655	120	-1.88	0.0624

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	61.4	20.44	<.0001
date1	1	35.5	7.70	0.0088
temp_dev	1	120	3.54	0.0624

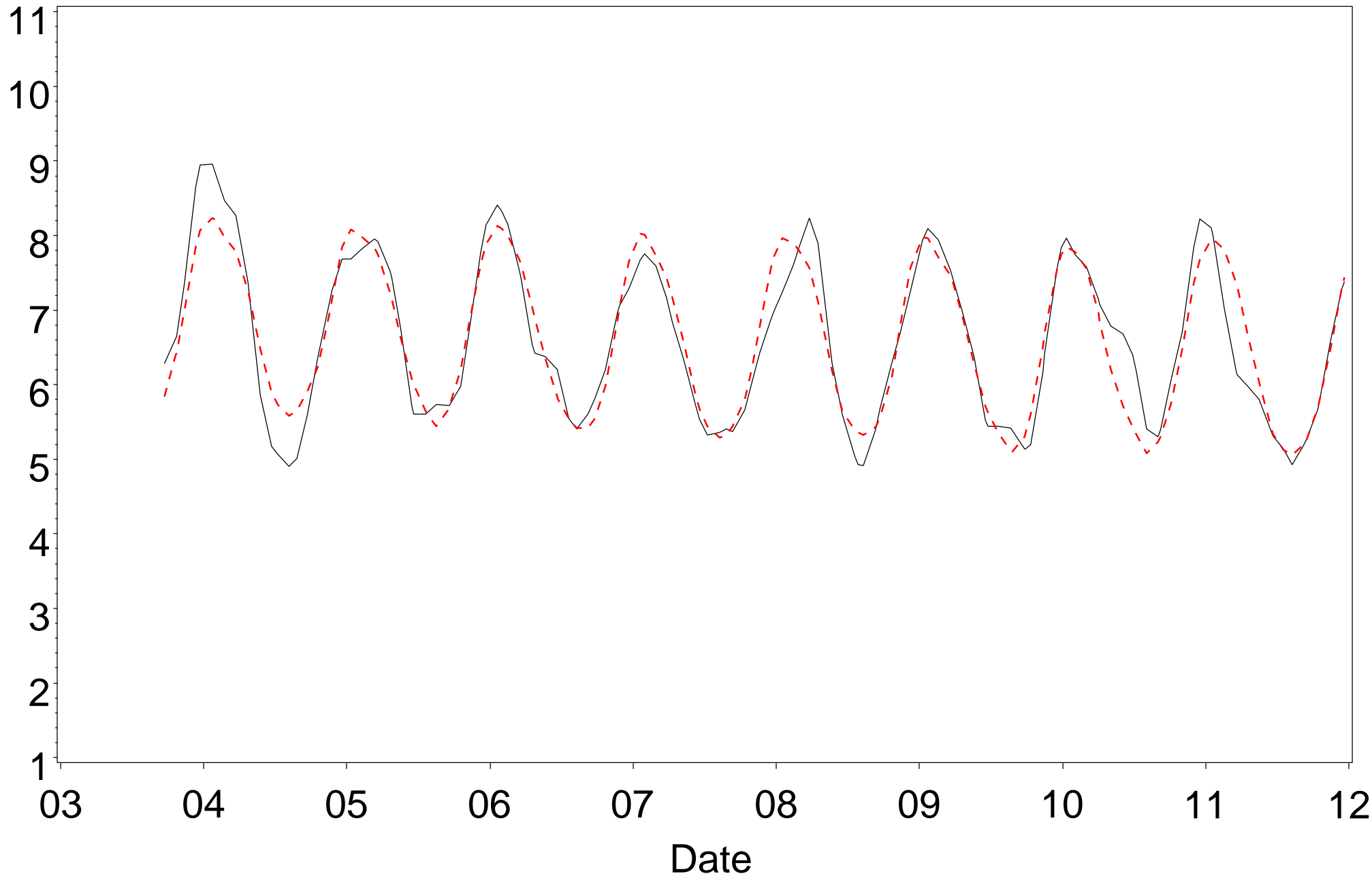
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	509
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1284.47583072	
1	3	1145.36326854	0.05687114
2	2	1140.33389806	0.04252241
3	2	1134.60051365	0.00573988
4	1	1133.91292751	0.00009797
5	1	1133.90182816	0.00000003
6	1	1133.90182520	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1592	0.03458	4.60	<.0001
Variance	Intercept	0.2281	0.05132	4.44	<.0001
SP(POW)	Intercept	0.3701	0.1449	2.55	0.0106
Residual		0.3246	0.02543	12.76	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1133.9
AIC (smaller is better)	1141.9
AICC (smaller is better)	1142.0
BIC (smaller is better)	1152.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		47.4522	60.4022	14.3	0.79	0.4449
season	1	0.1321	0.2291	64.4	0.58	0.5664
season	2	0.2093	0.2660	77.3	0.79	0.4337
season	3	-0.08756	0.2642	77.3	-0.33	0.7412
season	4	0.5406	0.2761	76.4	1.96	0.0539
season	5	-0.03681	0.2676	72.4	-0.14	0.8910
season	6	0.5546	0.2673	71.2	2.08	0.0416
season	7	0.9665	0.2674	72.4	3.61	0.0006
season	8	1.1252	0.2670	76	4.21	<.0001
season	9	1.2451	0.2564	77.7	4.86	<.0001
season	10	0.6306	0.2488	77.6	2.53	0.0133
season	11	0.08565	0.2229	65.4	0.38	0.7021
season	12	0	.	.	.	.
date1		-0.02376	0.03008	14.3	-0.79	0.4425
temp_dev		0.1301	0.04740	115	2.74	0.0070

Mixed Model With Local Nugget

The Mixed Procedure

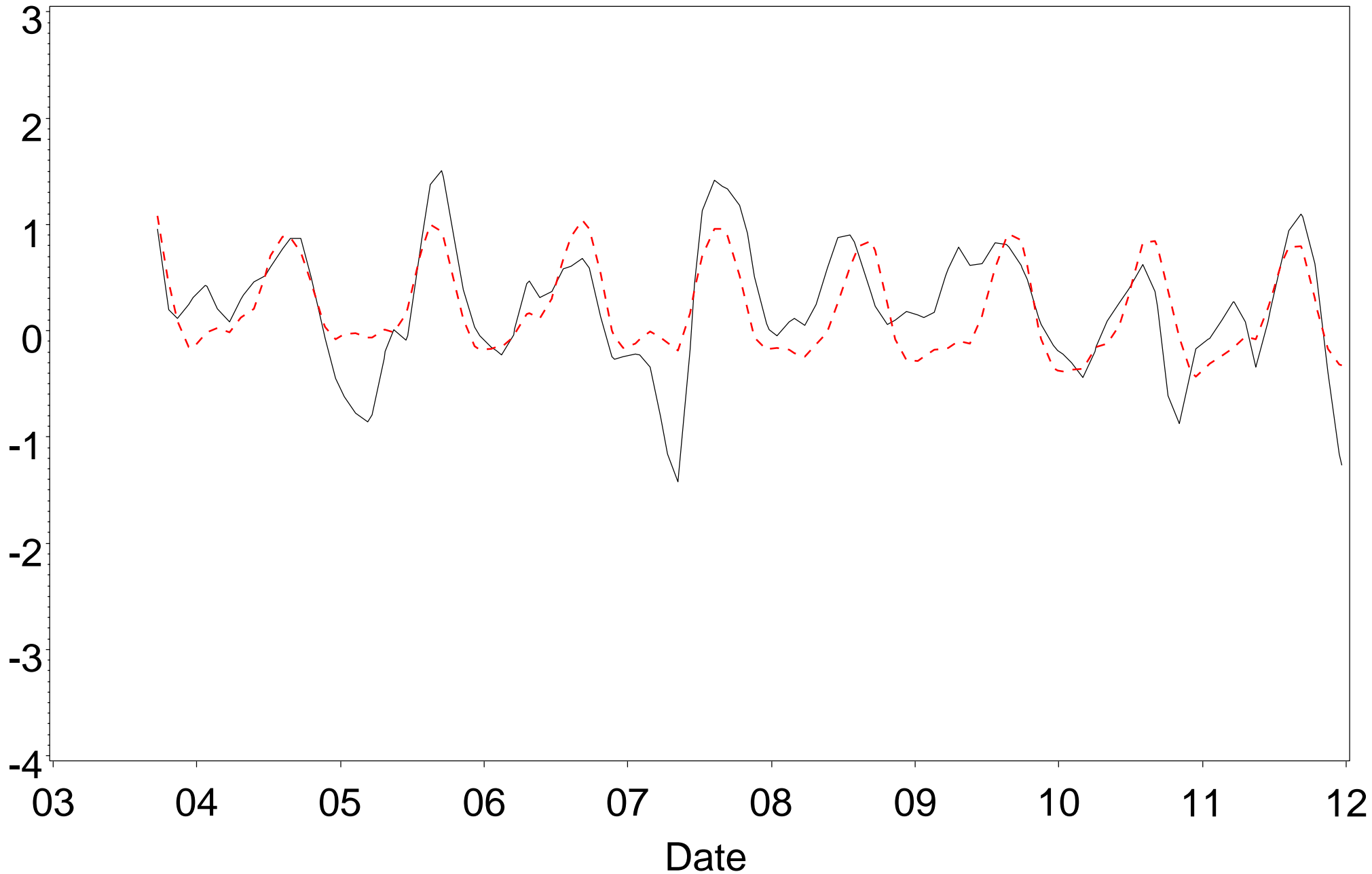
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.7	4.90	<.0001
date1	1	14.3	0.62	0.4425
temp_dev	1	115	7.53	0.0070

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Dissolved Silica (as SiO₂) (mg/L) and Sample Level = Surface

DSI_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	391
Number of Observations Not Used	123

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1171.25539215	
1	2	1163.91421951	0.00619755
2	4	1163.04270118	0.00002797
3	1	1163.03607786	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.07039	0.05919	1.19	0.1172
Variance	Intercept	0.1166	0.06487	1.80	0.0361
SP(POW)	Intercept	0.5806	0.2397	2.42	0.0154
Residual		0.9701	0.09064	10.70	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1163.0
AIC (smaller is better)	1171.0
AICC (smaller is better)	1171.1
BIC (smaller is better)	1181.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		26.4763	66.8922	8.71	0.40	0.7018
season	1	-0.00518	0.2856	93.2	-0.02	0.9856
season	2	0.2928	0.3162	68.6	0.93	0.3577
season	3	-0.09865	0.2961	60.2	-0.33	0.7402
season	4	-0.2452	0.3069	58	-0.80	0.4276
season	5	-0.1049	0.3223	59.1	-0.33	0.7459
season	6	-0.09319	0.3173	61.3	-0.29	0.7700
season	7	0.3381	0.3266	61.5	1.04	0.3047
season	8	0.02771	0.3030	58.8	0.09	0.9275
season	9	-0.07233	0.2913	59.9	-0.25	0.8047
season	10	-0.1321	0.3049	66.6	-0.43	0.6662
season	11	-0.2314	0.2847	89	-0.81	0.4187
season	12	0	.	.	.	.
date1		-0.01261	0.03331	8.7	-0.38	0.7140
temp_dev		0.03912	0.06119	110	0.64	0.5239

Mixed Model With Local Nugget

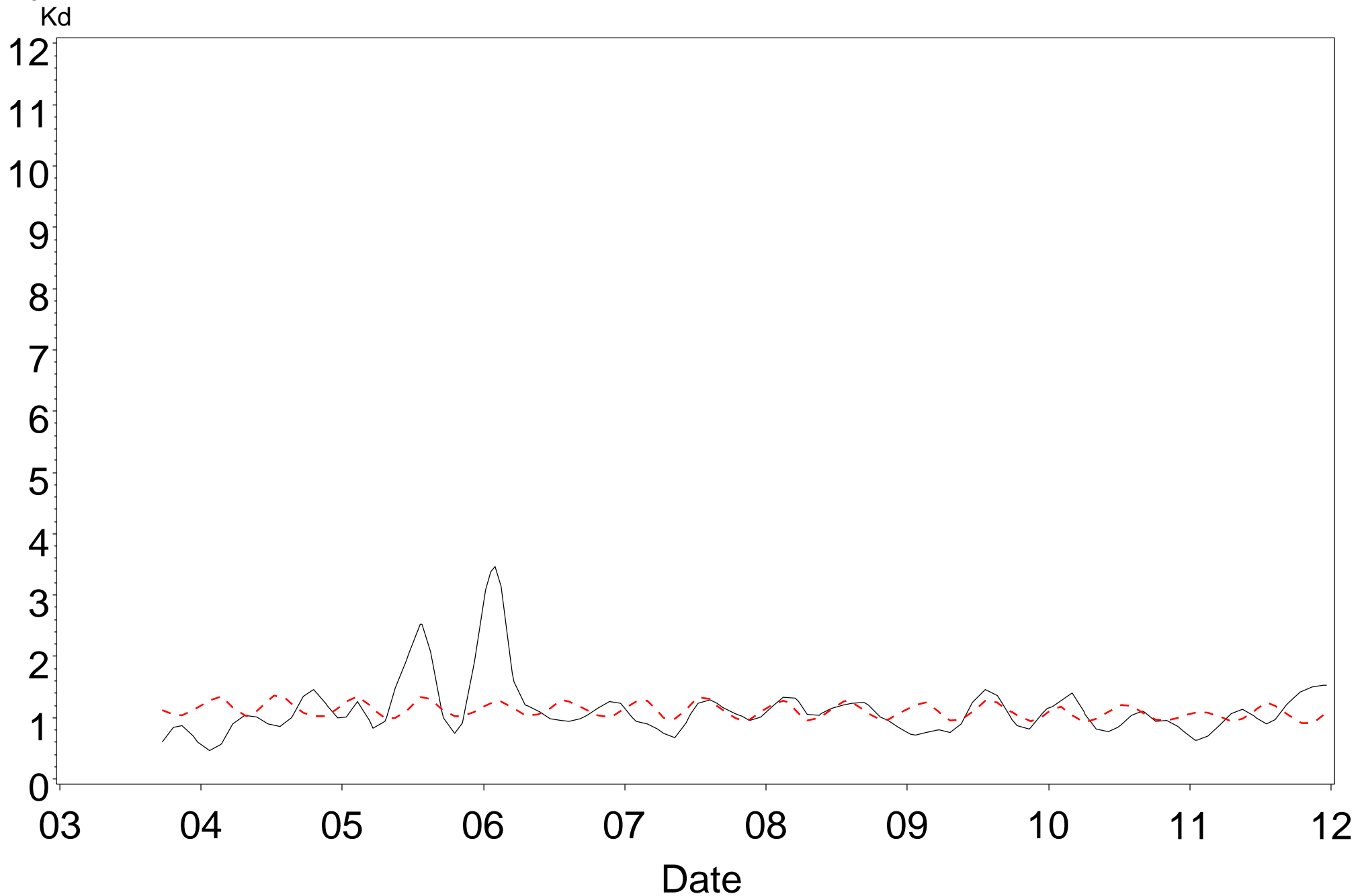
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.8	0.63	0.7930
date1	1	8.7	0.14	0.7140
temp_dev	1	110	0.41	0.5239

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1185.35244562	
1	2	1009.27238536	0.12261119
2	2	1001.74636511	0.09239089
3	2	997.18310531	0.01572626
4	2	996.52190672	0.00023825
5	1	996.51257375	0.00000005
6	1	996.51257167	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.005012	0.01010	0.50	0.3099
Variance	Intercept	0.3182	0.06456	4.93	<.0001
SP(POW)	Intercept	0.3793	0.1260	3.01	0.0026
Residual		0.2755	0.02115	13.02	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	996.5
AIC (smaller is better)	1004.5
AICC (smaller is better)	1004.6
BIC (smaller is better)	1015.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		252.12	69.9072	15.2	3.61	0.0026
season	1	-0.1334	0.2481	64.4	-0.54	0.5926
season	2	-0.03057	0.2925	78.5	-0.10	0.9170
season	3	-0.3606	0.2930	77.5	-1.23	0.2221
season	4	-0.2830	0.2964	73.2	-0.95	0.3428
season	5	-0.2447	0.2974	70.6	-0.82	0.4134
season	6	-0.1649	0.2973	69.6	-0.55	0.5809
season	7	0.02916	0.2971	70.7	0.10	0.9221
season	8	0.08997	0.2958	74.6	0.30	0.7619
season	9	0.1744	0.2840	77.8	0.61	0.5410
season	10	0.7680	0.2729	78	2.81	0.0062
season	11	0.08957	0.2386	62.9	0.38	0.7086
season	12	0	.	.	.	.
date1		-0.1277	0.03482	15.2	-3.67	0.0022
temp_dev		0.008493	0.04741	141	0.18	0.8581

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	66.5	1.78	0.0755
date1	1	15.2	13.45	0.0022
temp_dev	1	141	0.03	0.8581

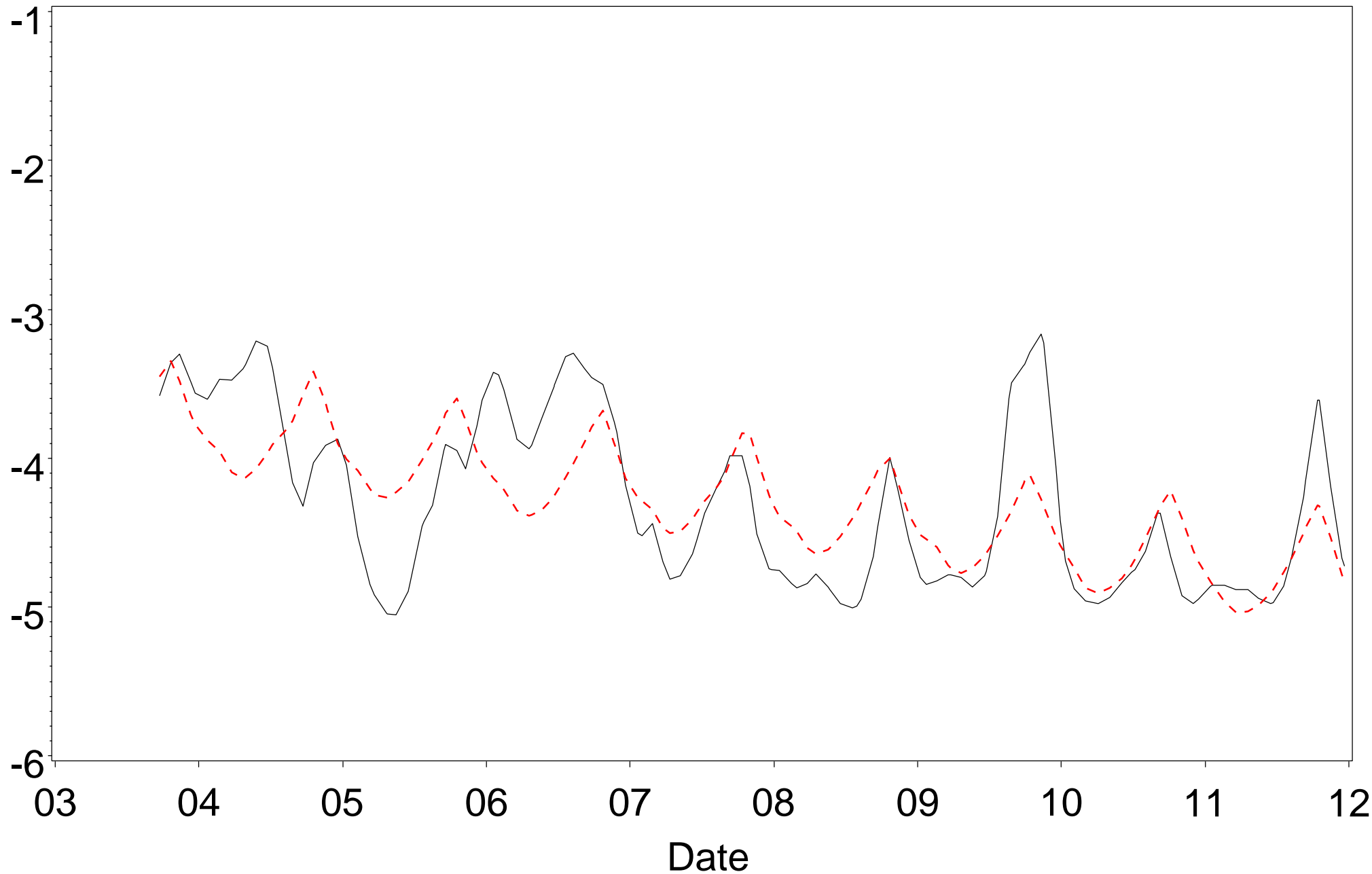
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface

NH3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	504
Number of Observations Not Used	10

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	994.95776727	
1	2	921.90733767	80.23187549
2	2	914.03989257	1.61007700
3	2	910.66961090	0.33205552
4	1	908.80646848	0.02118752
5	1	908.71420004	0.00018292
6	1	908.71344956	0.00000002
7	1	908.71344949	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02855	0.01788	1.60	0.0552
Variance	Intercept	0.1449	0.03151	4.60	<.0001
SP(POW)	Intercept	0.2259	0.1465	1.54	0.1231
Residual		0.2426	0.02087	11.63	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	908.7
AIC (smaller is better)	916.7
AICC (smaller is better)	916.8
BIC (smaller is better)	927.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		75.4877	43.4187	20.2	1.74	0.0973
season	1	0.1021	0.1978	62.9	0.52	0.6076
season	2	0.2560	0.2217	80.8	1.15	0.2516
season	3	-0.2055	0.2153	79.9	-0.95	0.3427
season	4	-0.3619	0.2158	79.1	-1.68	0.0976
season	5	-0.04065	0.2156	78.6	-0.19	0.8509
season	6	0.1414	0.2151	77.9	0.66	0.5130
season	7	-0.1087	0.2229	78.4	-0.49	0.6271
season	8	-0.1546	0.2236	80	-0.69	0.4913
season	9	0.2180	0.2089	80.1	1.04	0.2998
season	10	0.1220	0.2072	81	0.59	0.5575
season	11	0.08558	0.1919	62.1	0.45	0.6572
season	12	0	.	.	.	.
date1		-0.04004	0.02162	20.2	-1.85	0.0787
temp_dev		0.01853	0.04031	124	0.46	0.6465

Mixed Model With Local Nugget

The Mixed Procedure

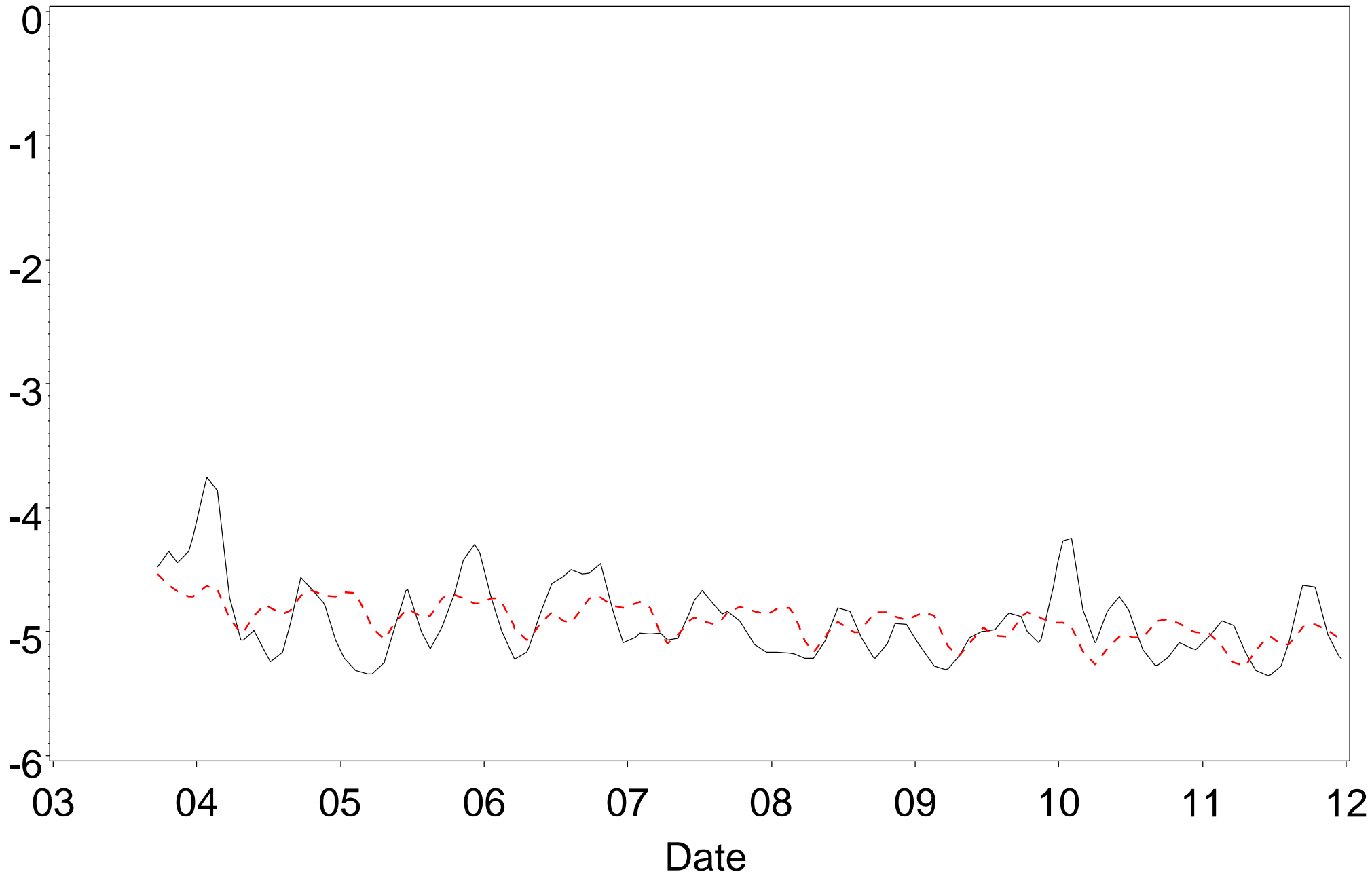
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.2	1.33	0.2264
date1	1	20.2	3.43	0.0787
temp_dev	1	124	0.21	0.6465

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	499
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1097.33670799	
1	4	922.18170370	1.65800365
2	1	891.64305922	.
3	2	880.22708712	1.40287278
4	2	872.74955302	0.34908266
5	2	869.06963253	0.02036701
6	1	868.82839176	0.00022215
7	1	868.82586541	0.00000004
8	1	868.82586492	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007610	0.01024	0.74	0.2286
Variance	Intercept	0.3194	0.05859	5.45	<.0001
SP(POW)	Intercept	0.1993	0.1243	1.60	0.1091
Residual		0.2102	0.01733	12.13	<.0001

Fit Statistics	
-2 Res Log Likelihood	868.8
AIC (smaller is better)	876.8
AICC (smaller is better)	876.9
BIC (smaller is better)	887.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		36.2574	59.3936	21.2	0.61	0.5481
season	1	0.04606	0.2678	63.4	0.17	0.8640
season	2	-0.4605	0.3012	81.7	-1.53	0.1301
season	3	-0.6349	0.2926	78.8	-2.17	0.0330
season	4	-0.6510	0.2927	77.1	-2.22	0.0291
season	5	-0.3751	0.2926	76.7	-1.28	0.2037
season	6	0.2659	0.2923	76.4	0.91	0.3660
season	7	-0.4563	0.3031	77.1	-1.51	0.1363

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.4708	0.3036	77.9	-1.55	0.1250
season	9	-0.1178	0.2926	79.2	-0.40	0.6885
season	10	-0.3277	0.2811	81.6	-1.17	0.2470
season	11	0.01410	0.2586	61.6	0.05	0.9567
season	12	0	.	.	.	.
date1		-0.02119	0.02958	21.2	-0.72	0.4816
temp_dev		-0.02232	0.04805	193	-0.46	0.6428

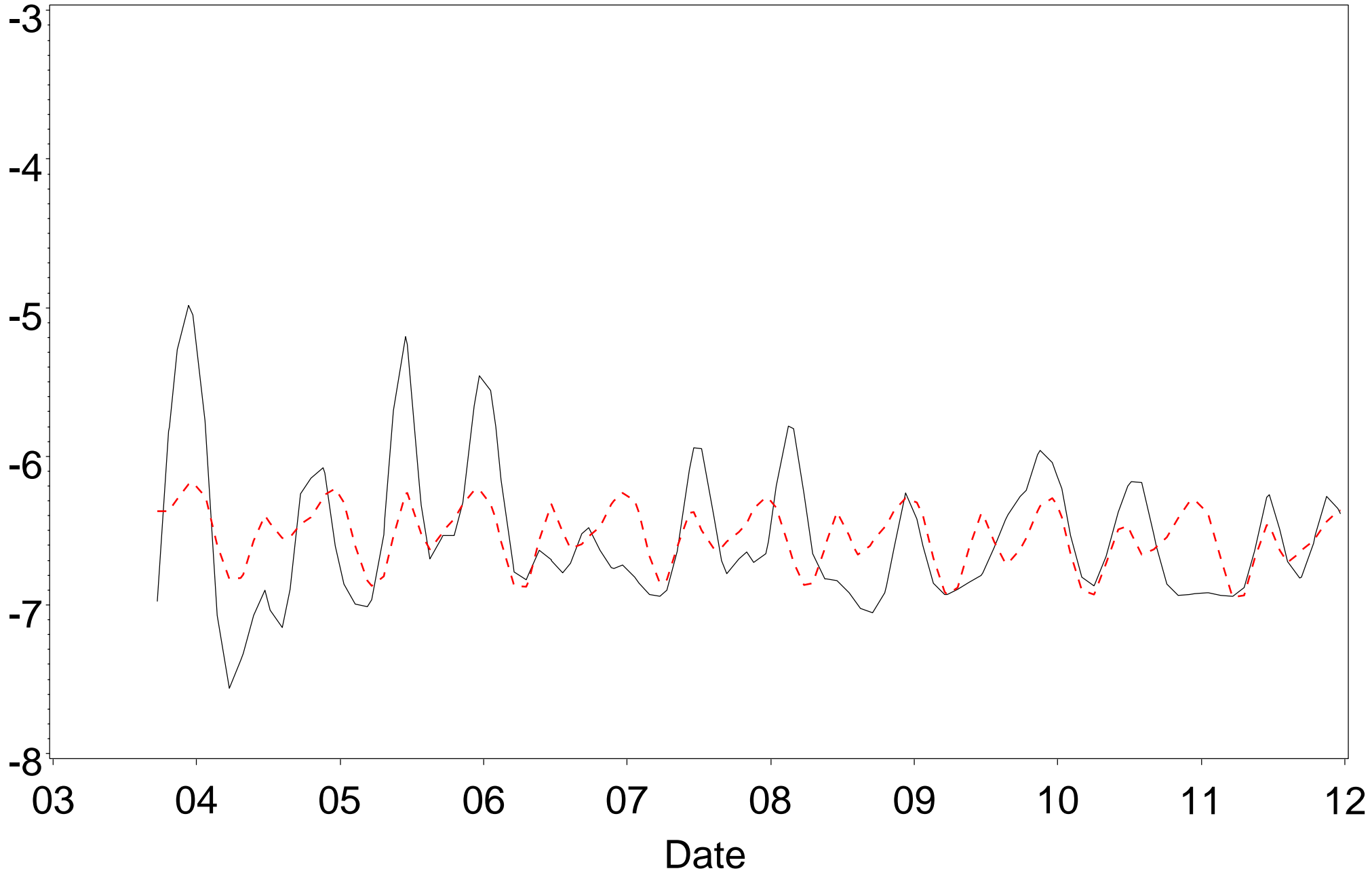
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.8	1.89	0.0567
date1	1	21.2	0.51	0.4816
temp_dev	1	193	0.22	0.6428

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale
NO2_mgl

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	504
Number of Observations Not Used	10

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	963.00229283	
1	3	889.26736500	116.31731963
2	2	880.52038865	0.79321517
3	2	878.16371697	0.14717919
4	1	876.27193668	0.01232398
5	1	876.11103007	0.00019056
6	1	876.10867483	0.00000005
7	1	876.10867417	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02900	0.01851	1.57	0.0585
Variance	Intercept	0.1366	0.02944	4.64	<.0001
SP(POW)	Intercept	0.2174	0.1449	1.50	0.1333
Residual		0.2252	0.01994	11.29	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	876.1
AIC (smaller is better)	884.1
AICC (smaller is better)	884.2
BIC (smaller is better)	894.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		46.5307	41.8781	20.9	1.11	0.2792
season	1	0.2497	0.1924	63.5	1.30	0.1990
season	2	0.4228	0.2151	81.6	1.97	0.0528
season	3	-0.04832	0.2087	80.6	-0.23	0.8175
season	4	-0.1923	0.2093	79.9	-0.92	0.3608
season	5	0.07129	0.2090	79.4	0.34	0.7339
season	6	0.1686	0.2086	78.7	0.81	0.4212
season	7	0.02652	0.2161	79.1	0.12	0.9026
season	8	-0.04479	0.2168	80.8	-0.21	0.8369
season	9	0.3903	0.2026	80.8	1.93	0.0575
season	10	0.2495	0.2011	81.9	1.24	0.2184
season	11	0.1886	0.1867	62.7	1.01	0.3164
season	12	0	.	.	.	.
date1		-0.02570	0.02086	20.9	-1.23	0.2315
temp_dev		0.03719	0.03912	126	0.95	0.3436

Mixed Model With Local Nugget

The Mixed Procedure

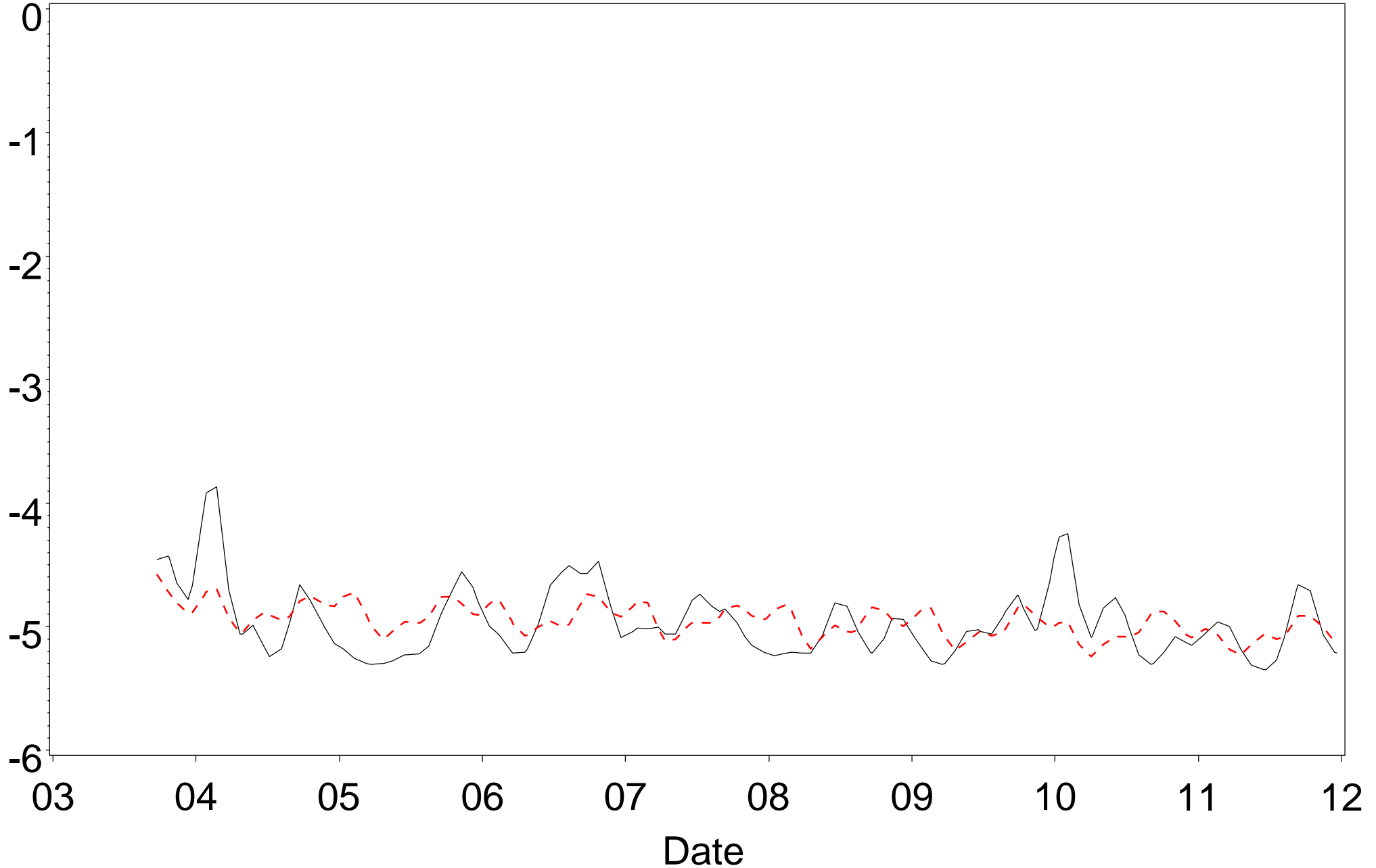
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.9	1.48	0.1592
date1	1	20.9	1.52	0.2315
temp_dev	1	126	0.90	0.3436

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-39.71249549	
1	2	-119.38433930	0.02194186
2	2	-123.76007277	0.01017985
3	2	-130.06004867	0.00150272
4	1	-130.89398989	0.00002311
5	1	-130.90625520	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.008690	0.002495	3.48	0.0002
Variance	Intercept	0.01379	0.003211	4.30	<.0001
SP(POW)	Intercept	0.2673	0.1628	1.64	0.1007
Residual		0.02758	0.002201	12.53	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-130.9
AIC (smaller is better)	-122.9
AICC (smaller is better)	-122.8
BIC (smaller is better)	-112.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-21.7954	14.0402	16.9	-1.55	0.1391
season	1	0.2158	0.06229	64.3	3.46	0.0010
season	2	0.03659	0.07024	81.7	0.52	0.6039
season	3	0.2275	0.06847	80.6	3.32	0.0013
season	4	0.3292	0.06881	79.6	4.78	<.0001
season	5	0.2443	0.06867	78.3	3.56	0.0006
season	6	0.2446	0.06850	77.3	3.57	0.0006
season	7	0.3116	0.06860	78	4.54	<.0001
season	8	0.2730	0.06877	80.3	3.97	0.0002
season	9	0.1674	0.06647	81	2.52	0.0137
season	10	0.1020	0.06575	82.3	1.55	0.1248
season	11	0.1986	0.06070	64.7	3.27	0.0017
season	12	0	.	.	.	.
date1		0.01475	0.006992	16.9	2.11	0.0502
temp_dev		0.02681	0.01287	119	2.08	0.0393

Mixed Model With Local Nugget

The Mixed Procedure

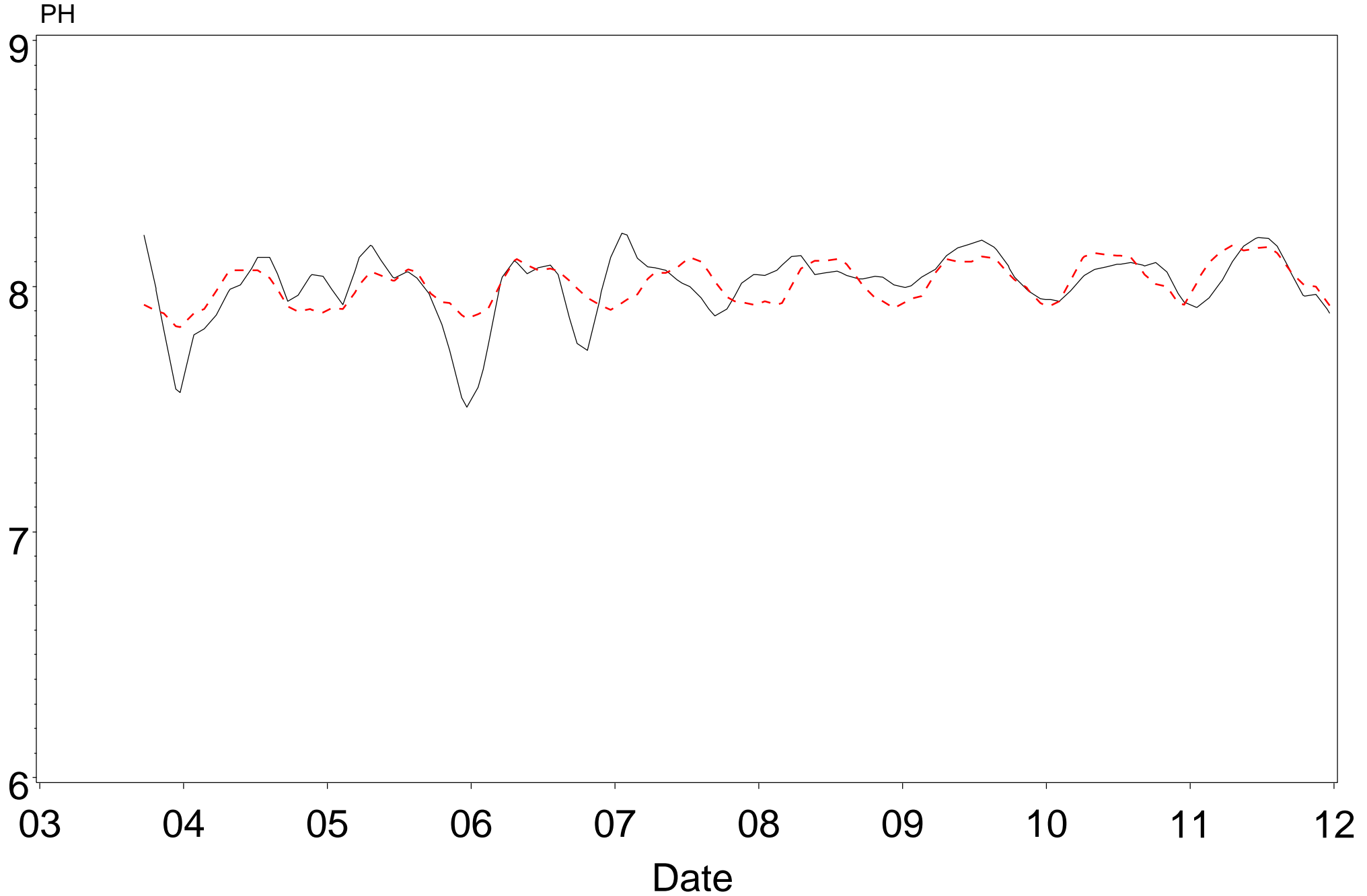
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.4	4.33	<.0001
date1	1	16.9	4.45	0.0502
temp_dev	1	119	4.34	0.0393

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale

Parameter = pH (SU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1244.27562578	
1	3	1195.07819434	0.09751061
2	2	1190.07583022	0.03121850
3	2	1185.76379304	0.00008814
4	1	1185.75193281	0.00000002
5	1	1185.75192984	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08271	0.02996	2.76	0.0029
Variance	Intercept	0.1762	0.04142	4.25	<.0001
SP(POW)	Intercept	0.1870	0.1759	1.06	0.2879
Residual		0.4055	0.03288	12.33	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1185.8
AIC (smaller is better)	1193.8
AICC (smaller is better)	1193.8
BIC (smaller is better)	1204.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		301.39	48.0937	19.6	6.27	<.0001
season	1	-0.4263	0.2344	58.9	-1.82	0.0740
season	2	-0.1711	0.2593	82.9	-0.66	0.5113
season	3	-0.5201	0.2499	83.3	-2.08	0.0405
season	4	-0.4952	0.2504	83.5	-1.98	0.0513
season	5	-0.5326	0.2499	83.2	-2.13	0.0360
season	6	-0.5120	0.2493	82.3	-2.05	0.0431
season	7	-0.5957	0.2496	82.7	-2.39	0.0193
season	8	-0.2917	0.2504	83.9	-1.16	0.2474
season	9	-0.1323	0.2426	83.5	-0.55	0.5870
season	10	-0.2173	0.2427	83.5	-0.90	0.3731
season	11	-0.3292	0.2284	58.7	-1.44	0.1547
season	12	0	.	.	.	.
date1		-0.1527	0.02395	19.6	-6.38	<.0001
temp_dev		-0.07246	0.04830	118	-1.50	0.1362

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.7	1.10	0.3729
date1	1	19.6	40.64	<.0001
temp_dev	1	118	2.25	0.1362

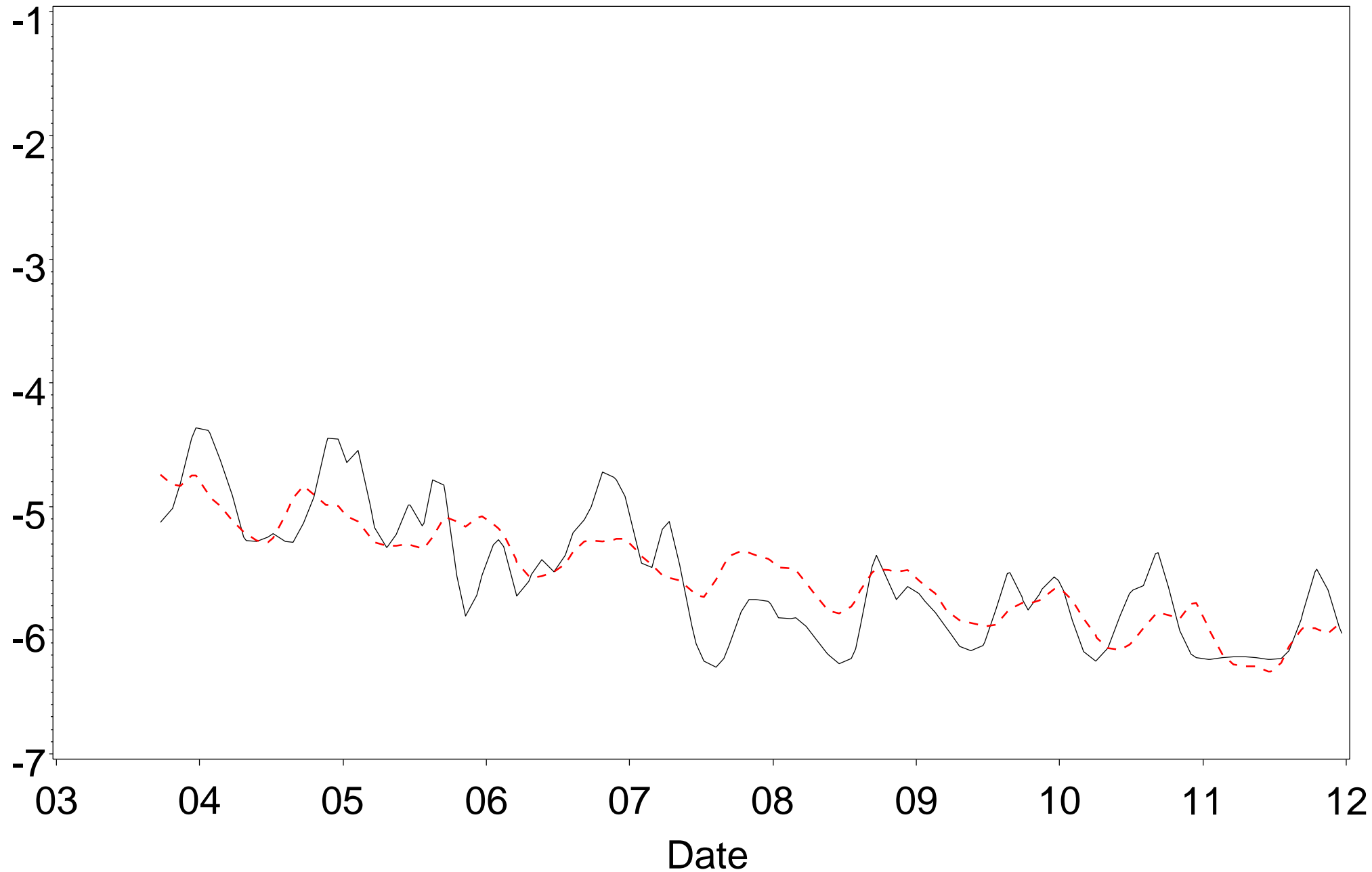
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	408
Number of Observations Not Used	106

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-338.93282046	
1	2	-495.62002830	0.00565788
2	1	-499.97022055	0.00198274
3	2	-501.30634466	0.00022978
4	1	-501.45370478	0.00000146
5	1	-501.45460439	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006030	0.001394	4.33	<.0001
Variance	Intercept	0.01097	0.002793	3.93	<.0001
SP(POW)	Intercept	0.5630	0.1286	4.38	<.0001
Residual		0.007693	0.000739	10.41	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-501.5
AIC (smaller is better)	-493.5
AICC (smaller is better)	-493.4
BIC (smaller is better)	-482.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-46.8037	15.5987	8.81	-3.00	0.0153
season	1	0.01445	0.04140	54.2	0.35	0.7284
season	2	0.05894	0.05292	59	1.11	0.2699
season	3	0.02853	0.05645	63.3	0.51	0.6150
season	4	0.04093	0.05583	61	0.73	0.4663
season	5	0.04445	0.05942	63.2	0.75	0.4572
season	6	-0.03762	0.06465	62.5	-0.58	0.5627
season	7	-0.00636	0.05680	59.9	-0.11	0.9112
season	8	-0.1471	0.05499	64.1	-2.67	0.0095
season	9	-0.08856	0.05037	59.5	-1.76	0.0838
season	10	-0.00789	0.04719	57.7	-0.17	0.8678
season	11	-0.04399	0.04089	52.5	-1.08	0.2869
season	12	0	.	.	.	.
date1		0.02503	0.007768	8.81	3.22	0.0108
temp_dev		-0.00023	0.008916	89.6	-0.03	0.9790

Mixed Model With Local Nugget

The Mixed Procedure

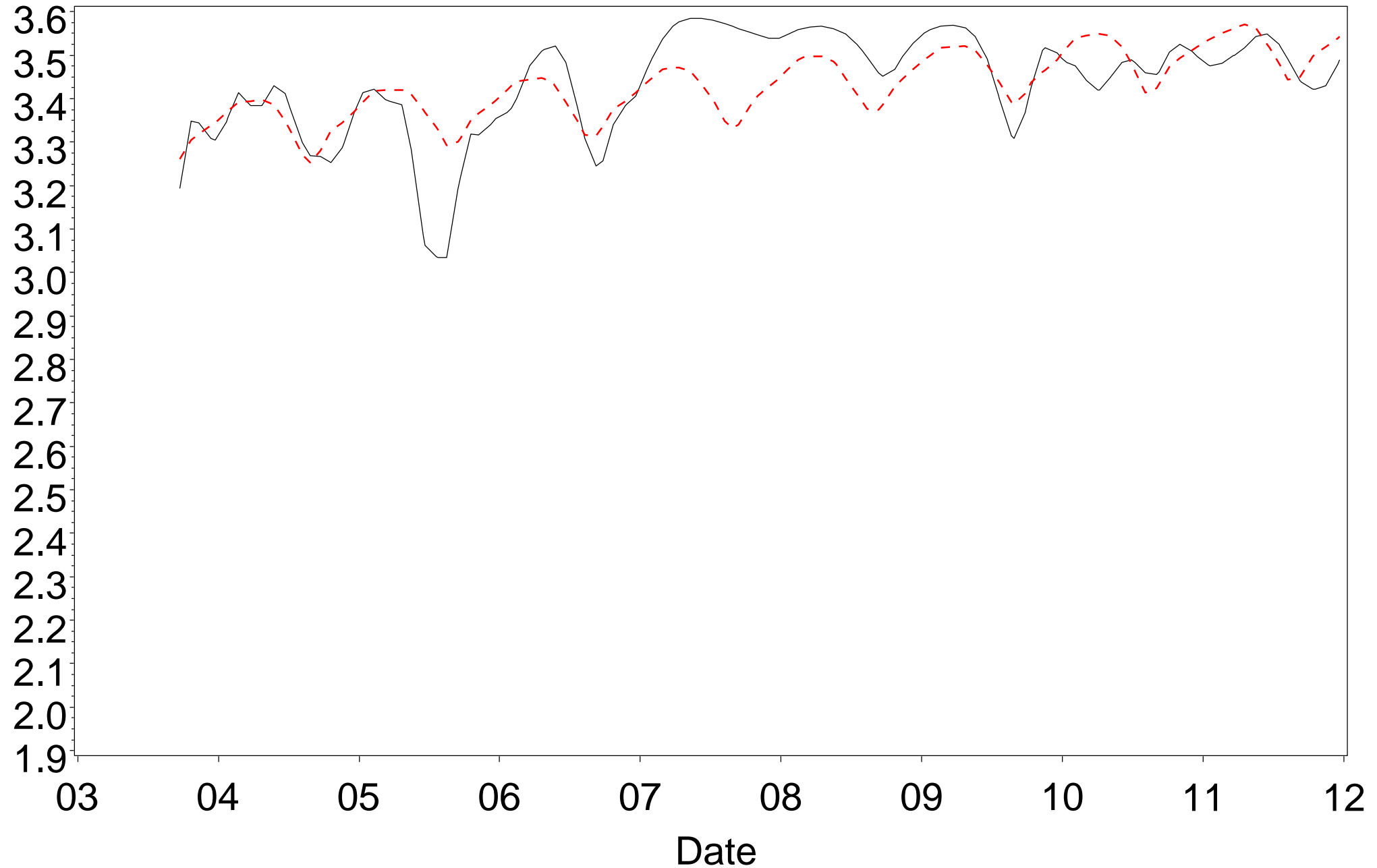
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.7	1.94	0.0538
date1	1	8.81	10.38	0.0108
temp_dev	1	89.6	0.00	0.9790

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1090.49282530	
1	2	-1808.22643983	0.03647370
2	1	-1870.65150444	0.01283939
3	1	-1893.95969731	.
4	2	-1908.44432142	0.00865409
5	2	-1923.15468020	0.00140787
6	2	-1925.40368489	0.00008889
7	1	-1925.53797077	0.00000094
8	1	-1925.53931605	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000011	0.000017	0.65	0.2573
Variance	Intercept	0.006342	0.001005	6.31	<.0001
SP(POW)	Intercept	-0.1217	0.1140	-1.07	0.2858
Residual		0.000539	0.000041	13.24	<.0001

Fit Statistics	
-2 Res Log Likelihood	-1925.5
AIC (smaller is better)	-1917.5
AICC (smaller is better)	-1917.5
BIC (smaller is better)	-1906.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		15.7194	6.0368	33.5	2.60	0.0136
season	1	-0.09054	0.04115	53.1	-2.20	0.0322
season	2	0.08399	0.04059	84.4	2.07	0.0416
season	3	0.1852	0.03897	81.5	4.75	<.0001
season	4	0.3363	0.03904	82.4	8.61	<.0001
season	5	0.4612	0.03902	82.3	11.82	<.0001
season	6	0.5786	0.03902	82.3	14.83	<.0001
season	7	0.5926	0.03902	82.3	15.19	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.5947	0.03906	82.7	15.23	<.0001
season	9	0.5414	0.03781	81.4	14.32	<.0001
season	10	0.4340	0.03784	84.4	11.47	<.0001
season	11	0.2923	0.04001	50.9	7.30	<.0001
season	12	0	.	.	.	.
date1		-0.00642	0.003006	33.5	-2.13	0.0402
temp_dev		0.08755	0.003327	498	26.32	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68	88.56	<.0001
date1	1	33.5	4.56	0.0402
temp_dev	1	498	692.51	<.0001

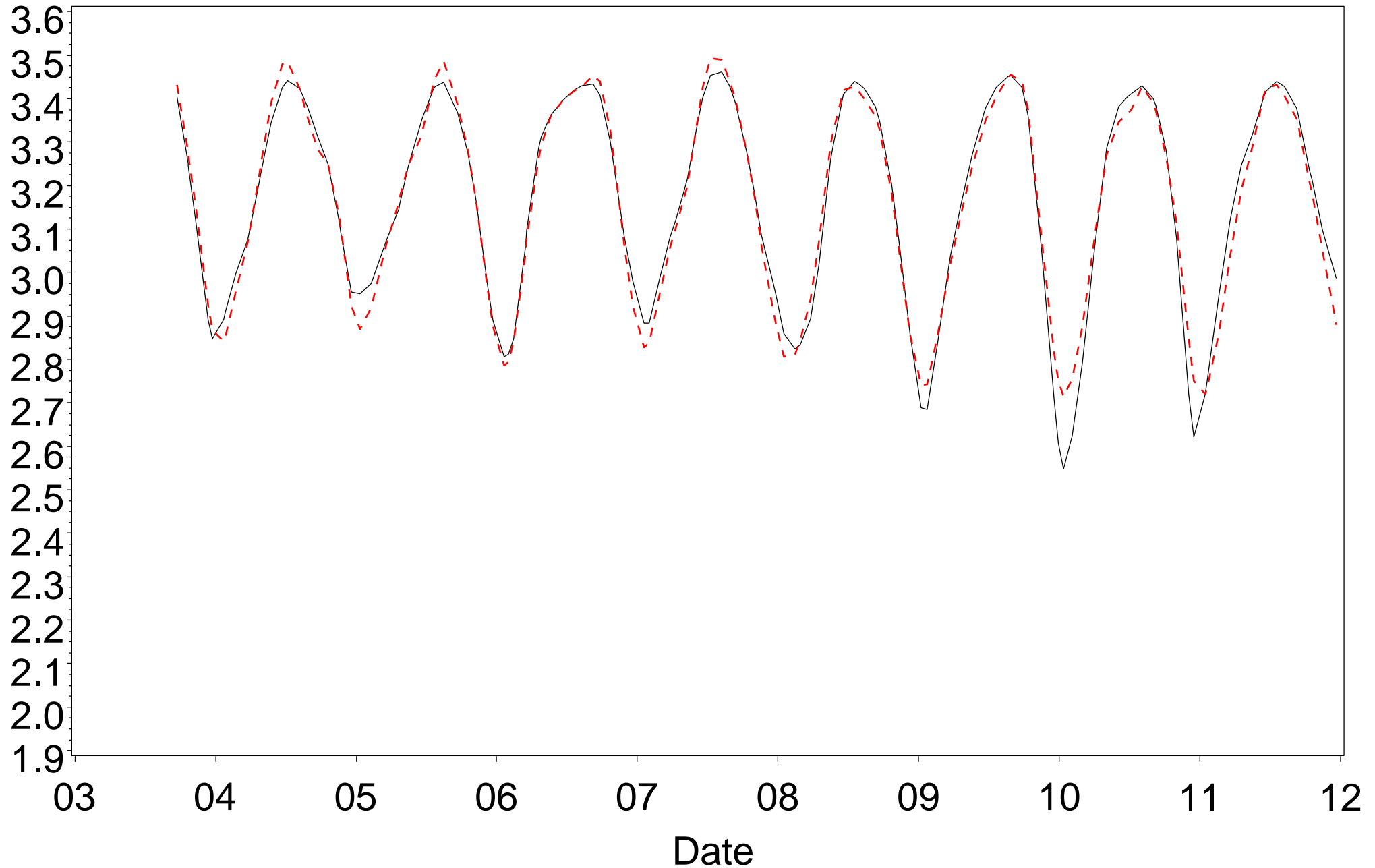
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1137.51462069	
1	2	871.30421076	0.21651576
2	2	864.37273530	0.12788704
3	2	860.95516671	0.03389647
4	1	859.88861613	0.00074292
5	1	859.86627900	0.00000063
6	1	859.86626047	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01649	0.01002	1.64	0.0500
Variance	Intercept	0.3553	0.07199	4.94	<.0001
SP(POW)	Intercept	0.4418	0.1124	3.93	<.0001
Residual		0.1880	0.01488	12.64	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	859.9
AIC (smaller is better)	867.9
AICC (smaller is better)	867.9
BIC (smaller is better)	878.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		242.21	77.6830	14.2	3.12	0.0075
season	1	-0.2022	0.2415	67.8	-0.84	0.4054
season	2	-0.4712	0.2916	79.2	-1.62	0.1101
season	3	-0.1224	0.2969	76.6	-0.41	0.6813
season	4	-0.2305	0.3029	71	-0.76	0.4491
season	5	-0.08064	0.3050	67.3	-0.26	0.7923
season	6	0.2040	0.3053	66.1	0.67	0.5064
season	7	0.4208	0.3047	67.7	1.38	0.1718
season	8	-0.02587	0.3017	72.6	-0.09	0.9319
season	9	0.3781	0.2876	77.1	1.31	0.1925
season	10	0.04337	0.2723	78.9	0.16	0.8739
season	11	-0.01960	0.2320	66.6	-0.08	0.9329
season	12	0	.	.	.	.
date1		-0.1211	0.03869	14.2	-3.13	0.0073
temp_dev		-0.02895	0.04371	166	-0.66	0.5087

Mixed Model With Local Nugget

The Mixed Procedure

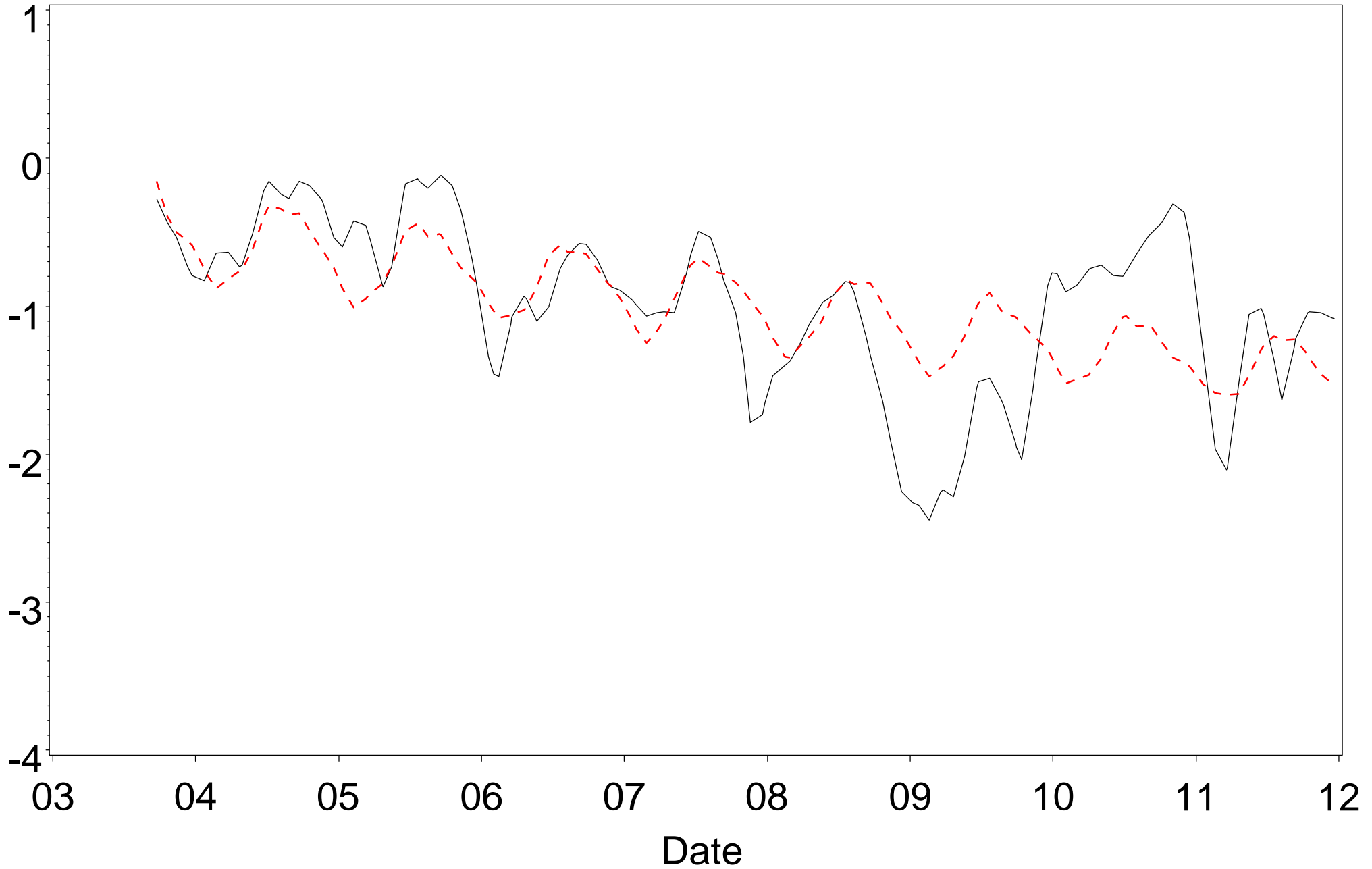
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68	1.28	0.2566
date1	1	14.2	9.80	0.0073
temp_dev	1	166	0.44	0.5087

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1181.74272532	
1	3	889.95611898	0.51111023
2	2	880.06839872	0.33258398
3	2	876.38673009	0.17603931
4	2	872.11633253	0.01224493
5	1	871.80975364	0.00017389
6	1	871.80560484	0.00000007
7	1	871.80560323	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01600	0.009893	1.62	0.0529
Variance	Intercept	0.4126	0.07653	5.39	<.0001
SP(POW)	Intercept	0.3337	0.1154	2.89	0.0038
Residual		0.1855	0.01468	12.64	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	871.8
AIC (smaller is better)	879.8
AICC (smaller is better)	879.9
BIC (smaller is better)	890.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		208.47	75.1436	17.5	2.77	0.0127
season	1	-0.1715	0.2762	66.9	-0.62	0.5368
season	2	-0.4283	0.3247	82.5	-1.32	0.1907
season	3	-0.1196	0.3234	78.8	-0.37	0.7125
season	4	-0.2034	0.3262	74.2	-0.62	0.5348
season	5	-0.08295	0.3268	71.8	-0.25	0.8003
season	6	-0.1632	0.3267	71	-0.50	0.6189
season	7	0.4080	0.3266	72	1.25	0.2157
season	8	-0.03816	0.3256	75.4	-0.12	0.9070
season	9	0.3869	0.3136	79.2	1.23	0.2210
season	10	0.04215	0.3032	82.4	0.14	0.8898
season	11	-0.02225	0.2657	65.4	-0.08	0.9335
season	12	0	.	.	.	.
date1		-0.1043	0.03742	17.5	-2.79	0.0124
temp_dev		-0.03276	0.04715	211	-0.69	0.4879

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69	1.08	0.3930
date1	1	17.5	7.77	0.0124
temp_dev	1	211	0.48	0.4879

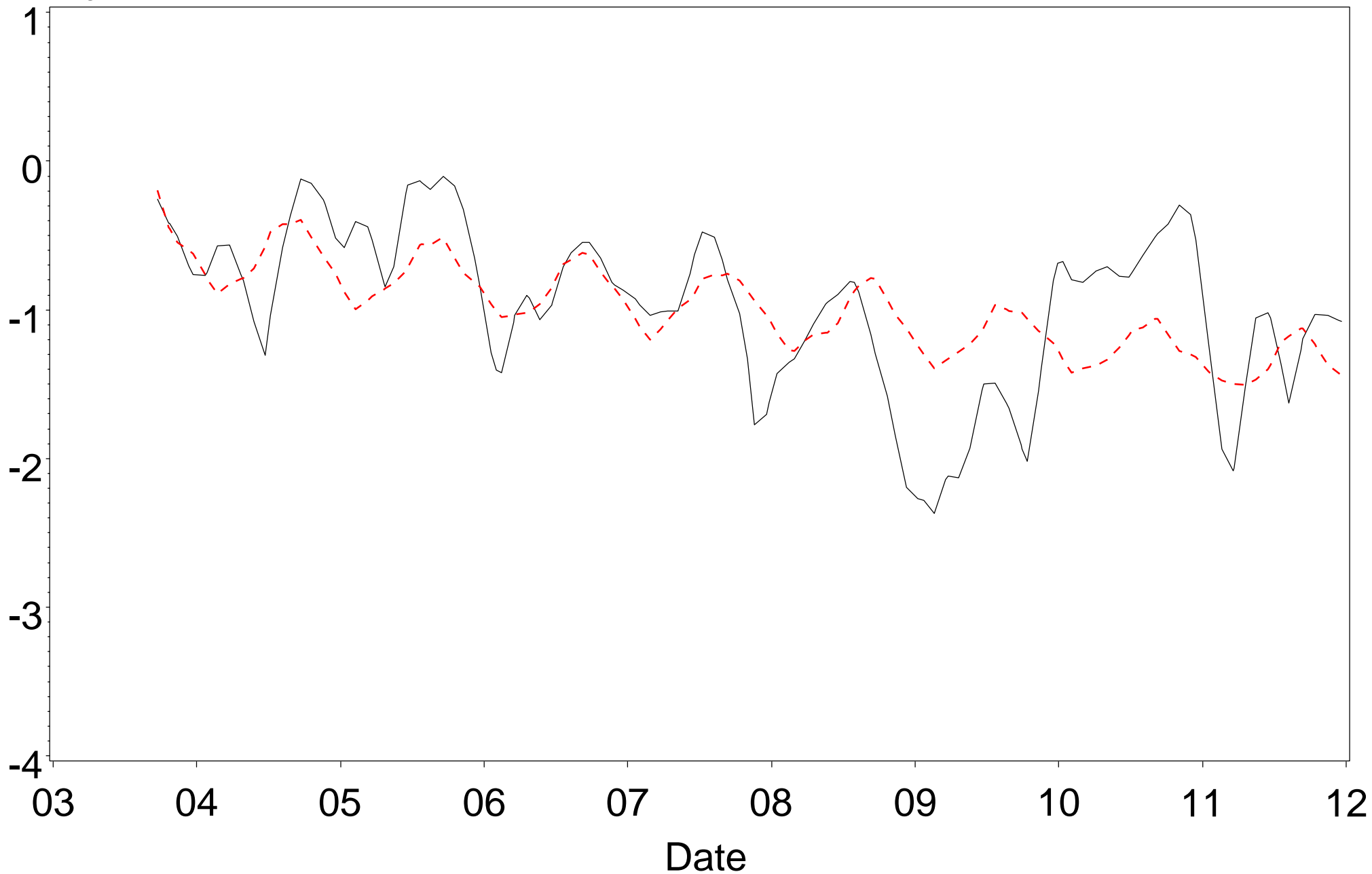
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	452
Number of Observations Not Used	62

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	228.96425308	
1	2	85.82135357	0.00668582
2	1	83.03149154	0.00103329
3	2	82.55859076	0.00042537
4	2	82.36767966	0.00018297
5	2	82.28285961	0.00008185
6	2	82.24630975	0.00003665
7	1	82.22928817	0.00001674
8	2	82.22190511	0.00000747
9	1	82.21845491	0.00000322
10	1	82.21706430	0.00000127
11	1	82.21649343	0.00000041
12	1	82.21632170	0.00000009
13	1	82.21628411	0.00000001

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03559	0.006981	5.10	<.0001
Variance	Intercept	0.1134	0.4427	0.26	0.3989
SP(POW)	Intercept	0.9430	0.2440	3.86	0.0001
Residual		0.03588	0.003213	11.17	<.0001

Fit Statistics	
-2 Res Log Likelihood	82.2
AIC (smaller is better)	90.2
AICC (smaller is better)	90.3
BIC (smaller is better)	101.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-80.7297	0	0	.	.
season	1	-0.04377	0.1834	40.6	-0.24	0.8126
season	2	-0.00633	0.2492	25.7	-0.03	0.9799
season	3	-0.02732	0.2780	20.1	-0.10	0.9227
season	4	0.08686	0.3005	19.3	0.29	0.7757
season	5	0.07825	0.3118	18.1	0.25	0.8047
season	6	0.2523	0.3136	17.5	0.80	0.4318
season	7	0.4071	0.3113	18.7	1.31	0.2069

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.4898	0.2871	18	1.71	0.1052
season	9	0.4228	0.2639	19.1	1.60	0.1255
season	10	0.2837	0.2282	23	1.24	0.2263
season	11	0.1806	0.1734	45.4	1.04	0.3032
season	12	0	.	.	.	.
date1		0.04078	0	0	.	.
temp_dev		0.03009	0.03337	61.1	0.90	0.3708

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	27.8	0.40	0.9424
date1	1	1	Infty	<.0001
temp_dev	1	61.1	0.81	0.3708

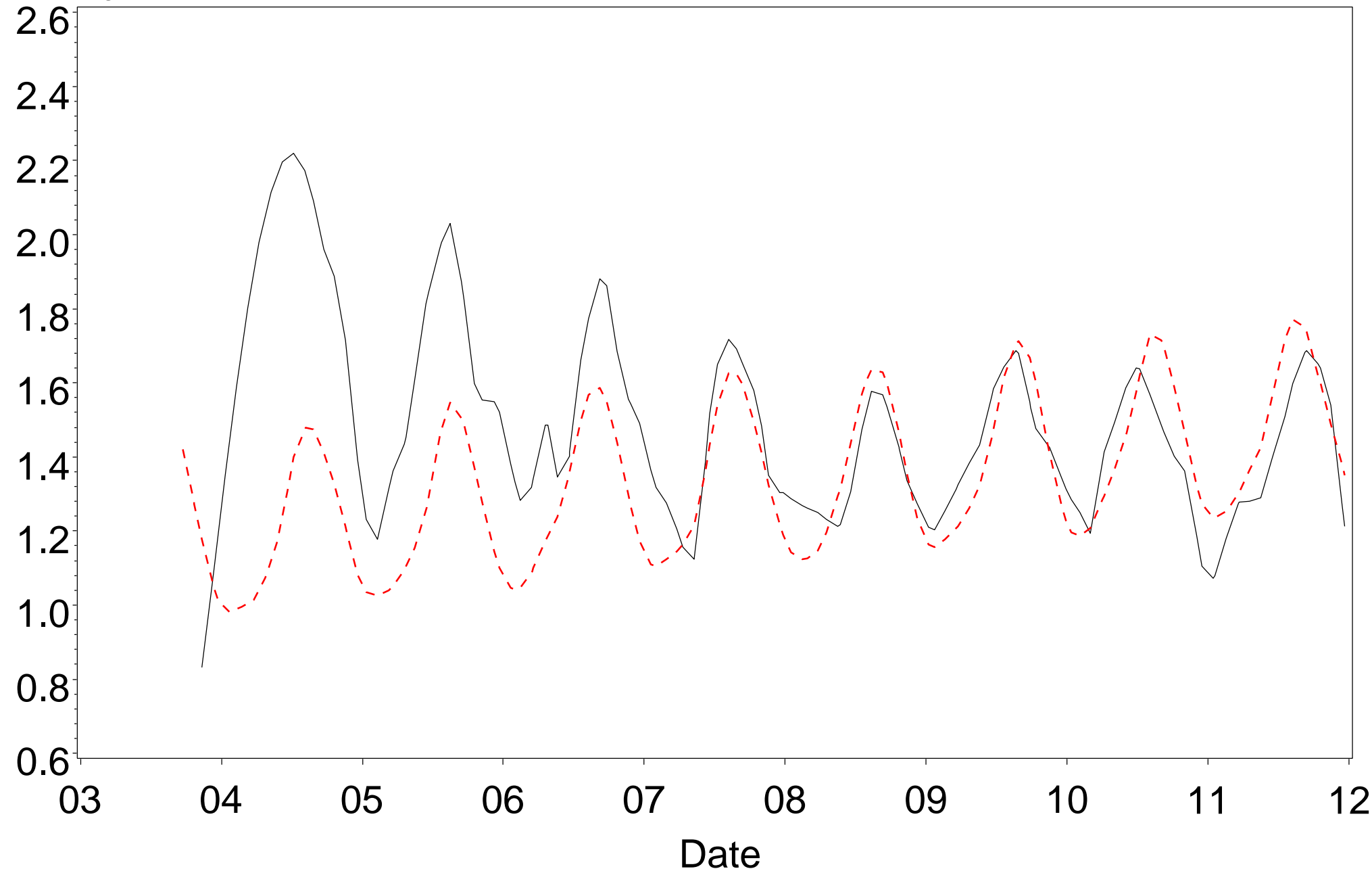
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1085.21208752	
1	3	993.89995493	0.24832294
2	2	980.63426127	0.27849660
3	2	971.18832289	0.04531844
4	1	969.92244017	0.00092800
5	1	969.89814484	0.00000171
6	1	969.89810118	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05954	0.01789	3.33	0.0004
Variance	Intercept	0.1488	0.03174	4.69	<.0001
SP(POW)	Intercept	0.06077	0.1646	0.37	0.7119
Residual		0.2493	0.01909	13.06	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	969.9
AIC (smaller is better)	977.9
AICC (smaller is better)	978.0
BIC (smaller is better)	988.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		178.12	39.1885	23.8	4.55	0.0001
season	1	-0.3530	0.2144	55.8	-1.65	0.1053
season	2	-0.4634	0.2296	82.5	-2.02	0.0469
season	3	-0.3442	0.2189	81.8	-1.57	0.1198
season	4	-0.5335	0.2193	82.8	-2.43	0.0171
season	5	-0.3392	0.2191	82.6	-1.55	0.1255
season	6	-0.07138	0.2187	81.9	-0.33	0.7450
season	7	-0.1791	0.2189	82.2	-0.82	0.4156
season	8	0.02620	0.2195	82.8	0.12	0.9053
season	9	0.08739	0.2125	82	0.41	0.6820
season	10	0.03832	0.2148	83.6	0.18	0.8588
season	11	-0.3424	0.2089	55.1	-1.64	0.1069
season	12	0	.	.	.	.
date1		-0.09044	0.01952	23.8	-4.63	0.0001
temp_dev		0.008016	0.04218	137	0.19	0.8496

Mixed Model With Local Nugget

The Mixed Procedure

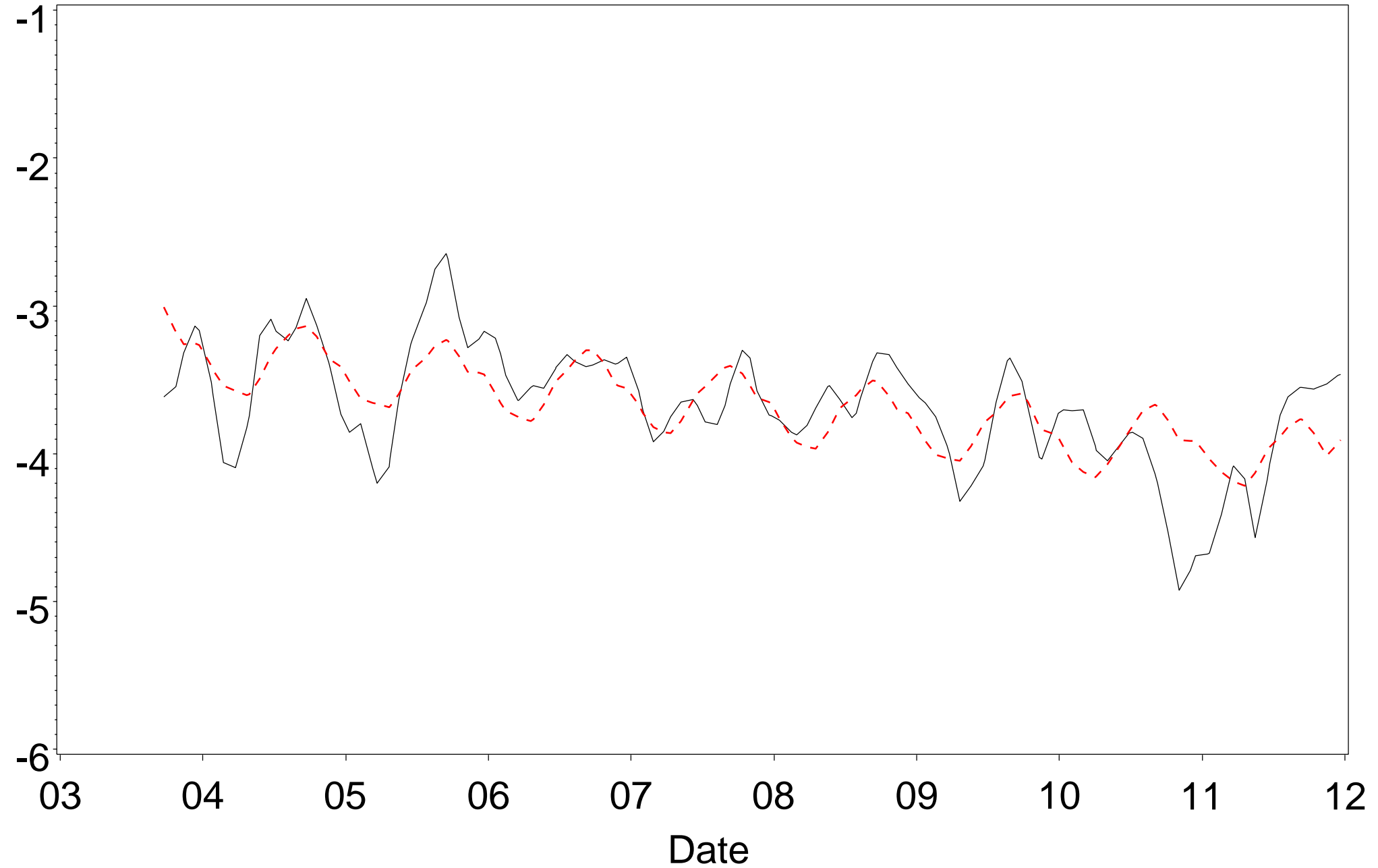
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	65.8	1.80	0.0710
date1	1	23.8	21.48	0.0001
temp_dev	1	137	0.04	0.8496

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale
TPO4_mgl

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	514
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	946.23151514	
1	4	820.98200684	.
2	1	807.97674230	0.28343415
3	2	802.26423463	0.10808797
4	2	794.92499670	0.01010484
5	1	794.26651041	0.00009364
6	1	794.26062111	0.00000002
7	1	794.26061992	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006330	0.007064	0.90	0.1851
Variance	Intercept	0.1740	0.03364	5.17	<.0001
SP(POW)	Intercept	0.1894	0.1404	1.35	0.1773
Residual		0.1842	0.01408	13.08	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	794.3
AIC (smaller is better)	802.3
AICC (smaller is better)	802.3
BIC (smaller is better)	813.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-114.87	44.3693	20.1	-2.59	0.0175
season	1	0.09890	0.2067	60.9	0.48	0.6341
season	2	0.03658	0.2310	82.7	0.16	0.8745
season	3	-0.00851	0.2236	80.9	-0.04	0.9697
season	4	-0.1011	0.2236	79.6	-0.45	0.6525
season	5	-0.3968	0.2235	79.4	-1.78	0.0797
season	6	0.01899	0.2232	78.9	0.09	0.9324
season	7	-0.1479	0.2233	79.1	-0.66	0.5098
season	8	-0.01395	0.2237	80.3	-0.06	0.9504
season	9	-0.05665	0.2170	81	-0.26	0.7947
season	10	-0.06120	0.2155	82.6	-0.28	0.7771
season	11	-0.1248	0.1998	59.1	-0.62	0.5347
season	12	0	.	.	.	.
date1		0.05858	0.02210	20.1	2.65	0.0153
temp_dev		0.01739	0.03925	157	0.44	0.6584

Mixed Model With Local Nugget

The Mixed Procedure

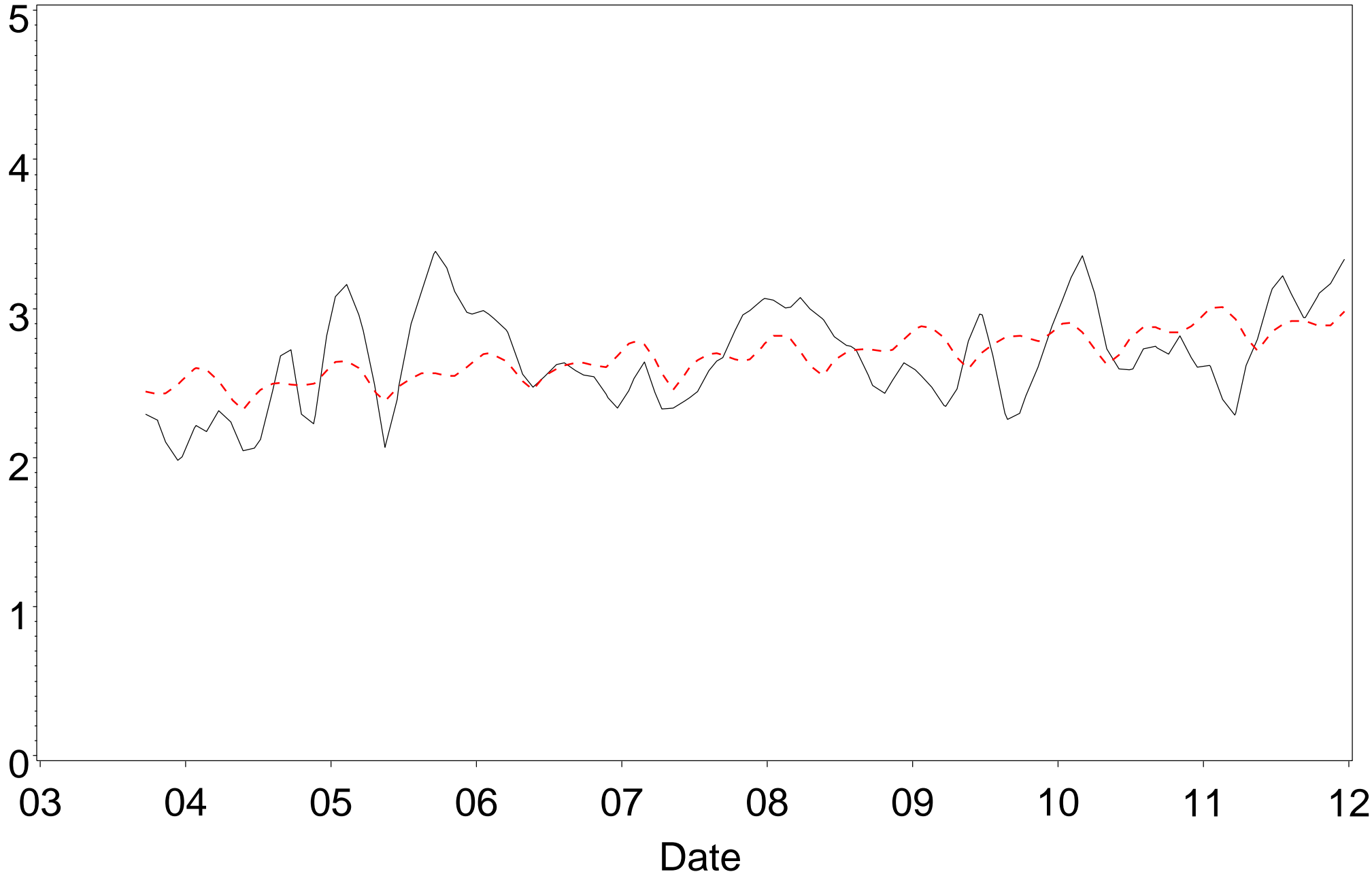
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67	0.63	0.8008
date1	1	20.1	7.03	0.0153
temp_dev	1	157	0.20	0.6584

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface

TSS_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	186	20 28 31 33 34 35 204 205 206 207 208 209 216 217 219 220 225 227 228 229 230 237 240 241 242 243 248 249 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 284 285 286 287 288 293 294 295 296 297 298 299 304 305 306 307 308 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 340 341 342 343 344 345 346 353 354 355 356 367 368 369 380 382 P25 P27 P28 P31 P35 204 205 206 207 209 215 218 220 225 228 229 231 237 238 242 243 248 250 251 252 253 254 259 260 261 262 263 264 265 270 271 272 273 274 275 276 282 283 284 286 287 293 294 295 296 297 298 299 302 304 305 306 307 309 315 316 317 318 319 320 321 327 328 329 330 331 332 333 335 340 341 342 343 344 345 346 353 353D 354 356 367 368 369 374 380

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	110
Subjects	1
Max Obs Per Subject	514

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	514
Number of Observations Used	452
Number of Observations Not Used	62

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	857.32805574	
1	2	767.98208248	0.15729660
2	2	764.17034233	0.06755987
3	1	762.53620901	0.00772507
4	1	762.36063103	0.00010407
5	1	762.35839242	0.00000002
6	1	762.35839200	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.07311	0.02008	3.64	0.0001
Variance	Intercept	0.1196	0.03235	3.70	0.0001
SP(POW)	Intercept	0.4879	0.1766	2.76	0.0057
Residual		0.1959	0.01680	11.66	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	762.4
AIC (smaller is better)	770.4
AICC (smaller is better)	770.5
BIC (smaller is better)	781.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-166.53	49.4972	9.52	-3.36	0.0077
season	1	0.09400	0.1665	43.7	0.56	0.5752
season	2	0.01730	0.1957	50.3	0.09	0.9299
season	3	0.3028	0.2038	55.4	1.49	0.1431
season	4	-0.02940	0.2425	60.7	-0.12	0.9039
season	5	-0.05317	0.2028	57.6	-0.26	0.7941
season	6	0.1998	0.2100	58.5	0.95	0.3454
season	7	0.1010	0.2170	59.1	0.47	0.6432
season	8	-0.00022	0.2012	58.6	-0.00	0.9991
season	9	0.01161	0.2097	54.4	0.06	0.9560
season	10	-0.04317	0.1828	49.4	-0.24	0.8143
season	11	-0.2400	0.1617	44.4	-1.48	0.1449
season	12	0	.	.	.	.
date1		0.08325	0.02465	9.52	3.38	0.0075
temp_dev		-0.03042	0.03667	71.1	-0.83	0.4095

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	46.3	1.00	0.4617
date1	1	9.52	11.41	0.0075
temp_dev	1	71.1	0.69	0.4095

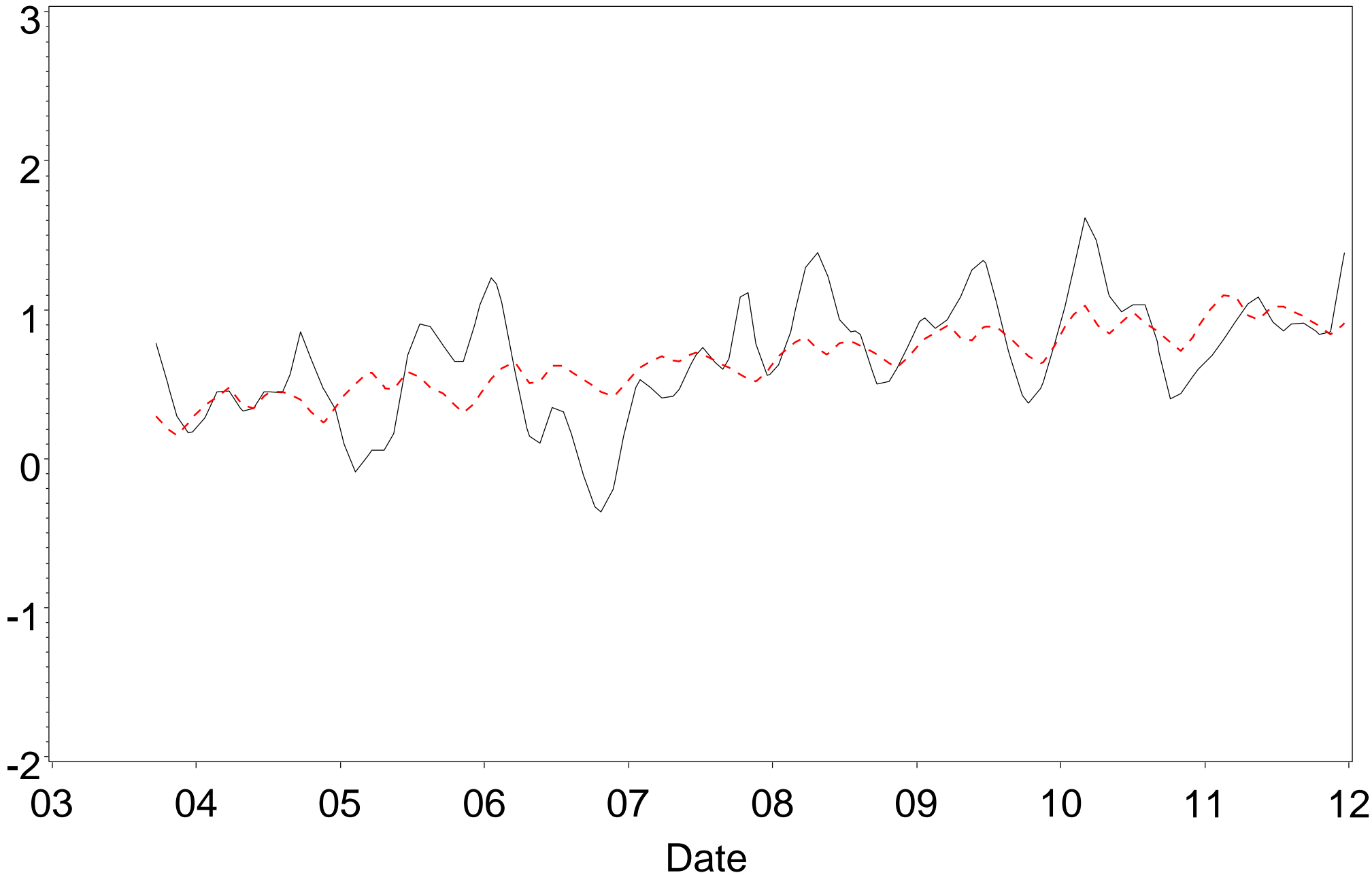
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Pine Island Sound

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	464
Number of Observations Not Used	164

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	568.35938097	
1	2	394.82337344	0.02276873
2	1	388.50168896	0.03644728
3	2	385.28033627	0.02296131
4	2	378.82963502	0.00732873
5	2	377.06333382	0.00039747
6	1	376.96969795	0.00000233
7	1	376.96917041	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007194	0.003752	1.92	0.0276
Variance	Intercept	0.09686	0.02203	4.40	<.0001
SP(POW)	Intercept	0.2088	0.1545	1.35	0.1764
Residual		0.08885	0.006580	13.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	377.0
AIC (smaller is better)	385.0
AICC (smaller is better)	385.1
BIC (smaller is better)	391.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		98.5545	58.3321	13.8	1.69	0.1135
season	1	-0.1527	0.1863	44.5	-0.82	0.4169
season	2	-0.4049	0.2020	55.7	-2.00	0.0499
season	3	-0.2289	0.2044	54.5	-1.12	0.2677
season	4	0.01295	0.2032	52.5	0.06	0.9494
season	5	0.04097	0.1936	50.9	0.21	0.8332
season	6	0.07279	0.1934	50.9	0.38	0.7082
season	7	0.2286	0.1935	51.3	1.18	0.2429
season	8	-0.02102	0.1939	52.2	-0.11	0.9141
season	9	-0.01089	0.1941	53.8	-0.06	0.9555
season	10	0.2770	0.1922	56	1.44	0.1551
season	11	-0.07029	0.1761	42.9	-0.40	0.6917
season	12	0	.	.	.	.
date1		-0.04890	0.02903	13.8	-1.68	0.1145
temp_dev		-0.00367	0.03046	210	-0.12	0.9042

Mixed Model With Local Nugget

The Mixed Procedure

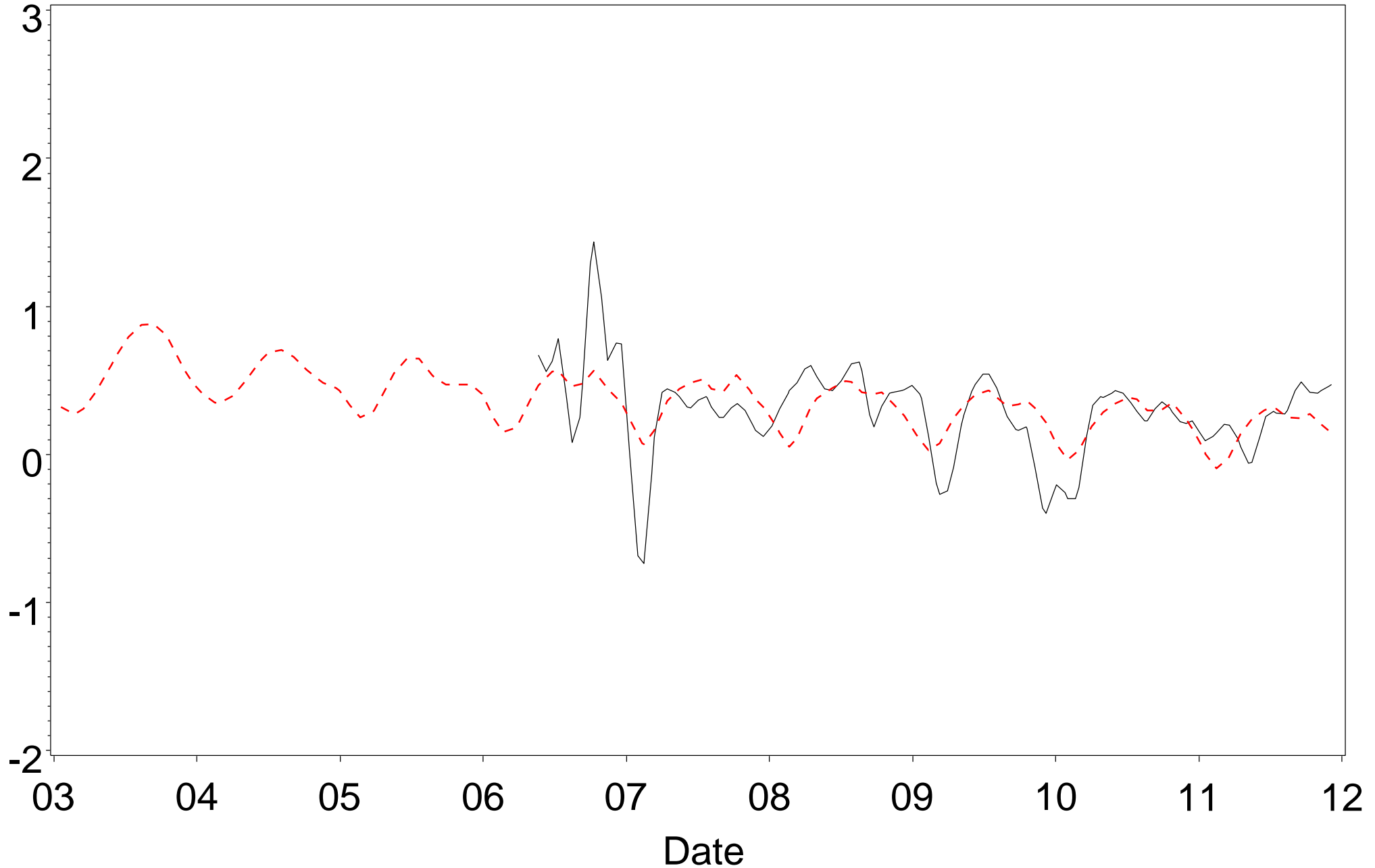
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.9	1.51	0.1608
date1	1	13.8	2.84	0.1145
temp_dev	1	210	0.01	0.9042

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

Log Scale
BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	553
Number of Observations Not Used	75

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1516.27831230	
1	2	1062.71106077	0.31163068
2	1	1049.27337826	0.05939218
3	1	1047.31508731	0.00441667
4	1	1047.17427449	0.00027024
5	1	1047.16623408	0.00000195
6	1	1047.16617854	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03260	0.01267	2.57	0.0050
Variance	Intercept	1.0648	0.3694	2.88	0.0020
SP(POW)	Intercept	0.7936	0.07761	10.22	<.0001
Residual		0.2419	0.01686	14.35	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1047.2
AIC (smaller is better)	1055.2
AICC (smaller is better)	1055.2
BIC (smaller is better)	1061.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		410.53	192.66	5.13	2.13	0.0849
season	1	-0.2213	0.2708	65	-0.82	0.4167
season	2	-0.3352	0.3481	61.8	-0.96	0.3393
season	3	0.003490	0.3801	61.8	0.01	0.9927
season	4	0.1074	0.4265	61.8	0.25	0.8021
season	5	0.5605	0.4235	61.8	1.32	0.1905
season	6	0.1529	0.4253	61.9	0.36	0.7204
season	7	0.2038	0.4114	60.7	0.50	0.6222
season	8	0.8441	0.4124	60.5	2.05	0.0451
season	9	0.6896	0.3897	60.1	1.77	0.0819
season	10	0.5623	0.3462	59.9	1.62	0.1096
season	11	0.2323	0.2678	63.2	0.87	0.3890
season	12	0	.	.	.	.
date1		-0.2041	0.09596	5.13	-2.13	0.0853
temp_dev		0.04940	0.04661	299	1.06	0.2900

Mixed Model With Local Nugget

The Mixed Procedure

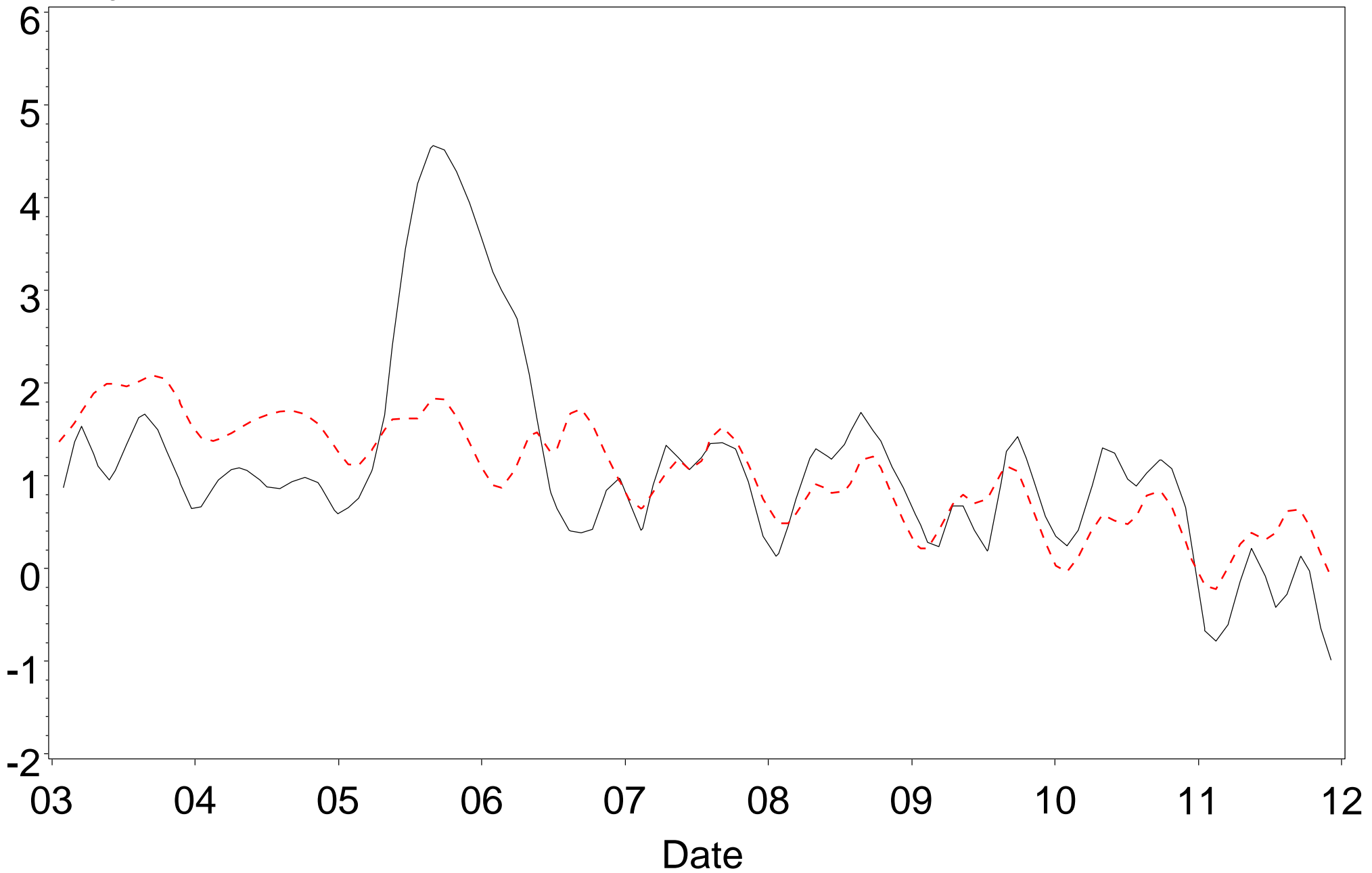
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.8	1.33	0.2309
date1	1	5.13	4.52	0.0853
temp_dev	1	299	1.12	0.2900

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	553
Number of Observations Not Used	75

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1702.09809202	
1	2	1147.39779213	1.38289765
2	2	1142.21388091	0.54341053
3	1	1142.12508496	0.00141120
4	2	1140.74717168	4.86984375
5	2	1139.72846375	0.02971559
6	1	1137.08798248	0.00799442
7	2	1136.47281570	0.00097450
8	1	1136.39939335	0.00000304
9	1	1136.39917129	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1363	0.03771	3.61	0.0002
Variance	Intercept	0.8452	0.2341	3.61	0.0002
SP(POW)	Intercept	0.7107	0.08425	8.44	<.0001
Residual		0.2696	0.01850	14.57	<.0001

Fit Statistics	
-2 Res Log Likelihood	1136.4
AIC (smaller is better)	1144.4
AICC (smaller is better)	1144.5
BIC (smaller is better)	1150.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		21.6153	153.14	8.01	0.14	0.8912
season	1	-0.5693	0.2815	75	-2.02	0.0467
season	2	-0.3805	0.3546	74.3	-1.07	0.2866
season	3	-0.7633	0.3824	74	-2.00	0.0496
season	4	-0.6611	0.4274	73.2	-1.55	0.1262
season	5	-0.6066	0.4209	71.3	-1.44	0.1539
season	6	-0.6794	0.4224	71.3	-1.61	0.1122
season	7	-0.1994	0.4088	70.1	-0.49	0.6272

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.06592	0.4139	72.1	0.16	0.8739
season	9	0.5249	0.3948	72.9	1.33	0.1878
season	10	0.4150	0.3553	72.1	1.17	0.2466
season	11	0.1731	0.2789	72.6	0.62	0.5369
season	12	0	.	.	.	.
date1		-0.00956	0.07628	8.01	-0.13	0.9033
temp_dev		0.07761	0.04931	309	1.57	0.1165

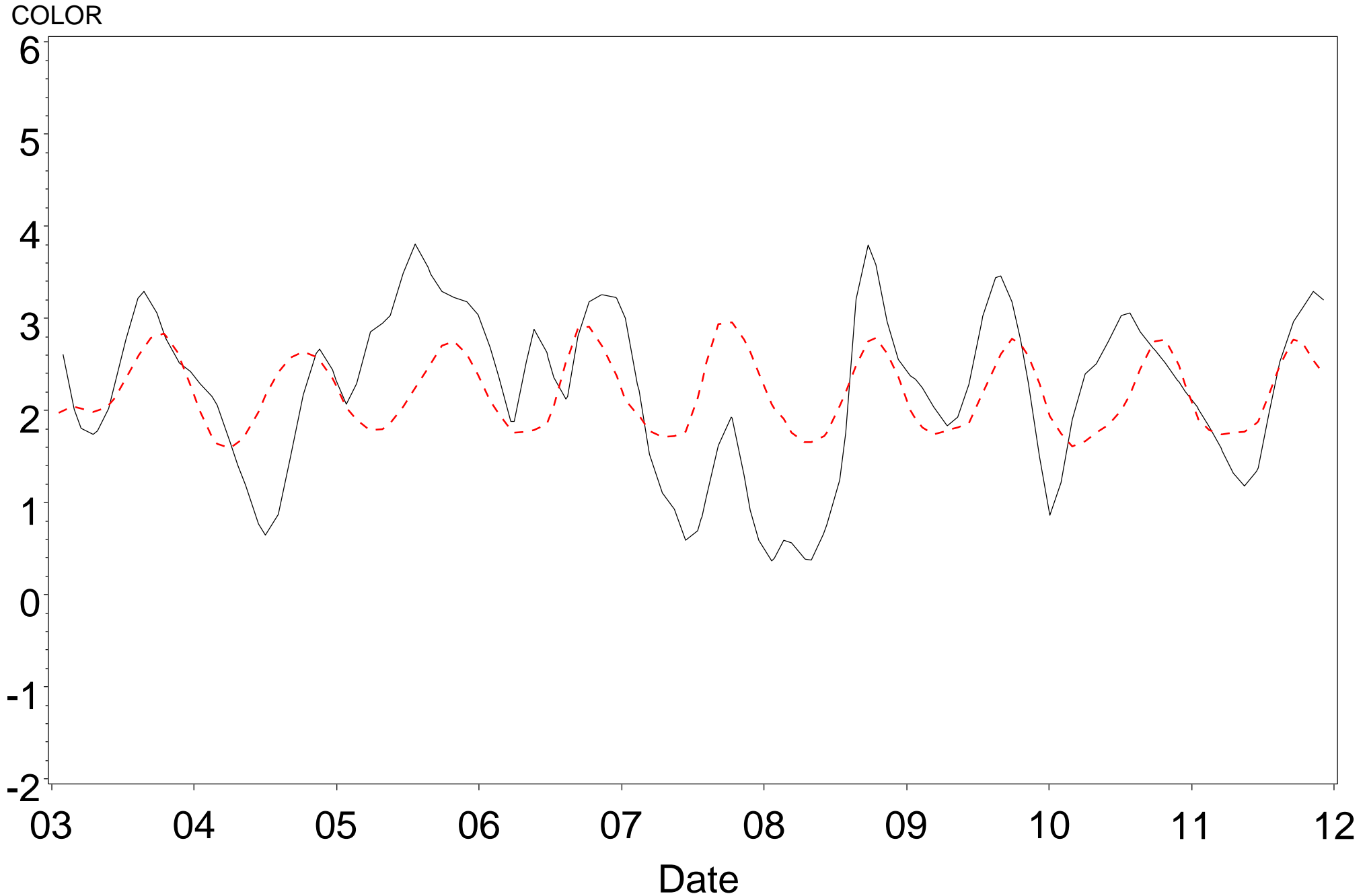
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	70.3	1.39	0.1957
date1	1	8.01	0.02	0.9033
temp_dev	1	309	2.48	0.1165

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	550
Number of Observations Not Used	78

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	90.66273763	
1	3	-244.49470369	0.01706803
2	1	-257.97679108	0.01799661
3	2	-263.96449502	0.01080855
4	2	-272.13813758	0.00197802
5	1	-273.50053565	0.00006248
6	1	-273.54083325	0.00000009
7	1	-273.54089289	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.008799	0.002433	3.62	0.0001
Variance	Intercept	0.03795	0.006967	5.45	<.0001
SP(POW)	Intercept	0.2634	0.1204	2.19	0.0287
Residual		0.01958	0.001348	14.52	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-273.5
AIC (smaller is better)	-265.5
AICC (smaller is better)	-265.5
BIC (smaller is better)	-259.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-23.1981	21.2923	26.4	-1.09	0.2858
season	1	0.03863	0.08783	66.7	0.44	0.6615
season	2	0.07097	0.09862	82.2	0.72	0.4738
season	3	0.09628	0.09785	80.5	0.98	0.3281
season	4	0.04739	0.1080	78.4	0.44	0.6619
season	5	0.1368	0.1045	78.4	1.31	0.1943
season	6	0.1144	0.1011	77.9	1.13	0.2616
season	7	-0.04750	0.09746	75.4	-0.49	0.6274
season	8	-0.2009	0.1034	76.5	-1.94	0.0558
season	9	-0.1535	0.1037	79.1	-1.48	0.1426
season	10	-0.05696	0.1015	80.4	-0.56	0.5763
season	11	0.002542	0.08877	63.2	0.03	0.9772
season	12	0	.	.	.	.
date1		0.01688	0.01060	26.4	1.59	0.1233
temp_dev		0.02596	0.01392	383	1.86	0.0630

Mixed Model With Local Nugget

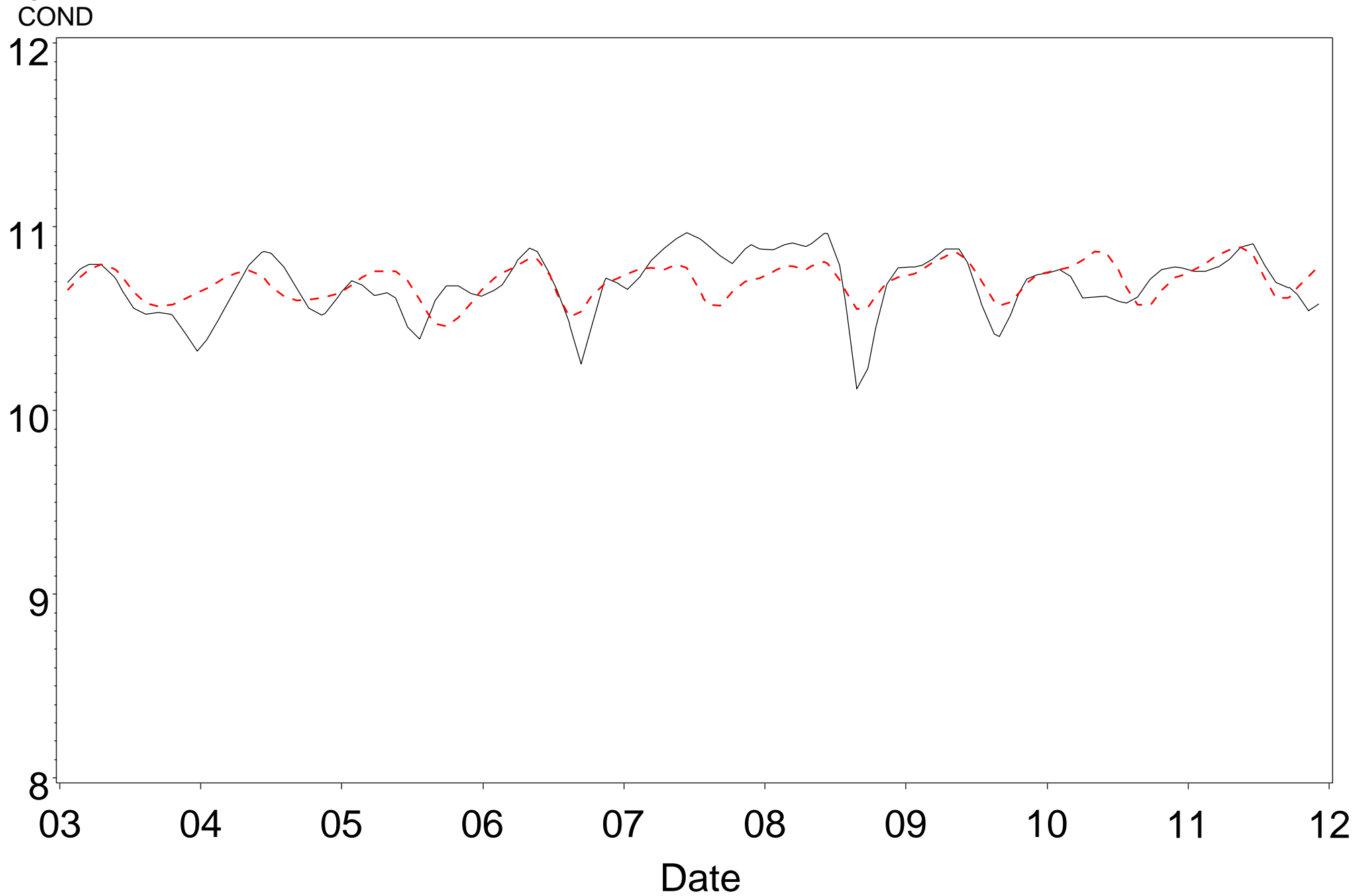
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.2	1.45	0.1713
date1	1	26.4	2.53	0.1233
temp_dev	1	383	3.48	0.0630

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	554
Number of Observations Not Used	74

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1507.70798539	
1	3	1363.10766542	0.96651948
2	2	1358.27801181	0.80583820
3	2	1350.49110256	0.00023280
4	1	1350.45281563	0.00000293
5	1	1350.45228627	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08389	0.03401	2.47	0.0068
Variance	Intercept	0.5768	0.1300	4.44	<.0001
SP(POW)	Intercept	0.1279	0.1280	1.00	0.3178
Residual		0.4335	0.03170	13.67	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1350.5
AIC (smaller is better)	1358.5
AICC (smaller is better)	1358.5
BIC (smaller is better)	1365.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		71.2848	77.7318	28.5	0.92	0.3668
season	1	0.3635	0.3757	47.8	0.97	0.3381
season	2	-0.1484	0.4025	56	-0.37	0.7137
season	3	-0.7014	0.3926	55.9	-1.79	0.0794
season	4	-1.0059	0.4331	53.6	-2.32	0.0240
season	5	-1.7473	0.4033	54.8	-4.33	<.0001
season	6	-2.1860	0.4049	55.5	-5.40	<.0001
season	7	-2.1208	0.3887	54.2	-5.46	<.0001
season	8	-1.8703	0.4131	53.2	-4.53	<.0001
season	9	-2.0012	0.4154	54.1	-4.82	<.0001
season	10	-1.2351	0.4146	54.7	-2.98	0.0043
season	11	-0.7604	0.3807	45.7	-2.00	0.0517
season	12	0	.	.	.	.
date1		-0.03169	0.03871	28.5	-0.82	0.4198
temp_dev		-0.01259	0.06163	263	-0.20	0.8382

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.3	8.02	<.0001
date1	1	28.5	0.67	0.4198
temp_dev	1	263	0.04	0.8382

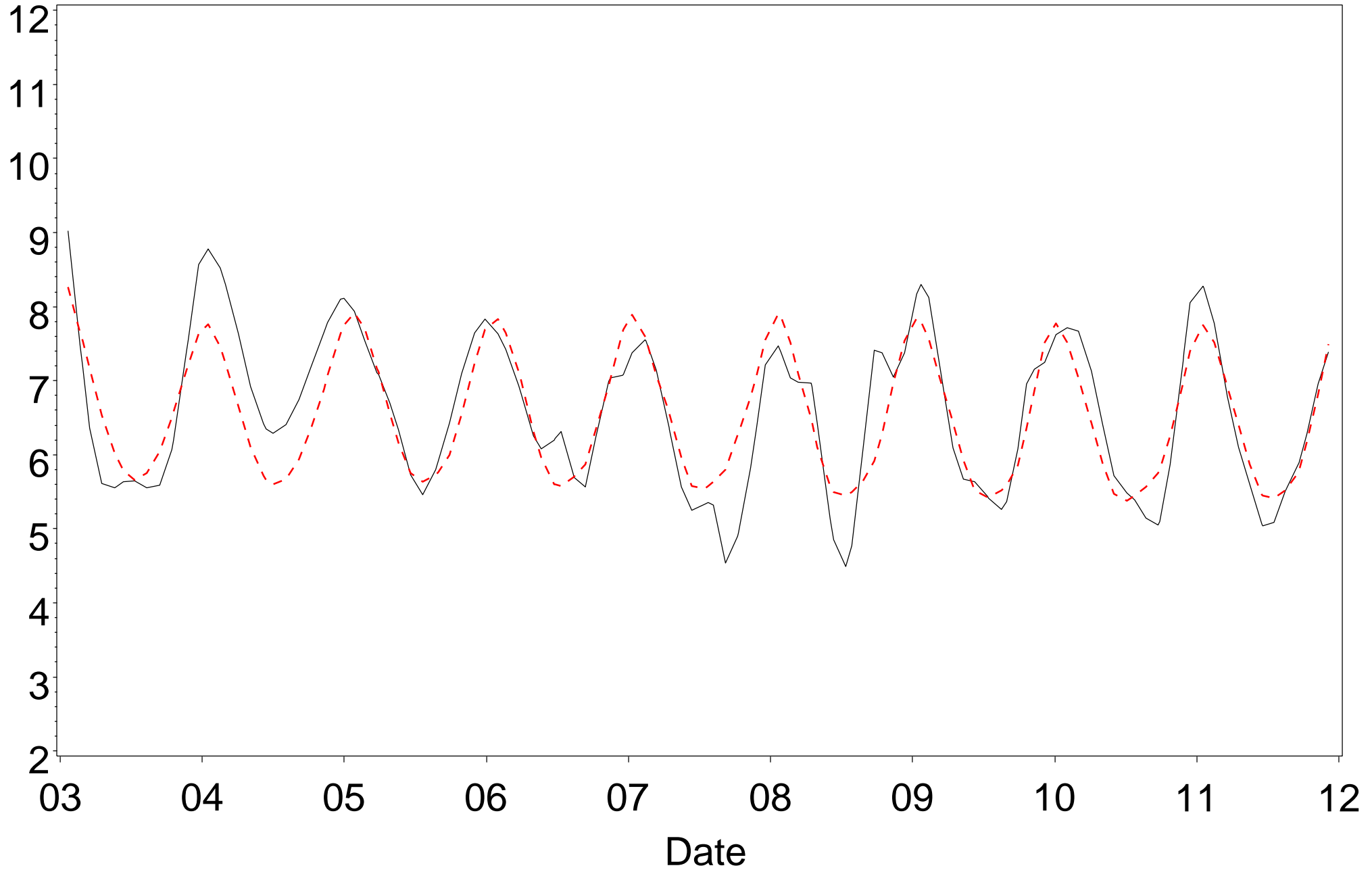
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	335
Number of Observations Not Used	293

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	474.10967829	
1	2	360.20887039	0.04570754
2	2	357.06447772	0.03512340
3	2	352.09960387	0.00681216
4	1	351.24043260	0.00018574
5	1	351.21777007	0.00000023
6	1	351.21774263	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04204	0.01312	3.20	0.0007
Variance	Intercept	0.1003	0.02491	4.03	<.0001
SP(POW)	Intercept	0.2711	0.1688	1.61	0.1083
Residual		0.09376	0.008702	10.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	351.2
AIC (smaller is better)	359.2
AICC (smaller is better)	359.3
BIC (smaller is better)	365.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-10.6030	63.4586	11.7	-0.17	0.8702
season	1	-0.06045	0.1891	41.8	-0.32	0.7508
season	2	-0.04090	0.2082	52.2	-0.20	0.8450
season	3	-0.2706	0.2114	50.6	-1.28	0.2065
season	4	-0.04010	0.2251	51.1	-0.18	0.8594
season	5	-0.1198	0.2014	46.8	-0.59	0.5549
season	6	0.3346	0.2015	47.1	1.66	0.1035
season	7	0.5672	0.2018	47.8	2.81	0.0072
season	8	0.3478	0.2014	48.3	1.73	0.0905
season	9	0.8778	0.2012	50.6	4.36	<.0001
season	10	0.6282	0.1974	51.9	3.18	0.0025
season	11	0.08547	0.1779	39.8	0.48	0.6336
season	12	0	.	.	.	.
date1		0.005533	0.03158	11.7	0.18	0.8639
temp_dev		0.1000	0.03446	137	2.90	0.0043

Mixed Model With Local Nugget

The Mixed Procedure

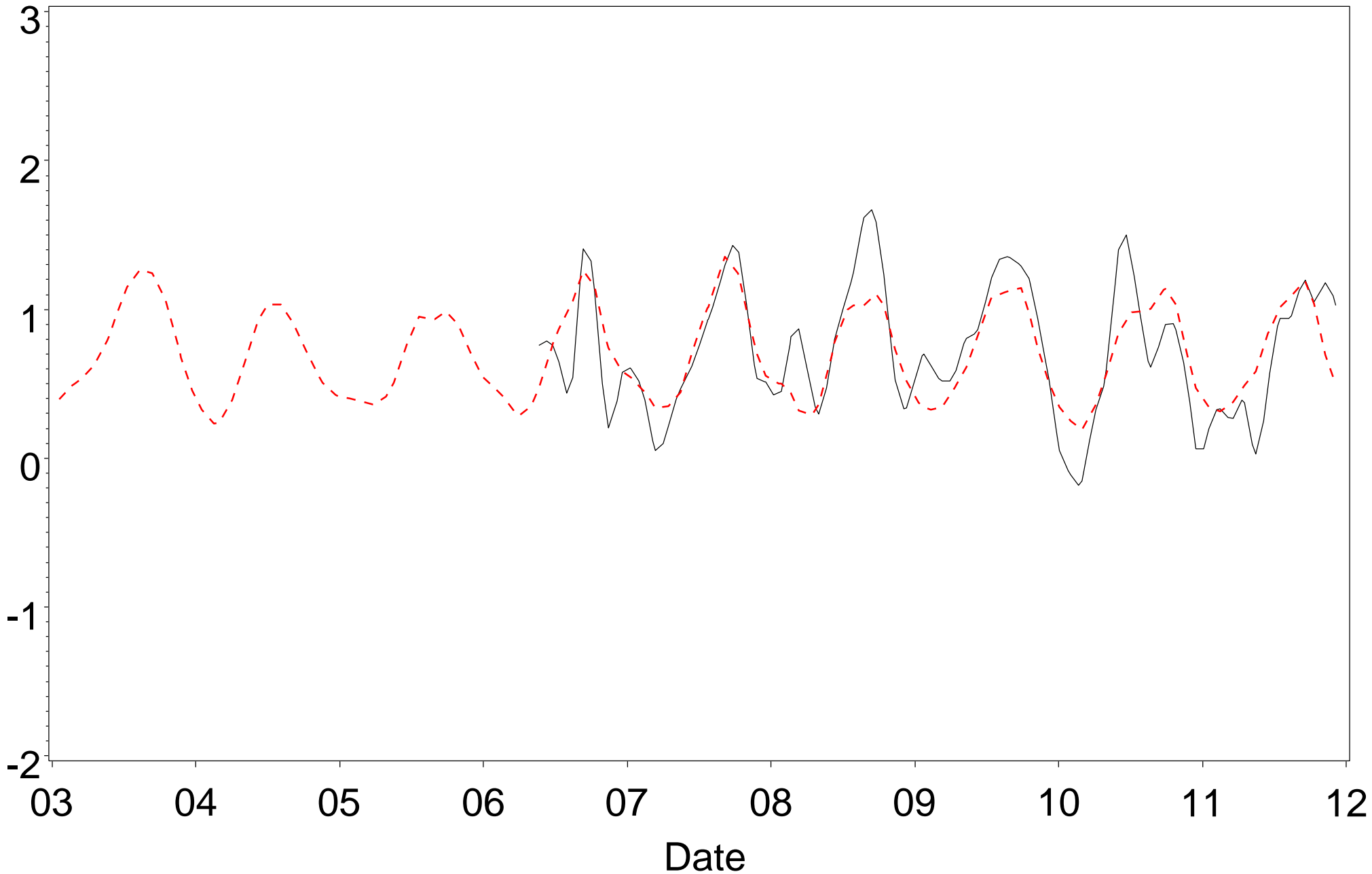
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	42	4.77	<.0001
date1	1	11.7	0.03	0.8639
temp_dev	1	137	8.43	0.0043

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Dissolved Silica (as SiO₂) (mg/L) and Sample Level = Surface

DSI_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	463
Number of Observations Not Used	165

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	822.57707672	
1	4	768.79719234	.
2	1	765.33490245	81.64479536
3	2	749.05049828	0.53256566
4	2	742.74995246	0.03504564
5	2	741.17672090	0.00117877
6	1	741.12505762	0.00000574
7	1	741.12481552	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.009648	0.007212	1.34	0.0905
Variance	Intercept	0.1063	0.02511	4.23	<.0001
SP(POW)	Intercept	-0.02133	0.1572	-0.14	0.8920
Residual		0.2150	0.01621	13.26	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	741.1
AIC (smaller is better)	749.1
AICC (smaller is better)	749.2
BIC (smaller is better)	755.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		25.4555	38.7699	49.1	0.66	0.5145
season	1	-0.2039	0.2104	54.1	-0.97	0.3367
season	2	-0.3208	0.2557	73	-1.25	0.2136
season	3	-0.06373	0.2016	76.4	-0.32	0.7528
season	4	0.1775	0.2115	71.6	0.84	0.4042
season	5	-0.00965	0.2081	74.6	-0.05	0.9631
season	6	-0.2428	0.1978	70.6	-1.23	0.2237
season	7	0.009120	0.1944	74.3	0.05	0.9627
season	8	0.3094	0.2100	70	1.47	0.1453
season	9	0.4937	0.2012	69.9	2.45	0.0166
season	10	0.1925	0.2038	71.5	0.94	0.3481
season	11	0.1717	0.1986	53.3	0.86	0.3913
season	12	0	.	.	.	.
date1		-0.01216	0.01930	49.1	-0.63	0.5317
temp_dev		-0.04311	0.03691	158	-1.17	0.2446

Mixed Model With Local Nugget

The Mixed Procedure

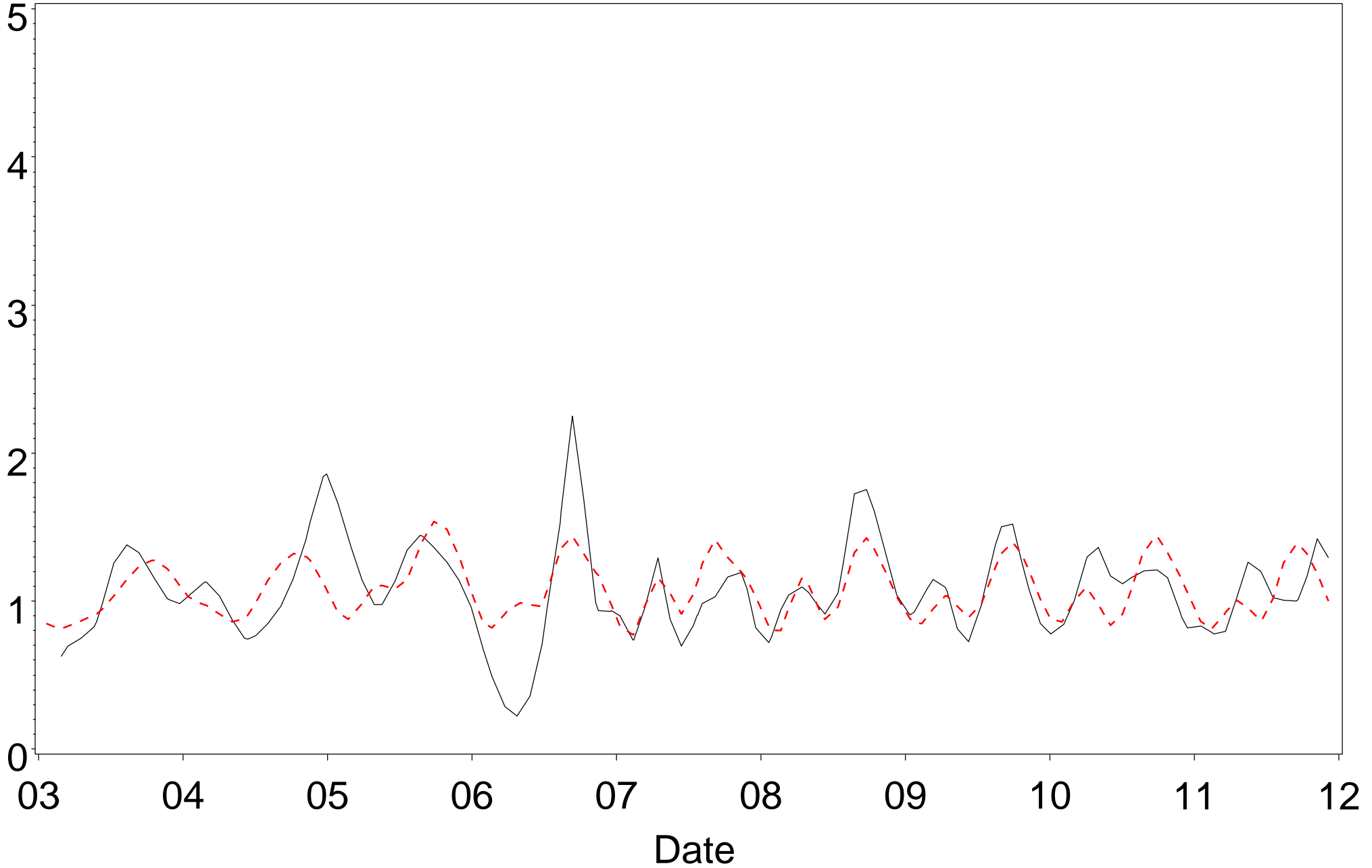
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	61.9	2.27	0.0213
date1	1	49.1	0.40	0.5317
temp_dev	1	158	1.36	0.2446

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	545
Number of Observations Not Used	83

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1345.91236766	
1	2	1034.47646113	0.24988832
2	1	1025.03232855	0.19898937
3	2	1021.90577368	0.10344556
4	1	1019.18666837	0.00868179
5	1	1018.98521553	0.00013833
6	1	1018.98219614	0.00000006
7	1	1018.98219484	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.02690	0.01124	2.39	0.0084
Variance	Intercept	0.4803	0.09381	5.12	<.0001
SP(POW)	Intercept	0.3940	0.1132	3.48	0.0005
Residual		0.2377	0.01655	14.36	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1019.0
AIC (smaller is better)	1027.0
AICC (smaller is better)	1027.1
BIC (smaller is better)	1033.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		675.04	84.2018	20.4	8.02	<.0001
season	1	-0.2383	0.2918	65.1	-0.82	0.4171
season	2	-0.5135	0.3378	79.5	-1.52	0.1324
season	3	-0.6011	0.3423	77.2	-1.76	0.0830
season	4	-0.5199	0.3771	75.1	-1.38	0.1722
season	5	-0.3762	0.3570	70.9	-1.05	0.2955
season	6	-0.6613	0.3571	71.3	-1.85	0.0682
season	7	-0.5451	0.3458	69.4	-1.58	0.1195
season	8	0.2249	0.3635	72.9	0.62	0.5380
season	9	0.2102	0.3609	76.6	0.58	0.5619
season	10	0.09332	0.3453	76.9	0.27	0.7877
season	11	-0.4006	0.2909	64.1	-1.38	0.1733
season	12	0	.	.	.	.
date1		-0.3379	0.04193	20.4	-8.06	<.0001
temp_dev		-0.00405	0.04736	369	-0.09	0.9318

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	66.3	1.35	0.2159
date1	1	20.4	64.92	<.0001
temp_dev	1	369	0.01	0.9318

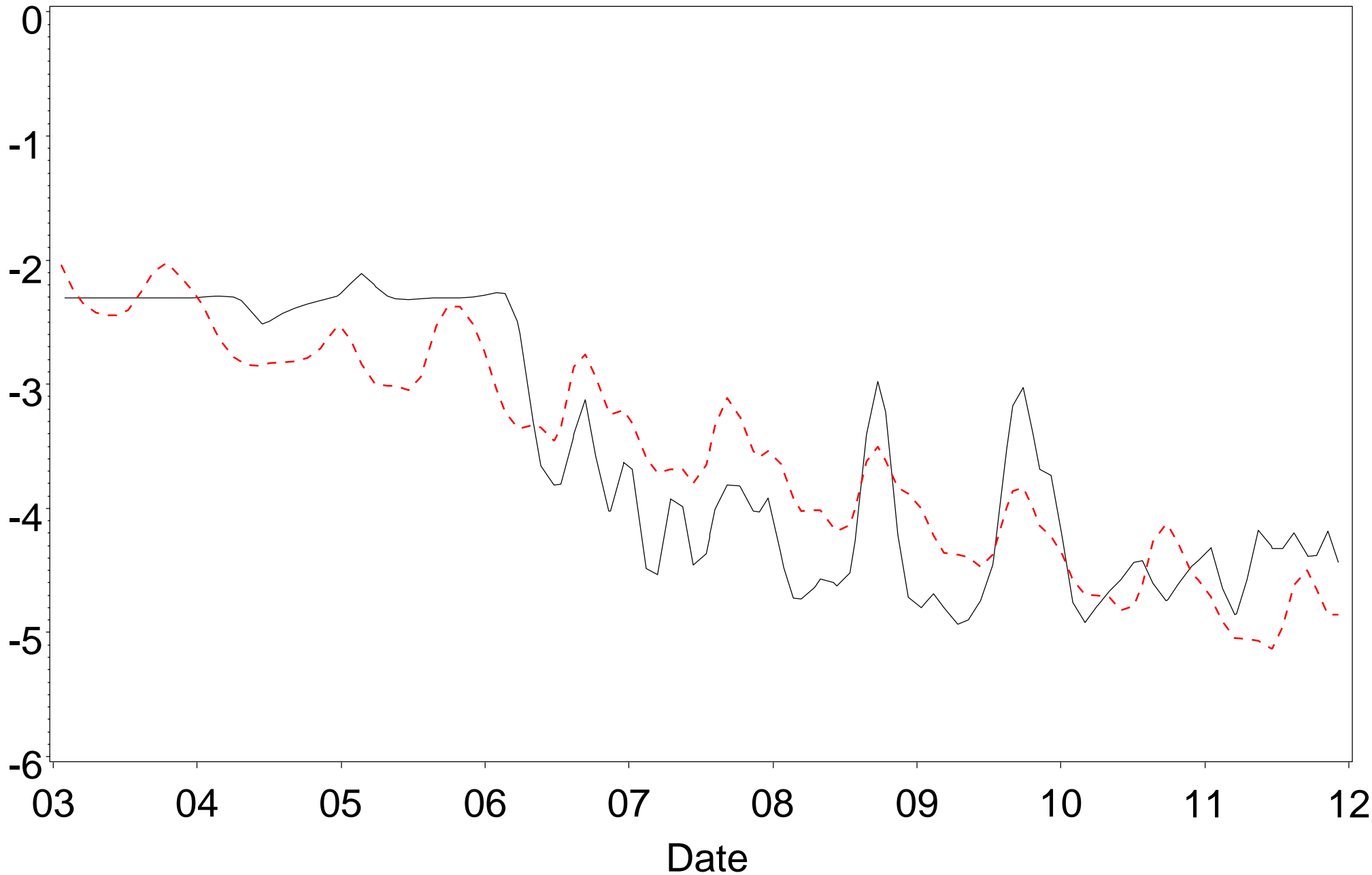
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface

NH3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	464
Number of Observations Not Used	164

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1075.62141895	
1	2	882.15556670	0.28315741
2	1	872.01579413	0.41386523
3	2	866.73716102	0.26609733
4	2	860.42010586	0.04413631
5	1	859.62182447	0.00111296
6	1	859.60325634	0.00000165
7	1	859.60322939	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr >|Z|
Station		0.03341	0.01411	2.37	0.0090
Variance	Intercept	0.3800	0.08152	4.66	<.0001
SP(POW)	Intercept	0.07659	0.1499	0.51	0.6094
Residual		0.2437	0.01825	13.35	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	859.6
AIC (smaller is better)	867.6
AICC (smaller is better)	867.7
BIC (smaller is better)	874.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		260.67	102.29	17.1	2.55	0.0207
season	1	-0.2973	0.3829	41.1	-0.78	0.4419
season	2	-0.5639	0.3973	54.5	-1.42	0.1615
season	3	-0.5773	0.3946	53.7	-1.46	0.1493
season	4	-0.4663	0.3943	53.6	-1.18	0.2422
season	5	-0.4323	0.3756	53.1	-1.15	0.2549
season	6	-0.2643	0.3754	53.1	-0.70	0.4844
season	7	-0.1997	0.3767	54	-0.53	0.5981
season	8	0.4486	0.3758	53.6	1.19	0.2378
season	9	0.6445	0.3764	53.8	1.71	0.0926
season	10	0.4862	0.3785	54.6	1.28	0.2044
season	11	0.1727	0.3631	39.2	0.48	0.6370
season	12	0	.	.	.	.
date1		-0.1320	0.05090	17.1	-2.59	0.0189
temp_dev		-0.06335	0.05480	256	-1.16	0.2488

Mixed Model With Local Nugget

The Mixed Procedure

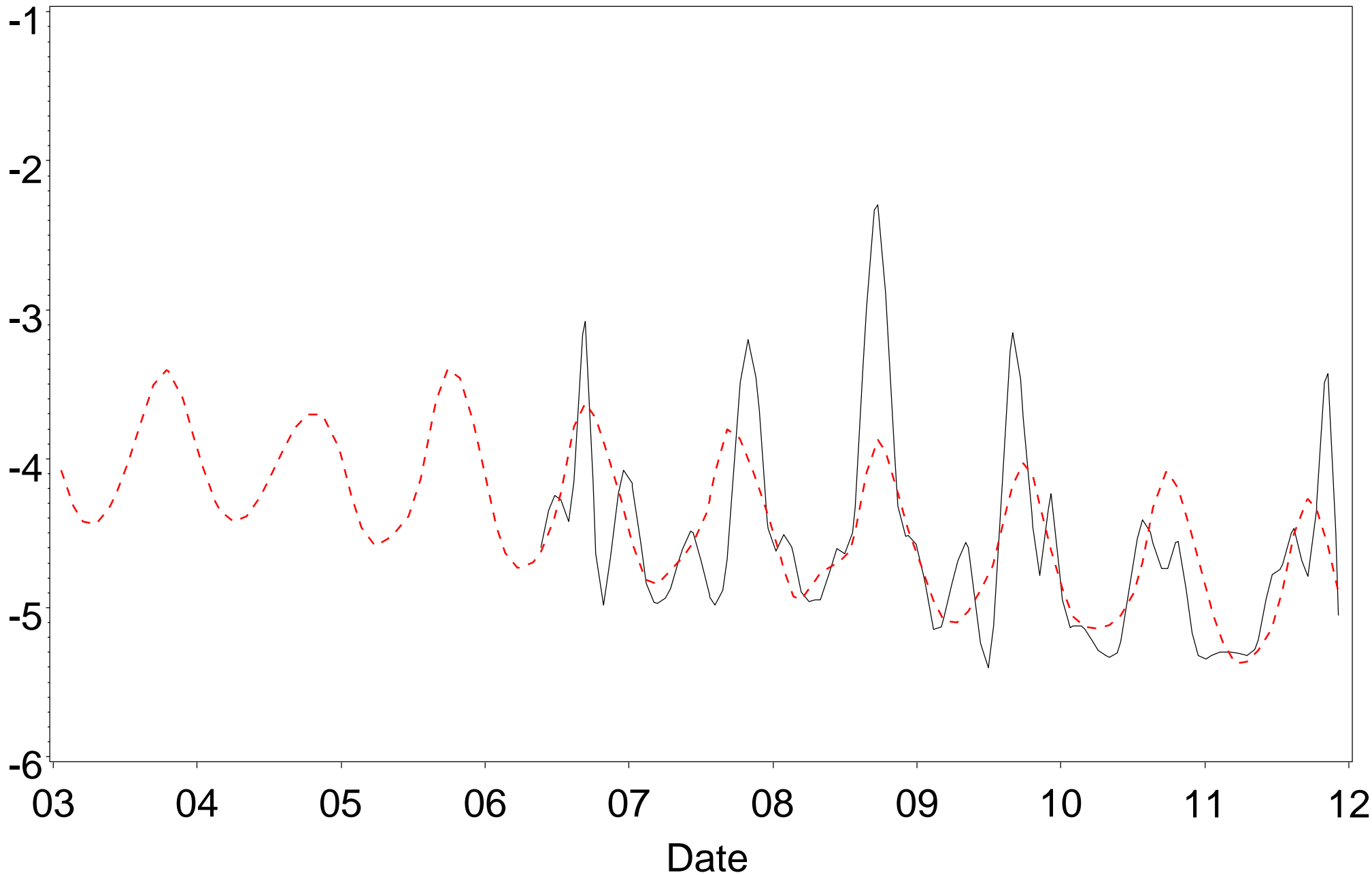
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	43.2	2.23	0.0302
date1	1	17.1	6.72	0.0189
temp_dev	1	256	1.34	0.2488

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	350
Number of Observations Not Used	278

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	853.53153982	
1	2	679.37323486	0.17979127
2	1	672.17147348	0.41564500
3	2	668.35188974	0.28270236
4	2	658.62575107	0.20685656
5	2	654.06243740	0.02512723
6	1	653.55408705	0.00097422
7	1	653.53599779	0.00000228
8	1	653.53595660	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02160	0.01258	1.72	0.0430
Variance	Intercept	0.4217	0.09160	4.60	<.0001
SP(POW)	Intercept	0.003903	0.1594	0.02	0.9805
Residual		0.2297	0.02072	11.08	<.0001

Fit Statistics	
-2 Res Log Likelihood	653.5
AIC (smaller is better)	661.5
AICC (smaller is better)	661.7
BIC (smaller is better)	668.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		260.66	102.09	17.4	2.55	0.0203
season	1	-0.08408	0.4158	37.8	-0.20	0.8408
season	2	-0.4214	0.4208	53	-1.00	0.3212
season	3	-0.1990	0.4155	52.6	-0.48	0.6340
season	4	0.06695	0.4151	52.1	0.16	0.8725
season	5	-0.08497	0.3963	52.4	-0.21	0.8310
season	6	-0.07113	0.3963	52.5	-0.18	0.8582
season	7	-0.00297	0.4167	52.9	-0.01	0.9943

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.5978	0.4147	52.4	1.44	0.1553
season	9	0.7286	0.4148	52	1.76	0.0849
season	10	0.1975	0.3998	52.4	0.49	0.6234
season	11	0.2713	0.3949	35.6	0.69	0.4966
season	12	0	.	.	.	.
date1		-0.1329	0.05081	17.4	-2.62	0.0178
temp_dev		-0.06366	0.06215	204	-1.02	0.3069

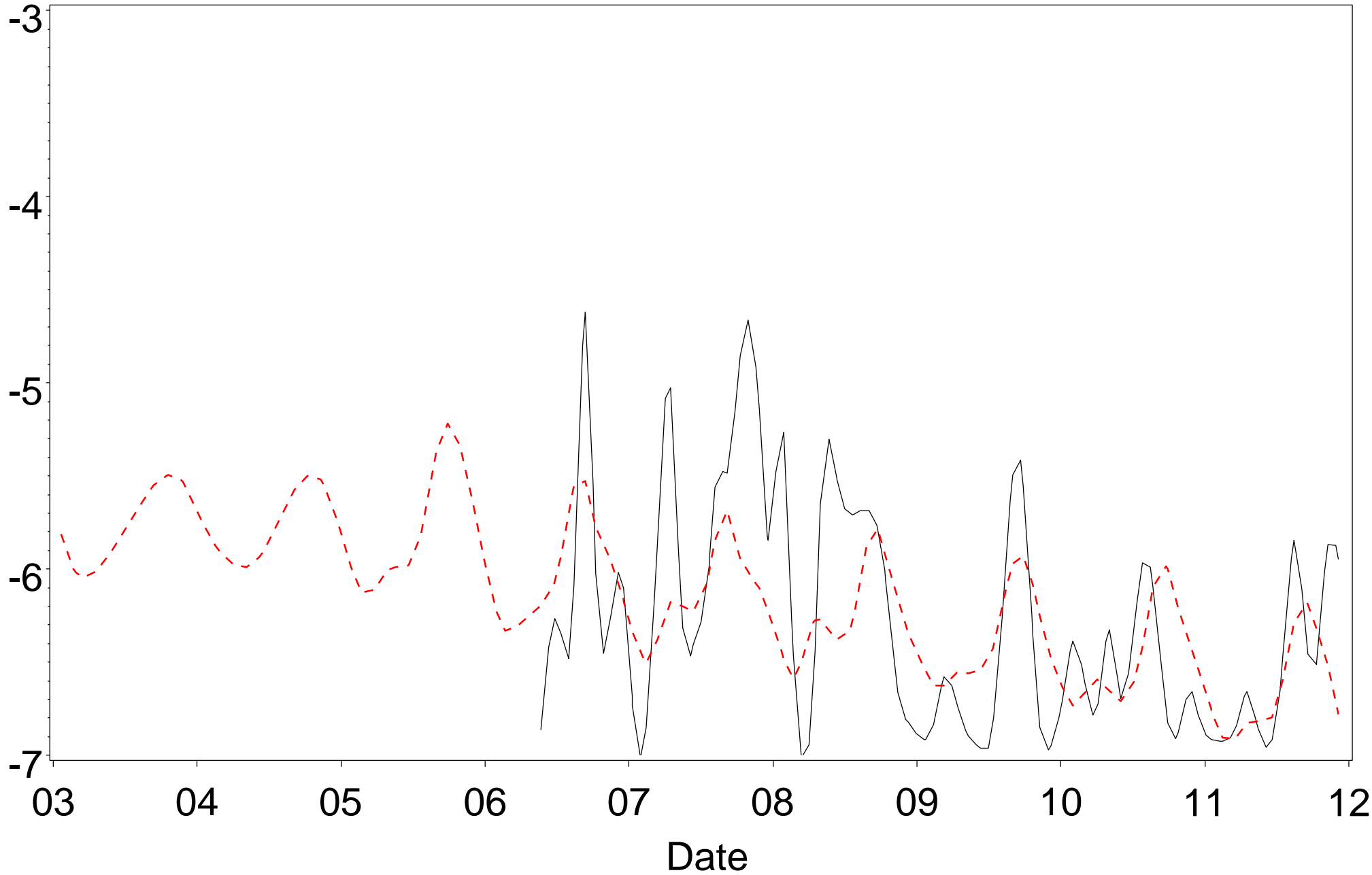
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	41	1.11	0.3814
date1	1	17.4	6.85	0.0178
temp_dev	1	204	1.05	0.3069

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

Log Scale
NO2_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	549
Number of Observations Not Used	79

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1557.38536064	
1	2	1078.26889486	0.13113082
2	1	1070.87406624	0.02953166
3	2	1069.35629271	0.00431575
4	1	1069.15561056	0.00008226
5	1	1069.15203387	0.00000003
6	1	1069.15203249	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02221	0.01061	2.09	0.0181
Variance	Intercept	0.8337	0.2260	3.69	0.0001
SP(POW)	Intercept	0.7001	0.08604	8.14	<.0001
Residual		0.2601	0.01800	14.45	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1069.2
AIC (smaller is better)	1077.2
AICC (smaller is better)	1077.2
BIC (smaller is better)	1083.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		745.10	149.71	8.26	4.98	0.0010
season	1	-0.2634	0.2822	73.1	-0.93	0.3537
season	2	-0.3582	0.3555	73.9	-1.01	0.3169
season	3	-0.3230	0.3830	73.9	-0.84	0.4018
season	4	-0.4587	0.4280	73.2	-1.07	0.2873
season	5	-0.5693	0.4211	71.2	-1.35	0.1807
season	6	-0.3695	0.4224	71.1	-0.87	0.3847
season	7	-0.2717	0.4095	70.3	-0.66	0.5092
season	8	0.1782	0.4143	71.9	0.43	0.6685
season	9	0.3074	0.3956	72.6	0.78	0.4397
season	10	0.2430	0.3564	71.4	0.68	0.4975
season	11	0.1435	0.2798	70.7	0.51	0.6097
season	12	0	.	.	.	.
date1		-0.3730	0.07456	8.26	-5.00	0.0010
temp_dev		-0.04760	0.04835	329	-0.98	0.3256

Mixed Model With Local Nugget

The Mixed Procedure

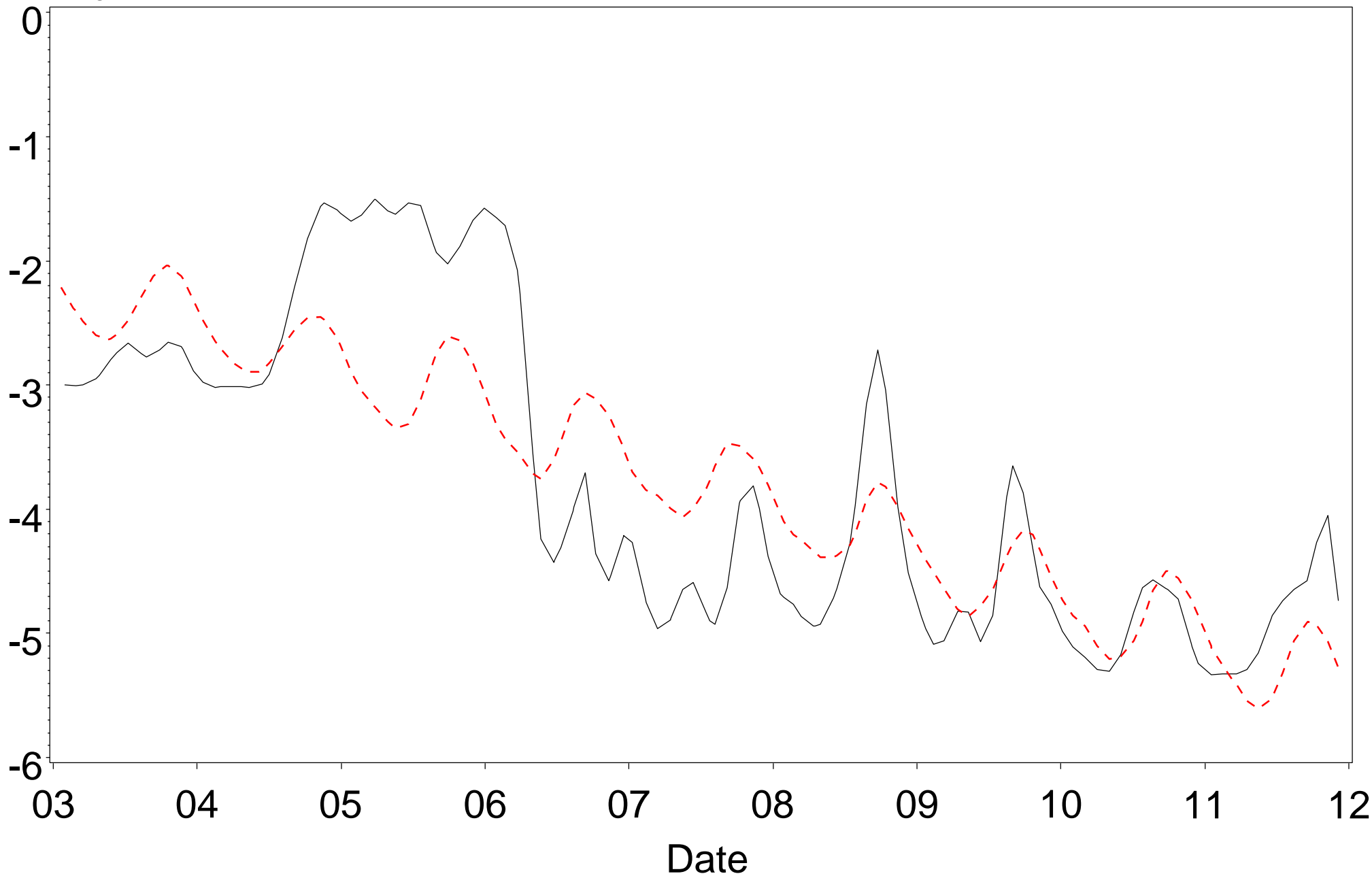
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.7	0.54	0.8696
date1	1	8.26	25.02	0.0010
temp_dev	1	329	0.97	0.3256

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	555
Number of Observations Not Used	73

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-557.80419076	
1	2	-691.55255938	0.01127203
2	2	-703.61028275	0.00993661
3	2	-714.14564616	0.00267526
4	2	-716.70193121	0.00014999
5	1	-716.83610940	0.00000091
6	1	-716.83689270	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.001592	0.000588	2.71	0.0034
Variance	Intercept	0.008865	0.001761	5.03	<.0001
SP(POW)	Intercept	-0.02526	0.1731	-0.15	0.8840
Residual		0.01001	0.000692	14.46	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-716.8
AIC (smaller is better)	-708.8
AICC (smaller is better)	-708.8
BIC (smaller is better)	-702.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		2.0836	9.1620	33.4	0.23	0.8215
season	1	0.1447	0.05132	48.1	2.82	0.0070
season	2	0.1080	0.05220	79.5	2.07	0.0419
season	3	0.08003	0.05033	80.1	1.59	0.1157
season	4	0.08561	0.05562	75.7	1.54	0.1279
season	5	0.009393	0.05174	78	0.18	0.8564
season	6	0.04979	0.05205	78.9	0.96	0.3417
season	7	0.01921	0.04982	77.7	0.39	0.7009
season	8	0.07587	0.05289	75.7	1.43	0.1556
season	9	-0.03306	0.05310	77	-0.62	0.5354
season	10	0.1166	0.05372	77.4	2.17	0.0330
season	11	0.09344	0.05190	45.3	1.80	0.0785
season	12	0	.	.	.	.
date1		0.002892	0.004562	33.4	0.63	0.5305
temp_dev		-0.01228	0.008547	233	-1.44	0.1522

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	59.1	1.97	0.0480
date1	1	33.4	0.40	0.5305
temp_dev	1	233	2.06	0.1522

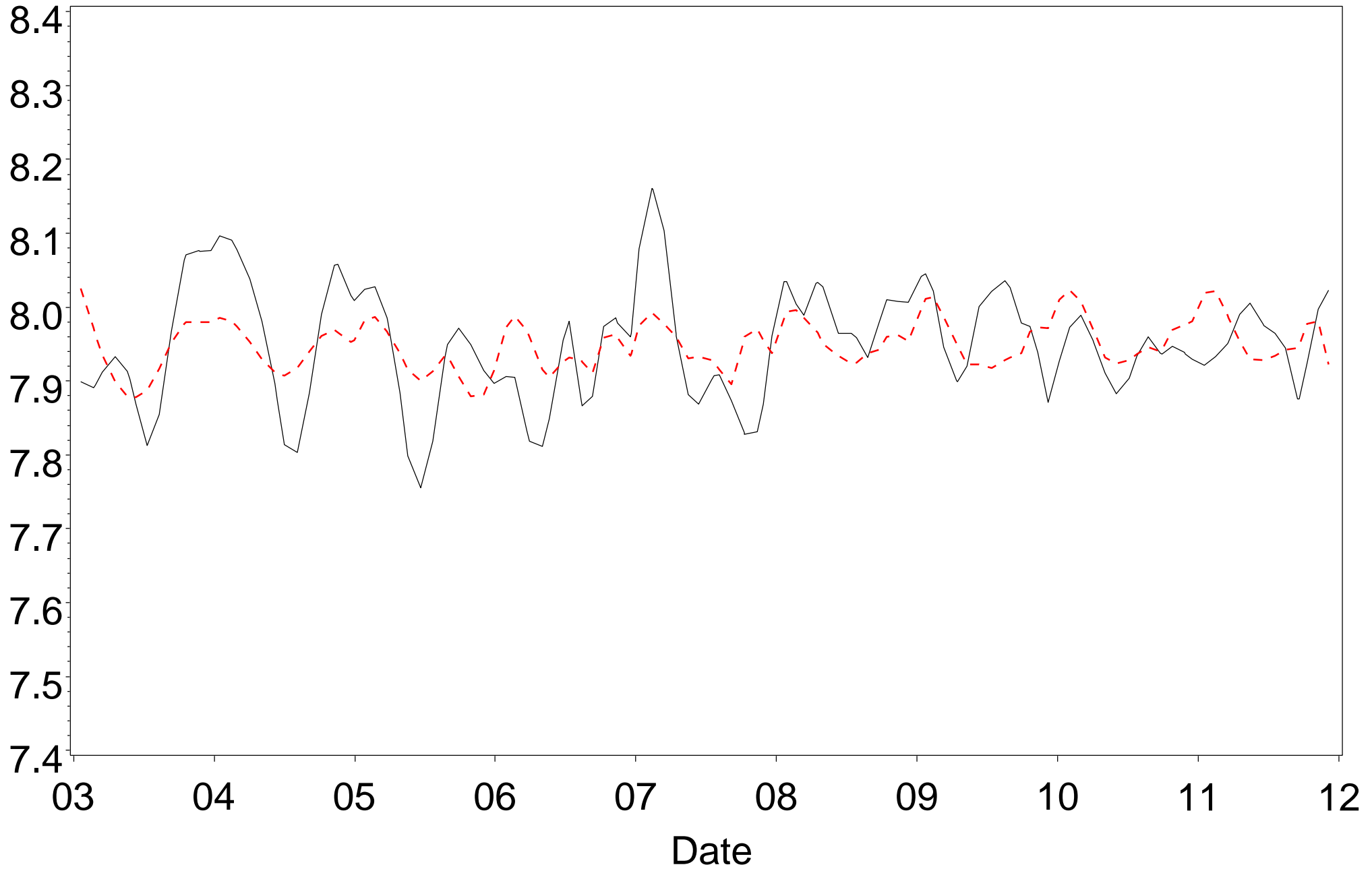
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	340
Number of Observations Not Used	288

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	986.20508434	
1	2	790.07283043	0.04201976
2	1	785.19901641	0.02140412
3	2	784.12127733	0.01469115
4	1	782.60072824	0.00072859
5	1	782.53070599	0.00000538
6	1	782.53020872	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.3034	0.08139	3.73	<.0001
Variance	Intercept	0.5176	0.1473	3.52	0.0002
SP(POW)	Intercept	0.5347	0.1316	4.06	<.0001
Residual		0.3151	0.02884	10.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	782.5
AIC (smaller is better)	790.5
AICC (smaller is better)	790.7
BIC (smaller is better)	797.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		364.91	180.56	7.63	2.02	0.0797
season	1	-0.4843	0.3519	50.8	-1.38	0.1747
season	2	-0.9763	0.4169	52	-2.34	0.0231
season	3	-1.0306	0.4451	49.3	-2.32	0.0248
season	4	-1.1175	0.4552	45.7	-2.46	0.0180
season	5	-0.6271	0.4443	40.4	-1.41	0.1658
season	6	-0.7466	0.4454	40.3	-1.68	0.1015
season	7	-0.5606	0.4436	42	-1.26	0.2133
season	8	-0.1648	0.4361	45	-0.38	0.7073
season	9	-0.03624	0.4221	49.5	-0.09	0.9319
season	10	-0.06659	0.3921	51.7	-0.17	0.8658
season	11	-0.1988	0.3278	49.4	-0.61	0.5471
season	12	0	.	.	.	.
date1		-0.1837	0.08985	7.63	-2.04	0.0768
temp_dev		0.01908	0.06331	141	0.30	0.7635

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47	1.02	0.4438
date1	1	7.63	4.18	0.0768
temp_dev	1	141	0.09	0.7635

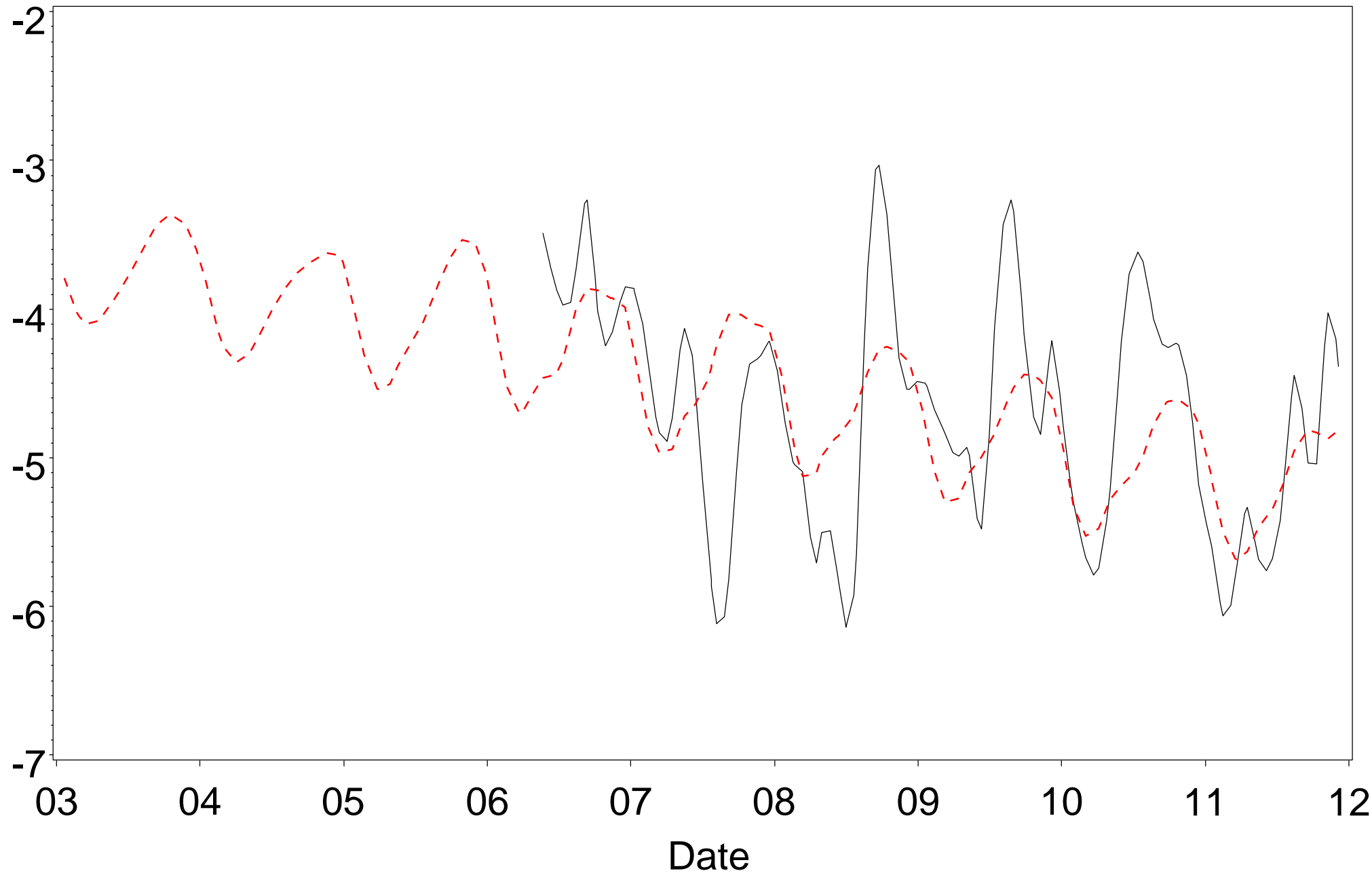
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	508
Number of Observations Not Used	120

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	196.42044566	
1	3	-86.84832062	0.01696031
2	1	-97.99658692	0.02065486
3	2	-103.73794968	0.01183349
4	2	-110.87528816	0.00171190
5	1	-111.82280468	0.00003908
6	1	-111.84307706	0.00000003
7	1	-111.84309168	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.01164	0.003250	3.58	0.0002
Variance	Intercept	0.04626	0.008613	5.37	<.0001
SP(POW)	Intercept	0.2700	0.1213	2.22	0.0261
Residual		0.02538	0.001842	13.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-111.8
AIC (smaller is better)	-103.8
AICC (smaller is better)	-103.8
BIC (smaller is better)	-97.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-30.5818	23.8574	26.8	-1.28	0.2109
season	1	0.04190	0.09713	66.2	0.43	0.6676
season	2	0.07955	0.1092	81.4	0.73	0.4685
season	3	0.1097	0.1086	80.1	1.01	0.3154
season	4	0.06534	0.1203	79.1	0.54	0.5887
season	5	0.1378	0.1121	76.6	1.23	0.2228
season	6	0.1008	0.1167	80.1	0.86	0.3900
season	7	-0.05556	0.1081	74.8	-0.51	0.6089
season	8	-0.2206	0.1146	75.6	-1.92	0.0580
season	9	-0.1709	0.1148	78.3	-1.49	0.1406
season	10	-0.06178	0.1123	79.3	-0.55	0.5838
season	11	0.002023	0.09832	63.3	0.02	0.9837
season	12	0	.	.	.	.
date1		0.01690	0.01188	26.7	1.42	0.1664
temp_dev		0.02824	0.01625	324	1.74	0.0832

Mixed Model With Local Nugget

The Mixed Procedure

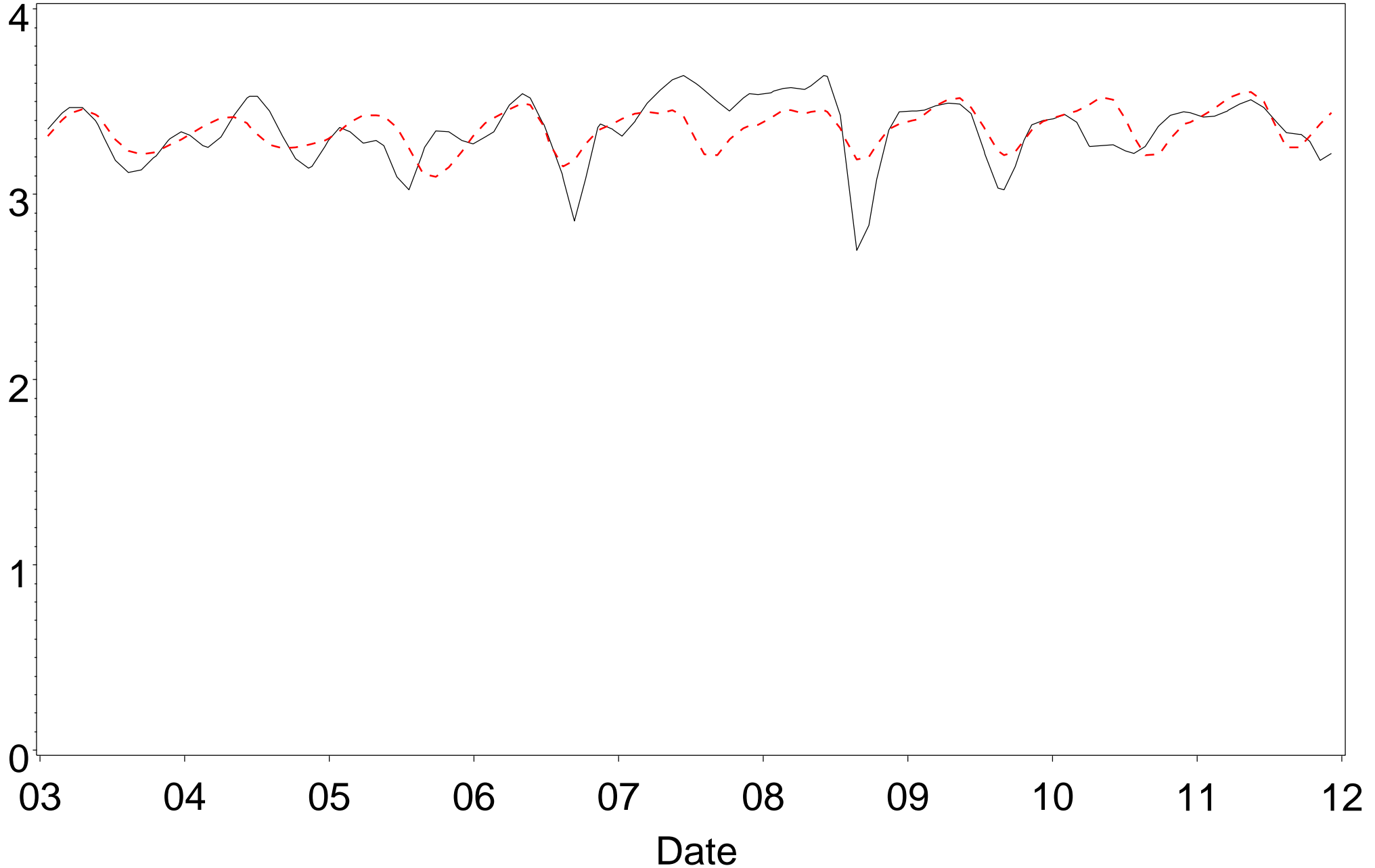
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.5	1.34	0.2209
date1	1	26.7	2.02	0.1664
temp_dev	1	324	3.02	0.0832

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	555
Number of Observations Not Used	73

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1523.87162661	
1	4	-2090.71550855	0.18582447
2	2	-2445.63842460	.
3	2	-2558.86619860	0.01704702
4	2	-2596.42849678	0.00469911
5	1	-2606.61077212	0.00087839
6	1	-2608.42420772	0.00006625
7	1	-2608.55046226	0.00000059
8	1	-2608.55153513	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000014	7.239E-6	1.87	0.0311
Variance	Intercept	0.005129	0.000831	6.17	<.0001
SP(POW)	Intercept	0.1101	0.1131	0.97	0.3303
Residual		0.000194	0.000013	14.50	<.0001

Fit Statistics	
-2 Res Log Likelihood	-2608.6
AIC (smaller is better)	-2600.6
AICC (smaller is better)	-2600.5
BIC (smaller is better)	-2594.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		10.4150	6.5402	30.2	1.59	0.1217
season	1	-0.08748	0.03245	60.8	-2.70	0.0091
season	2	0.1021	0.03506	79.6	2.91	0.0047
season	3	0.1882	0.03407	78.4	5.52	<.0001
season	4	0.2582	0.03804	78.8	6.79	<.0001
season	5	0.4183	0.03503	78.2	11.94	<.0001
season	6	0.5182	0.03505	78.5	14.79	<.0001
season	7	0.5356	0.03396	77.9	15.77	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.5635	0.03635	78.1	15.50	<.0001
season	9	0.5283	0.03641	78.4	14.51	<.0001
season	10	0.4031	0.03635	79.4	11.09	<.0001
season	11	0.2699	0.03319	58.3	8.13	<.0001
season	12	0	.	.	.	.
date1		-0.00376	0.003257	30.2	-1.15	0.2577
temp_dev		0.04274	0.001644	494	26.00	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	66.2	66.83	<.0001
date1	1	30.2	1.33	0.2577
temp_dev	1	494	675.93	<.0001

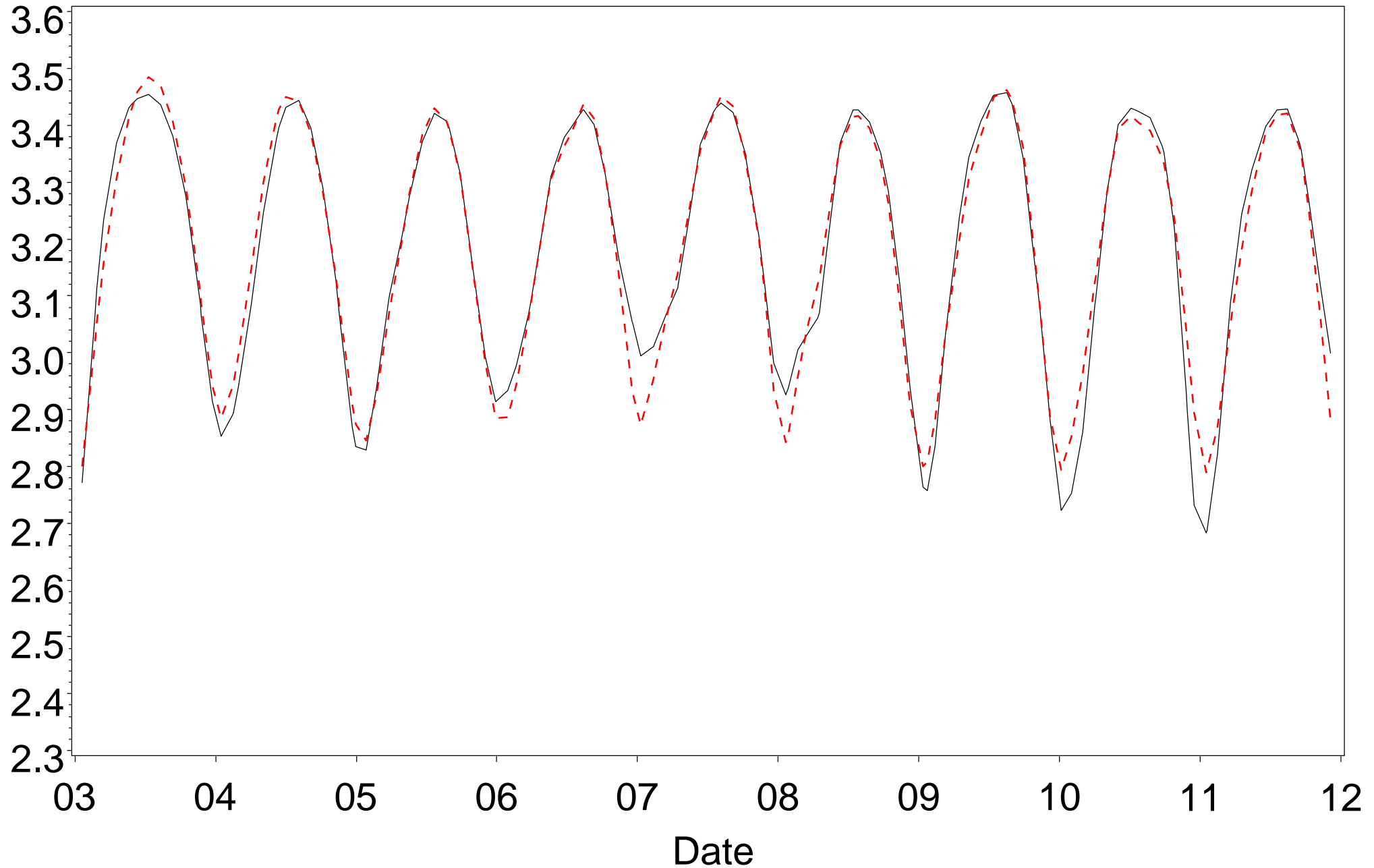
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	554
Number of Observations Not Used	74

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1292.25834087	
1	2	973.11910290	1.21718558
2	1	958.72811592	0.29278287
3	2	953.06821130	0.11701410
4	1	950.40643261	0.00935106
5	1	950.19911703	0.00007338
6	1	950.19755829	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04012	0.01384	2.90	0.0019
Variance	Intercept	0.4250	0.08446	5.03	<.0001
SP(POW)	Intercept	0.3866	0.1244	3.11	0.0019
Residual		0.1970	0.01361	14.47	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	950.2
AIC (smaller is better)	958.2
AICC (smaller is better)	958.3
BIC (smaller is better)	964.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-145.03	78.2133	18.2	-1.85	0.0800
season	1	0.1725	0.2750	58.4	0.63	0.5328
season	2	-0.1730	0.3176	74.9	-0.54	0.5875
season	3	-0.1328	0.3219	74	-0.41	0.6813
season	4	0.3692	0.3548	72.1	1.04	0.3015
season	5	0.1677	0.3353	67.9	0.50	0.6185
season	6	-0.03000	0.3354	68.4	-0.09	0.9290
season	7	0.4696	0.3245	66.2	1.45	0.1526
season	8	0.5552	0.3419	70	1.62	0.1089
season	9	0.7641	0.3398	73.6	2.25	0.0275
season	10	0.2358	0.3255	72.7	0.72	0.4712
season	11	0.3535	0.2742	57.5	1.29	0.2025
season	12	0	.	.	.	.
date1		0.07146	0.03895	18.1	1.83	0.0830
temp_dev		0.05801	0.04383	369	1.32	0.1865

Mixed Model With Local Nugget

The Mixed Procedure

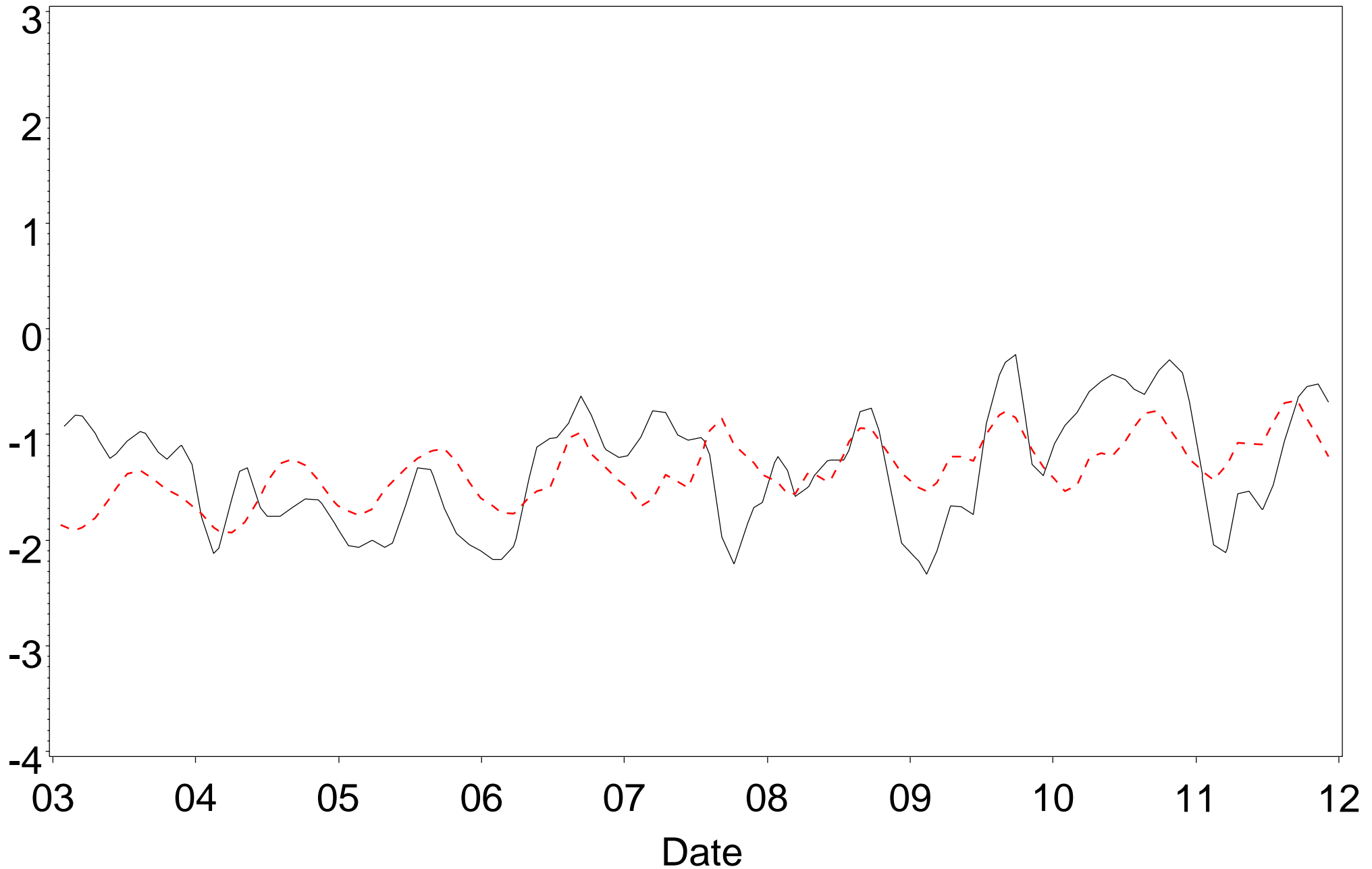
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.5	1.31	0.2421
date1	1	18.1	3.37	0.0830
temp_dev	1	369	1.75	0.1865

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	541
Number of Observations Not Used	87

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1218.69895737	
1	2	916.76553791	0.50967838
2	1	900.49484982	0.17936533
3	2	894.04684733	0.08143811
4	1	890.54752253	0.00644776
5	1	890.28096080	0.00006034
6	1	890.27858380	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03936	0.01378	2.86	0.0021
Variance	Intercept	0.3780	0.07359	5.14	<.0001
SP(POW)	Intercept	0.3426	0.1248	2.74	0.0061
Residual		0.1837	0.01282	14.33	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	890.3
AIC (smaller is better)	898.3
AICC (smaller is better)	898.4
BIC (smaller is better)	904.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-6.5149	71.7785	20.9	-0.09	0.9285
season	1	0.2245	0.2794	58.8	0.80	0.4250
season	2	-0.2748	0.3165	74.9	-0.87	0.3879
season	3	-0.1687	0.3158	73.8	-0.53	0.5947
season	4	0.2953	0.3379	71.6	0.87	0.3851
season	5	0.05336	0.3173	69	0.17	0.8669
season	6	-0.1777	0.3176	69.7	-0.56	0.5776
season	7	0.3119	0.3068	67.4	1.02	0.3130
season	8	0.4330	0.3243	70	1.34	0.1862
season	9	0.6865	0.3235	73	2.12	0.0372
season	10	0.1503	0.3125	72.4	0.48	0.6320
season	11	0.2977	0.2667	56.7	1.12	0.2690
season	12	0	.	.	.	.
date1		0.002620	0.03575	20.9	0.07	0.9423
temp_dev		0.06161	0.04251	365	1.45	0.1481

Mixed Model With Local Nugget

The Mixed Procedure

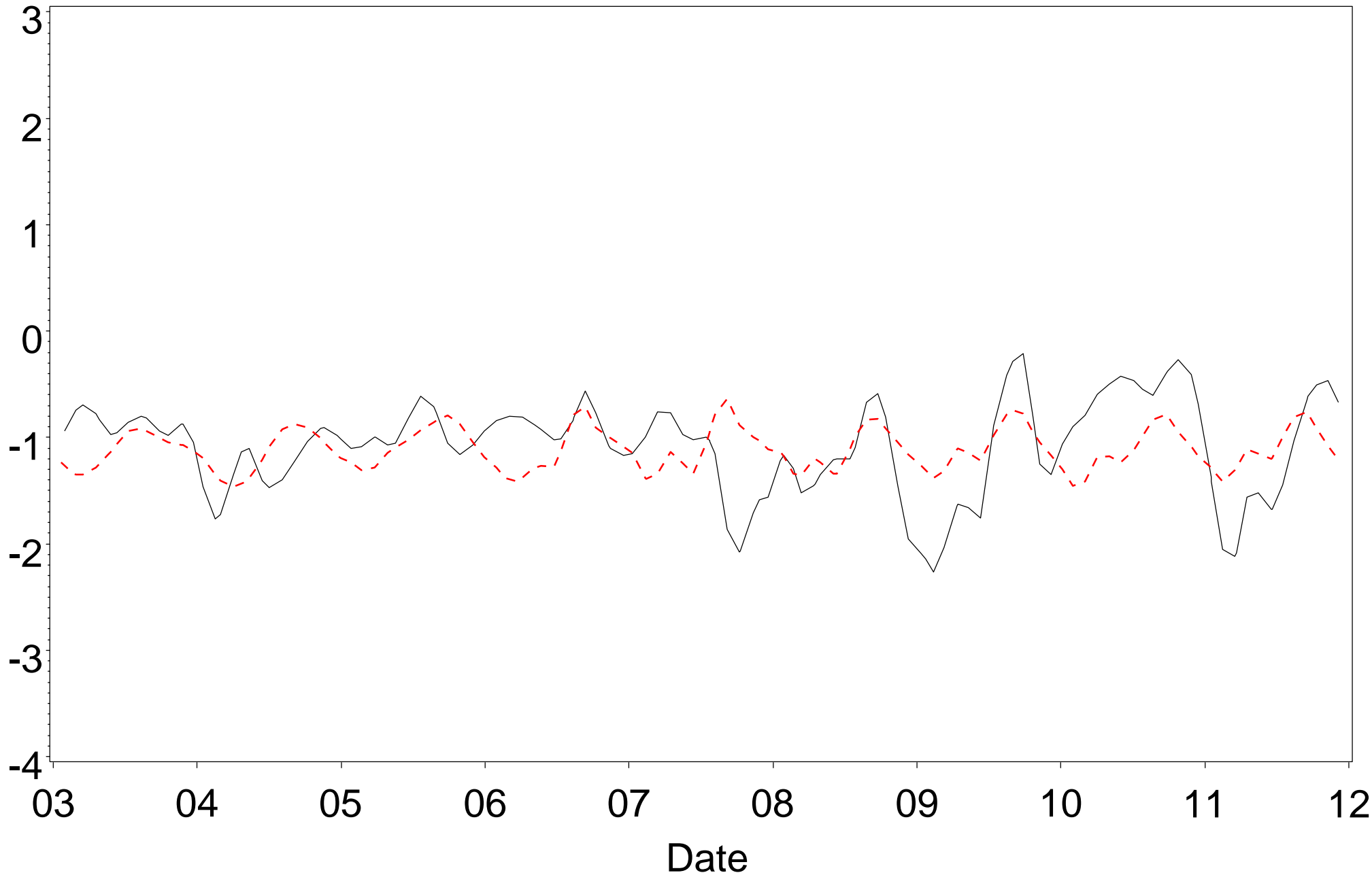
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.3	1.40	0.1972
date1	1	20.9	0.01	0.9423
temp_dev	1	365	2.10	0.1481

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	549
Number of Observations Not Used	79

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	743.17914280	
1	2	250.64980448	0.10733395
2	1	202.37497137	0.02497539
3	1	190.70306233	0.00395082
4	1	188.94216790	0.00019660
5	1	188.86115751	0.00000069
6	1	188.86088393	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03855	0.01026	3.76	<.0001
Variance	Intercept	0.2575	0.05326	4.84	<.0001
SP(POW)	Intercept	0.4630	0.1150	4.03	<.0001
Residual		0.03784	0.002645	14.31	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	188.9
AIC (smaller is better)	196.9
AICC (smaller is better)	196.9
BIC (smaller is better)	203.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-31.1905	63.0024	13.8	-0.50	0.6284
season	1	0.2111	0.1916	59.9	1.10	0.2751
season	2	0.4069	0.2300	74.3	1.77	0.0810
season	3	0.2581	0.2373	70.5	1.09	0.2805
season	4	0.3053	0.2626	69	1.16	0.2490
season	5	0.04827	0.2502	61.7	0.19	0.8477
season	6	0.1994	0.2501	61.4	0.80	0.4283
season	7	0.5899	0.2434	60.3	2.42	0.0184
season	8	0.5603	0.2545	67	2.20	0.0311
season	9	0.7281	0.2503	72	2.91	0.0048
season	10	0.5997	0.2351	72.7	2.55	0.0129
season	11	0.2992	0.1914	59	1.56	0.1233
season	12	0	.	.	.	.
date1		0.01614	0.03138	13.8	0.51	0.6152
temp_dev		0.03395	0.02206	490	1.54	0.1245

Mixed Model With Local Nugget

The Mixed Procedure

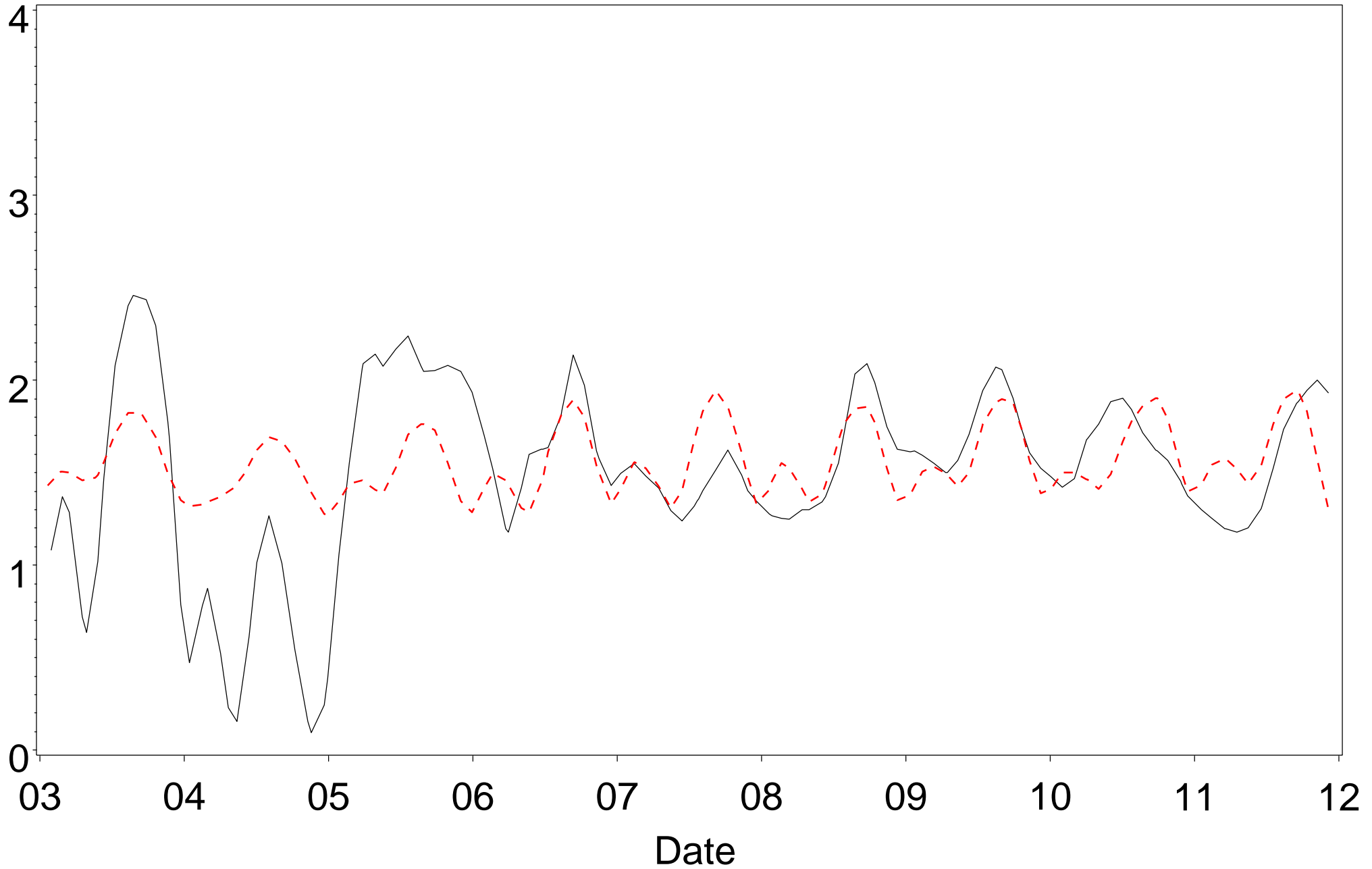
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	60.2	1.46	0.1727
date1	1	13.8	0.26	0.6152
temp_dev	1	490	2.37	0.1245

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	208
Number of Observations Not Used	420

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	235.56283547	
1	6	181.00579229	1.44370199
2	2	175.85211499	0.32178154
3	2	172.46302514	0.00322546
4	2	172.15525846	0.00003027
5	1	172.15244615	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01835	0.008978	2.04	0.0205
Variance	Intercept	0.08000	0.02472	3.24	0.0006
SP(POW)	Intercept	0.2100	0.2379	0.88	0.3774
Residual		0.07155	0.009034	7.92	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	172.2
AIC (smaller is better)	180.2
AICC (smaller is better)	180.4
BIC (smaller is better)	186.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		324.50	65.3365	13.3	4.97	0.0002
season	1	-0.07996	0.1887	22	-0.42	0.6758
season	2	-0.2492	0.2218	34.6	-1.12	0.2689
season	3	-0.1789	0.1991	35.2	-0.90	0.3751
season	4	-0.1430	0.2357	33.3	-0.61	0.5482
season	5	-0.1007	0.2076	35.2	-0.48	0.6308
season	6	-0.1849	0.2085	35.5	-0.89	0.3810
season	7	-0.1597	0.1952	33.9	-0.82	0.4189
season	8	-0.2640	0.2338	32.3	-1.13	0.2671
season	9	0.08686	0.2372	33.7	0.37	0.7166
season	10	-0.2008	0.2383	33.7	-0.84	0.4054
season	11	-0.1320	0.2017	23.7	-0.65	0.5192
season	12	0	.	.	.	.
date1		-0.1632	0.03257	13.2	-5.01	0.0002
temp_dev		0.01385	0.03933	109	0.35	0.7254

Mixed Model With Local Nugget

The Mixed Procedure

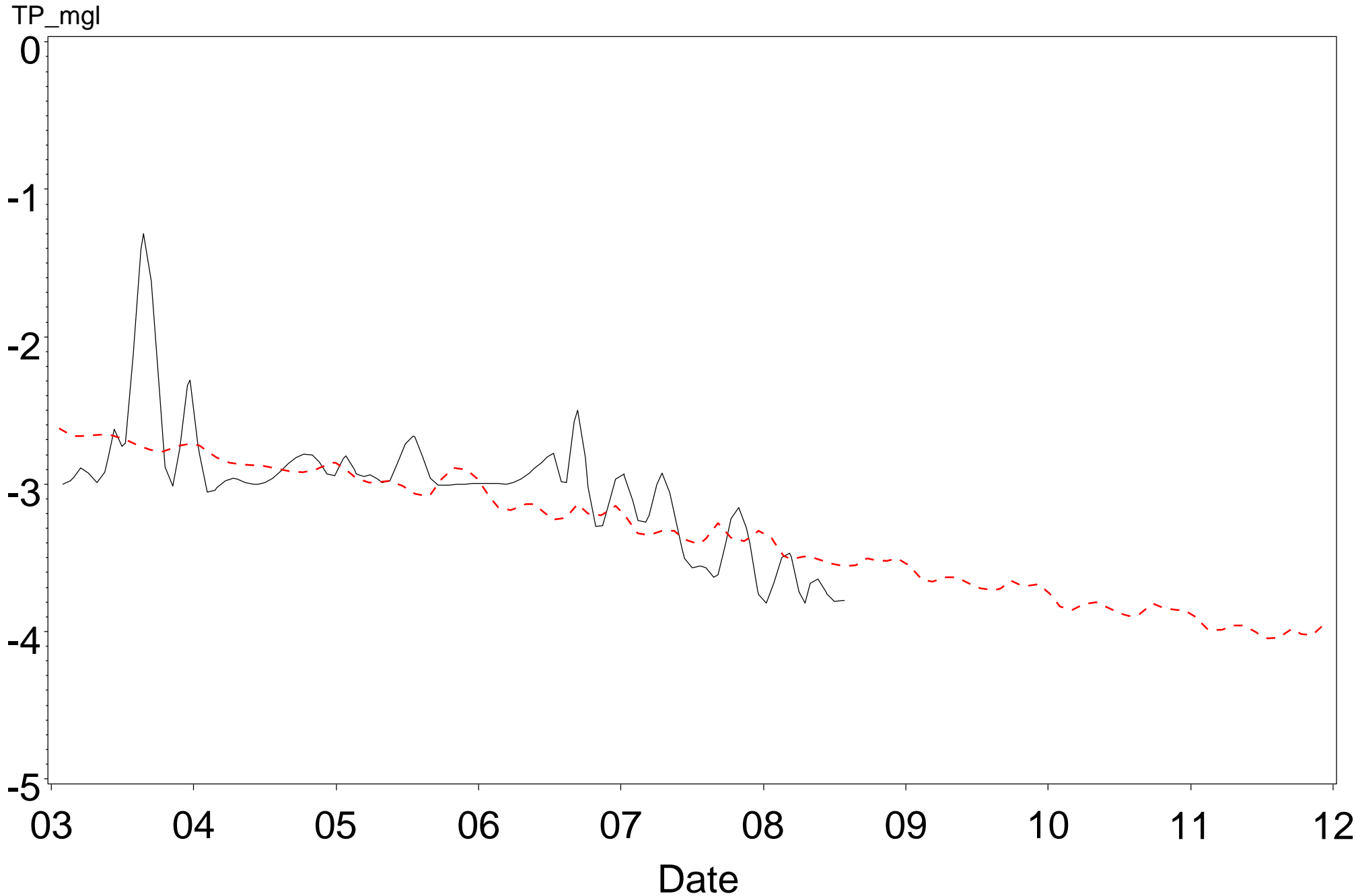
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	25.2	0.38	0.9520
date1	1	13.2	25.12	0.0002
temp_dev	1	109	0.12	0.7254

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	554
Number of Observations Not Used	74

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1136.43294131	
1	2	846.71375862	0.11525353
2	1	836.96491856	0.01121470
3	1	835.99533095	0.00069917
4	1	835.93711839	0.00000833
5	1	835.93646156	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02332	0.008872	2.63	0.0043
Variance	Intercept	0.4493	0.1288	3.49	0.0002
SP(POW)	Intercept	0.6434	0.1197	5.37	<.0001
Residual		0.1638	0.01131	14.48	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	835.9
AIC (smaller is better)	843.9
AICC (smaller is better)	844.0
BIC (smaller is better)	850.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-179.25	99.0408	6.43	-1.81	0.1170
season	1	0.3508	0.2271	60	1.55	0.1276
season	2	0.1780	0.2827	68.4	0.63	0.5311
season	3	0.4327	0.3017	69.4	1.43	0.1560
season	4	0.5849	0.3360	68	1.74	0.0863
season	5	0.1404	0.3285	63.7	0.43	0.6706
season	6	-0.08941	0.3292	63.3	-0.27	0.7868
season	7	0.1029	0.3190	62.5	0.32	0.7480
season	8	-0.02471	0.3255	66.8	-0.08	0.9397
season	9	-0.1632	0.3132	68.5	-0.52	0.6039
season	10	0.4128	0.2847	64.9	1.45	0.1519
season	11	-0.1224	0.2255	57.6	-0.54	0.5895
season	12	0	.	.	.	.
date1		0.09038	0.04933	6.43	1.83	0.1133
temp_dev		0.06192	0.03880	298	1.60	0.1116

Mixed Model With Local Nugget

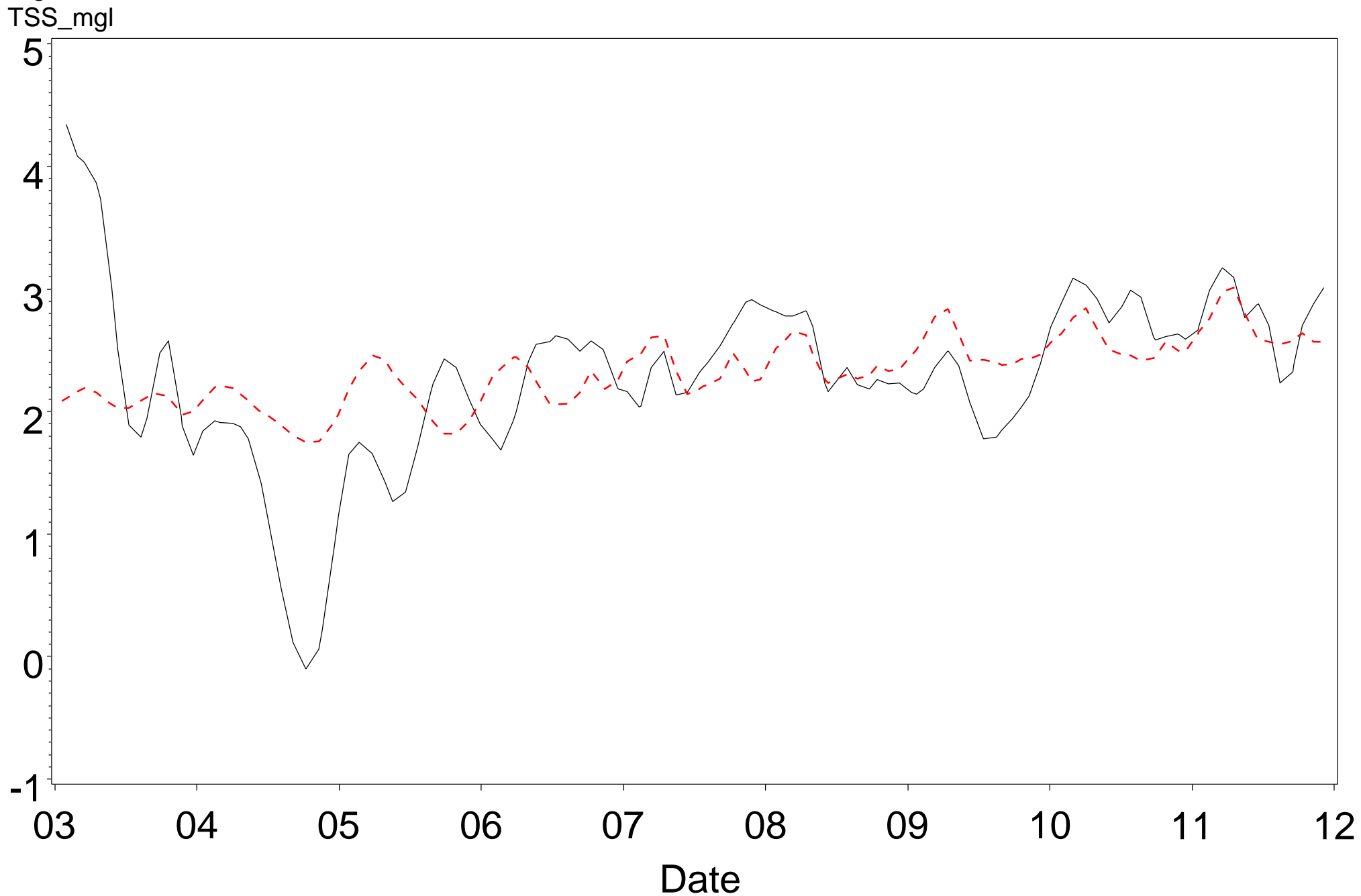
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	56.8	1.58	0.1294
date1	1	6.43	3.36	0.1133
temp_dev	1	298	2.55	0.1116

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	76	322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382 322 323 324 325 334 335 336 337 338 346 347 348 349 350 351 352 357 358 359 360 361 362 363 364 365 366 370 371 372 373 374 375 376 377 378 379 381 382

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	38
Subjects	1
Max Obs Per Subject	628

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	628
Number of Observations Used	515
Number of Observations Not Used	113

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	830.57621806	
1	2	592.80264477	0.07509451
2	1	577.47621053	0.03867933
3	2	571.11268508	0.01662891
4	1	567.79025375	0.00118519
5	1	567.56869107	0.00001136
6	1	567.56666903	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01640	0.006006	2.73	0.0032
Variance	Intercept	0.2064	0.04039	5.11	<.0001
SP(POW)	Intercept	0.2468	0.1337	1.85	0.0649
Residual		0.1062	0.007610	13.95	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	567.6
AIC (smaller is better)	575.6
AICC (smaller is better)	575.6
BIC (smaller is better)	582.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-137.21	50.3931	24.7	-2.72	0.0117
season	1	0.1170	0.2096	52.9	0.56	0.5790
season	2	0.1249	0.2312	70.6	0.54	0.5909
season	3	0.7627	0.2363	70.3	3.23	0.0019
season	4	0.7481	0.2869	69.9	2.61	0.0111
season	5	0.09403	0.2355	66.9	0.40	0.6909
season	6	0.1429	0.2359	67.8	0.61	0.5465
season	7	0.2841	0.2273	65.6	1.25	0.2158
season	8	0.3137	0.2415	66.4	1.30	0.1984
season	9	0.4163	0.2527	68.8	1.65	0.1041
season	10	0.4435	0.2636	69.2	1.68	0.0970
season	11	0.1108	0.2090	52.6	0.53	0.5982
season	12	0	.	.	.	.
date1		0.06843	0.02510	24.6	2.73	0.0116
temp_dev		0.05202	0.03306	365	1.57	0.1165

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	58.4	1.81	0.0734
date1	1	24.6	7.43	0.0116
temp_dev	1	365	2.48	0.1165

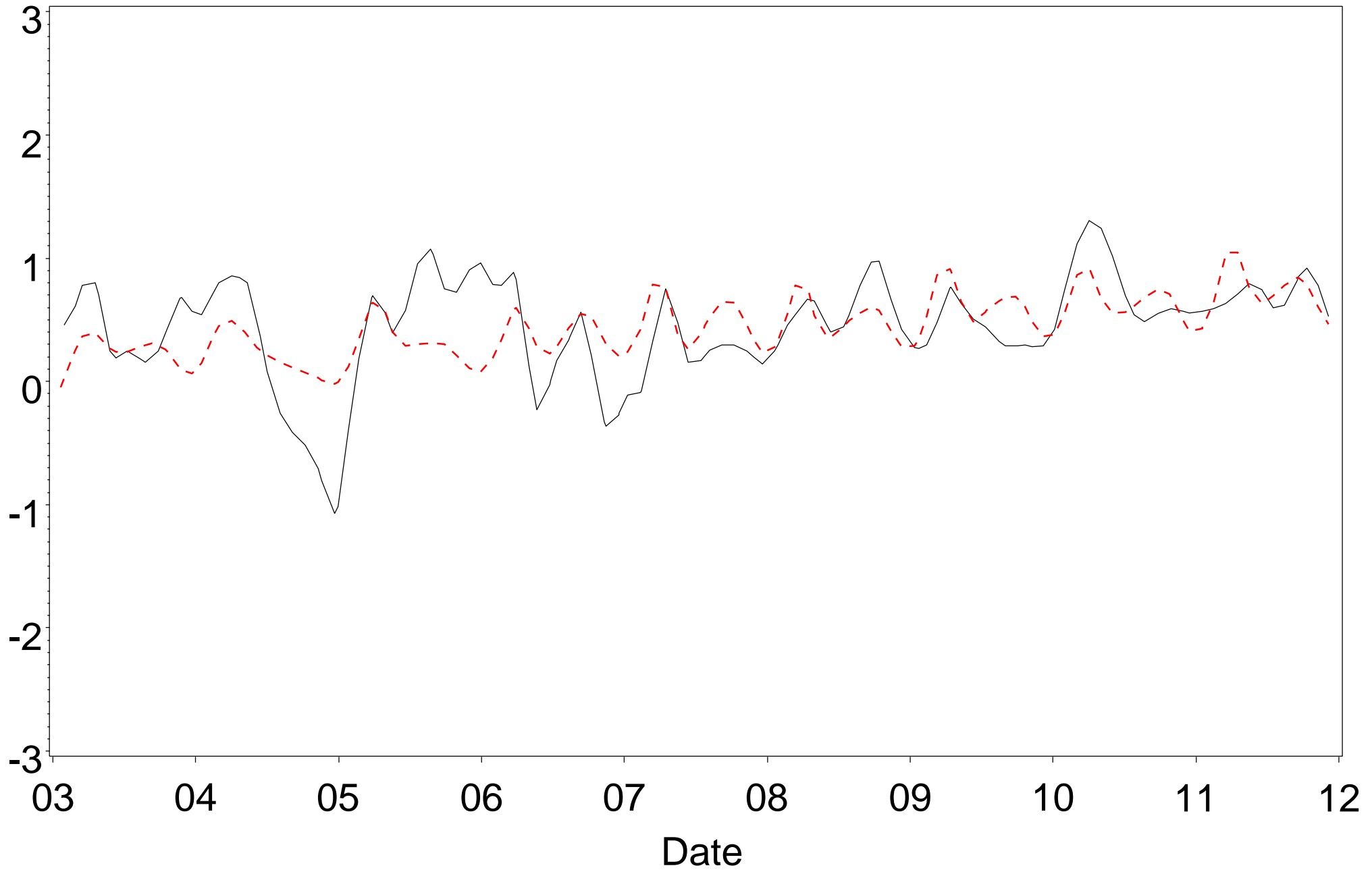
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum San Carlos Bay

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	897.15717346	
1	2	721.81987277	0.38722177
2	2	718.72145959	0.27886775
3	1	713.65563060	0.03466797
4	1	712.98890672	0.00085624
5	1	712.97293369	0.00000030
6	1	712.97292810	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01176	0.01004	1.17	0.1207
Variance	Intercept	0.2750	0.05954	4.62	<.0001
SP(POW)	Intercept	0.5145	0.1128	4.56	<.0001
Residual		0.1932	0.01747	11.05	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	713.0
AIC (smaller is better)	721.0
AICC (smaller is better)	721.1
BIC (smaller is better)	730.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-29.6660	66.9272	12.4	-0.44	0.6652
season	1	-0.2144	0.2137	82.3	-1.00	0.3186
season	2	-0.03646	0.2477	87.7	-0.15	0.8833
season	3	-0.1451	0.2599	84.7	-0.56	0.5781
season	4	0.2900	0.2671	81.7	1.09	0.2808
season	5	-0.1486	0.2699	78.4	-0.55	0.5834
season	6	0.3250	0.2699	76.6	1.20	0.2323
season	7	0.07426	0.2685	77.8	0.28	0.7829
season	8	0.04107	0.2661	82.4	0.15	0.8777
season	9	-0.2033	0.2592	87.2	-0.78	0.4349
season	10	-0.1588	0.2433	85.5	-0.65	0.5158
season	11	-0.3506	0.2084	78.8	-1.68	0.0964
season	12	0	.	.	.	.
date1		0.01494	0.03333	12.4	0.45	0.6618
temp_dev		0.007295	0.03616	280	0.20	0.8403

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	78	1.60	0.1141
date1	1	12.4	0.20	0.6618
temp_dev	1	280	0.04	0.8403

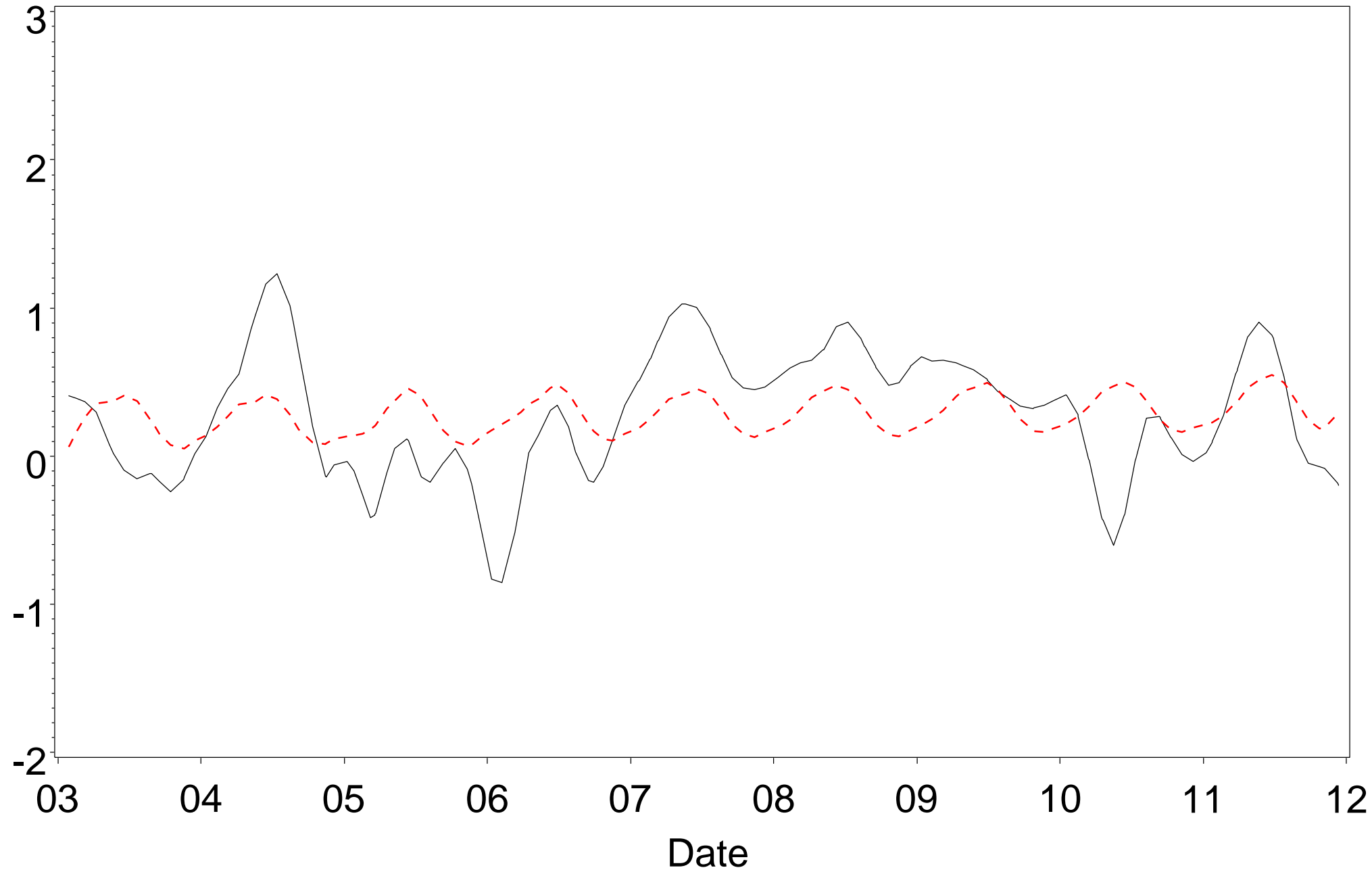
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	417
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1218.25778337	
1	2	1113.32479553	0.00494825
2	1	1112.26459903	0.00059223
3	1	1112.14920355	0.00001148
4	1	1112.14705948	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01790	0.02559	0.70	0.2421
Variance	Intercept	0.5022	0.1718	2.92	0.0017
SP(POW)	Intercept	0.7674	0.09741	7.88	<.0001
Residual		0.6340	0.05489	11.55	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1112.1
AIC (smaller is better)	1120.1
AICC (smaller is better)	1120.2
BIC (smaller is better)	1129.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		322.97	125.12	5.2	2.58	0.0475
season	1	-0.1230	0.2699	109	-0.46	0.6494
season	2	-0.1354	0.3079	75.6	-0.44	0.6614
season	3	-0.05958	0.3251	62	-0.18	0.8552
season	4	-0.1033	0.3418	62.6	-0.30	0.7634
season	5	0.07204	0.3500	61.9	0.21	0.8376
season	6	0.3057	0.3509	61	0.87	0.3871
season	7	0.4534	0.3466	60.6	1.31	0.1958
season	8	0.2861	0.3391	62.3	0.84	0.4021
season	9	-0.02604	0.3248	66.5	-0.08	0.9364
season	10	0.01848	0.3002	75.2	0.06	0.9511
season	11	-0.4631	0.2757	118	-1.68	0.0956
season	12	0	.	.	.	.
date1		-0.1602	0.06232	5.2	-2.57	0.0482
temp_dev		0.1298	0.05460	229	2.38	0.0182

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	84.3	0.87	0.5700
date1	1	5.2	6.61	0.0482
temp_dev	1	229	5.66	0.0182

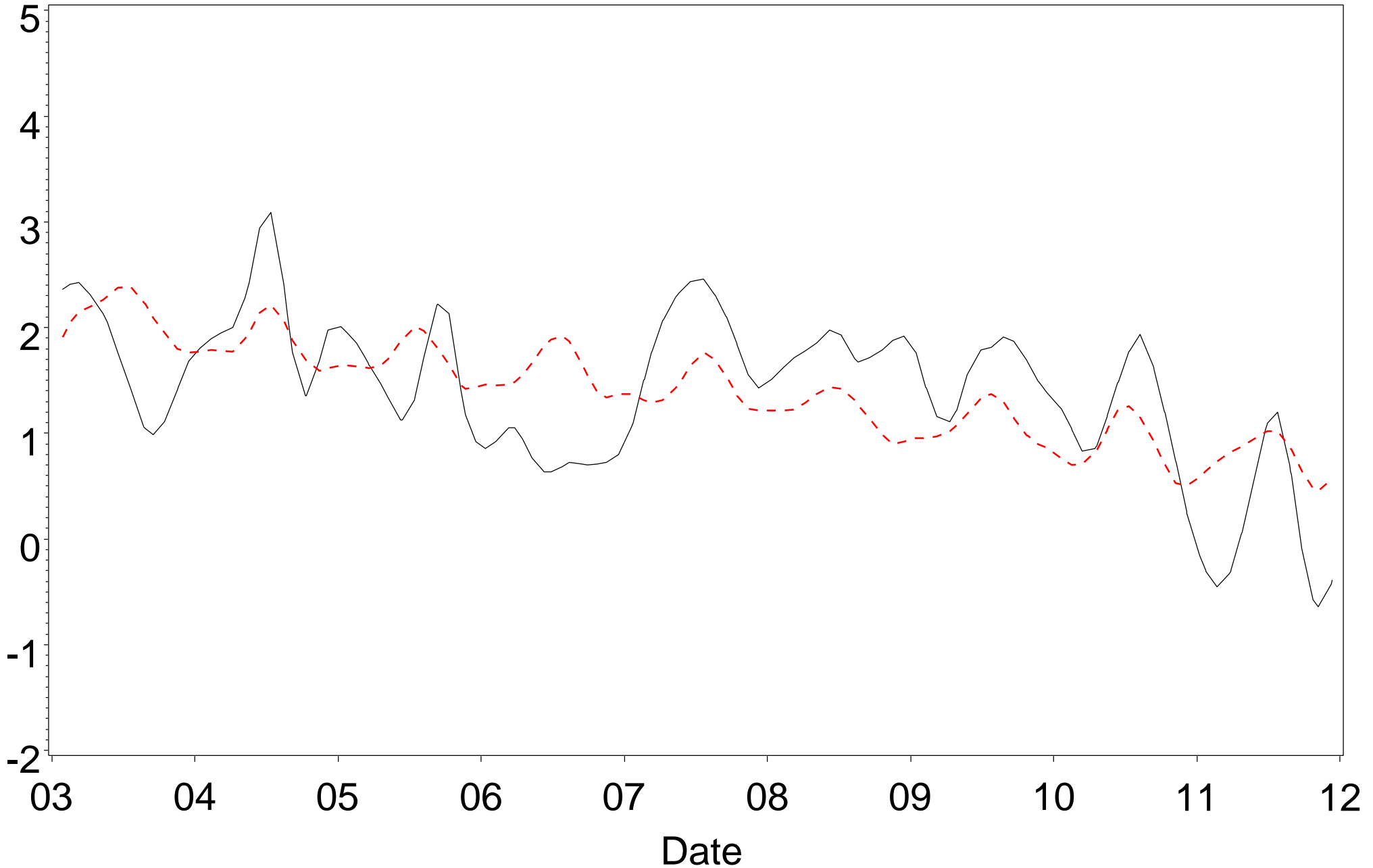
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	811.76301479	
1	2	409.24302216	0.09436102
2	1	390.07559728	0.01329087
3	1	387.40796644	0.00064496
4	1	387.28360231	0.00001097
5	1	387.28157161	0.00000001
6	1	387.28156940	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.05847	0.01293	4.52	<.0001
Variance	Intercept	0.3607	0.1017	3.55	0.0002
SP(POW)	Intercept	0.7260	0.07997	9.08	<.0001
Residual		0.05617	0.005027	11.17	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	387.3
AIC (smaller is better)	395.3
AICC (smaller is better)	395.4
BIC (smaller is better)	404.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		116.79	98.8908	7.19	1.18	0.2752
season	1	-0.2070	0.1734	83.6	-1.19	0.2358
season	2	-0.2602	0.2150	82.1	-1.21	0.2296
season	3	-0.4325	0.2391	81.7	-1.81	0.0742
season	4	-0.2852	0.2523	79	-1.13	0.2617
season	5	-0.4142	0.2590	76.6	-1.60	0.1139
season	6	0.02133	0.2607	75.7	0.08	0.9350
season	7	0.2701	0.2579	76.6	1.05	0.2982
season	8	0.6096	0.2500	79.1	2.44	0.0170
season	9	0.8090	0.2353	81.5	3.44	0.0009
season	10	0.4655	0.2096	81.2	2.22	0.0291
season	11	0.3125	0.1669	84.5	1.87	0.0647
season	12	0	.	.	.	.
date1		-0.05624	0.04926	7.19	-1.14	0.2901
temp_dev		0.06093	0.02542	377	2.40	0.0170

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	79.4	2.82	0.0037
date1	1	7.19	1.30	0.2901
temp_dev	1	377	5.74	0.0170

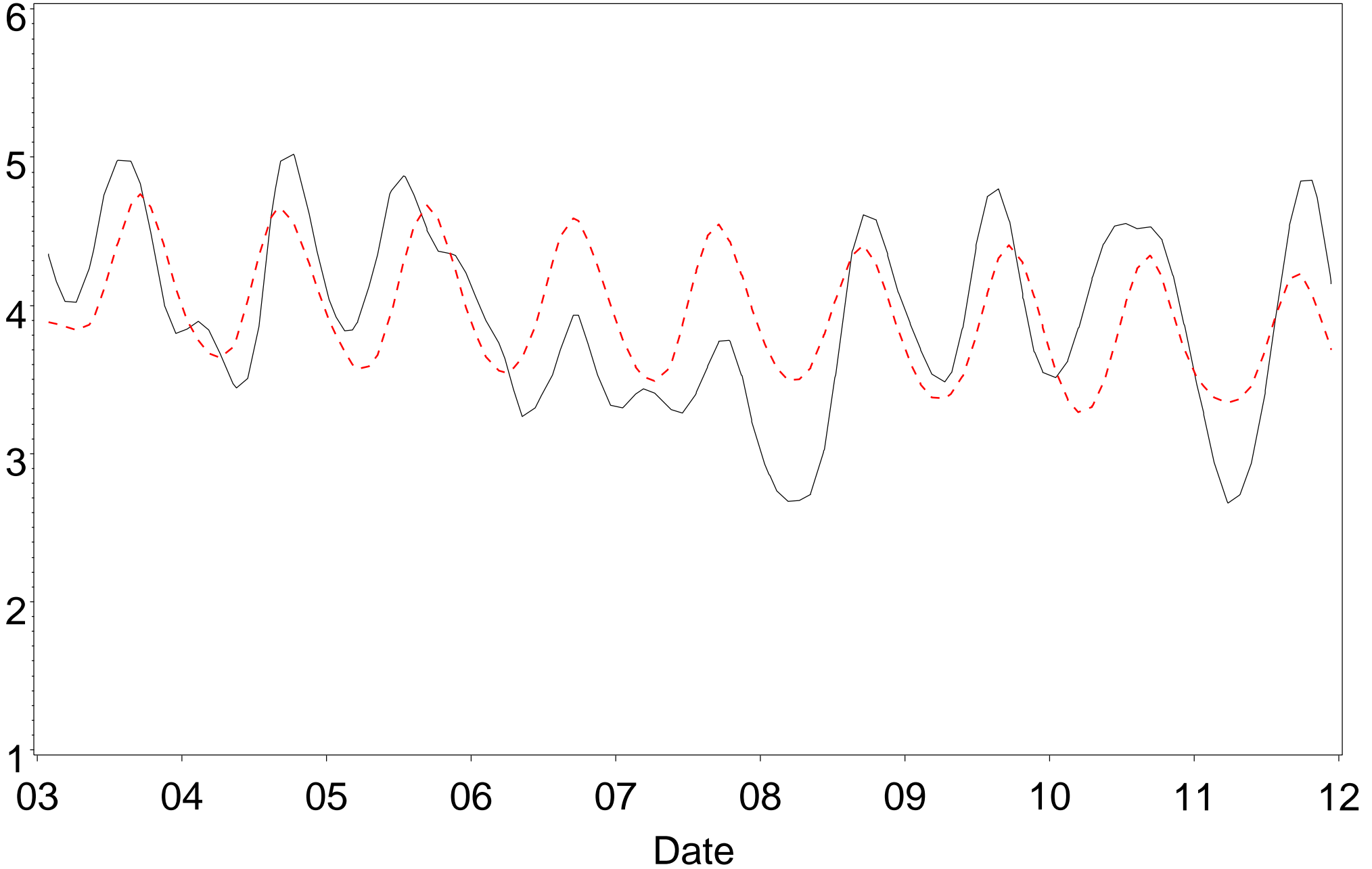
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Parameter = Color (PCU) and Sample Level = Surface

Log Scale

COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1547.77312693	
1	2	1232.32431989	0.03558159
2	1	1222.37022395	0.00346454
3	1	1221.48507806	0.00007848
4	1	1221.46612178	0.00000012
5	1	1221.46609297	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.6788	0.1440	4.71	<.0001
Variance	Intercept	1.6347	0.4751	3.44	0.0003
SP(POW)	Intercept	0.7396	0.08091	9.14	<.0001
Residual		0.4710	0.04258	11.06	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1221.5
AIC (smaller is better)	1229.5
AICC (smaller is better)	1229.6
BIC (smaller is better)	1238.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-348.75	216.01	6.9	-1.61	0.1510
season	1	0.1184	0.3851	86.1	0.31	0.7593
season	2	0.03510	0.4692	78	0.07	0.9406
season	3	-0.02312	0.5197	76.9	-0.04	0.9646
season	4	0.2446	0.5457	75	0.45	0.6553
season	5	-0.09186	0.5589	73	-0.16	0.8699
season	6	-0.4159	0.5622	72.3	-0.74	0.4618
season	7	-1.0922	0.5564	73	-1.96	0.0535
season	8	-1.8923	0.5405	74.7	-3.50	0.0008
season	9	-1.9430	0.5108	76.9	-3.80	0.0003
season	10	-1.1566	0.4571	77.2	-2.53	0.0134
season	11	-0.3575	0.3744	90.2	-0.95	0.3421
season	12	0	.	.	.	.
date1		0.1783	0.1076	6.9	1.66	0.1420
temp_dev		0.02971	0.06816	310	0.44	0.6632

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.3	2.31	0.0161
date1	1	6.9	2.75	0.1420
temp_dev	1	310	0.19	0.6632

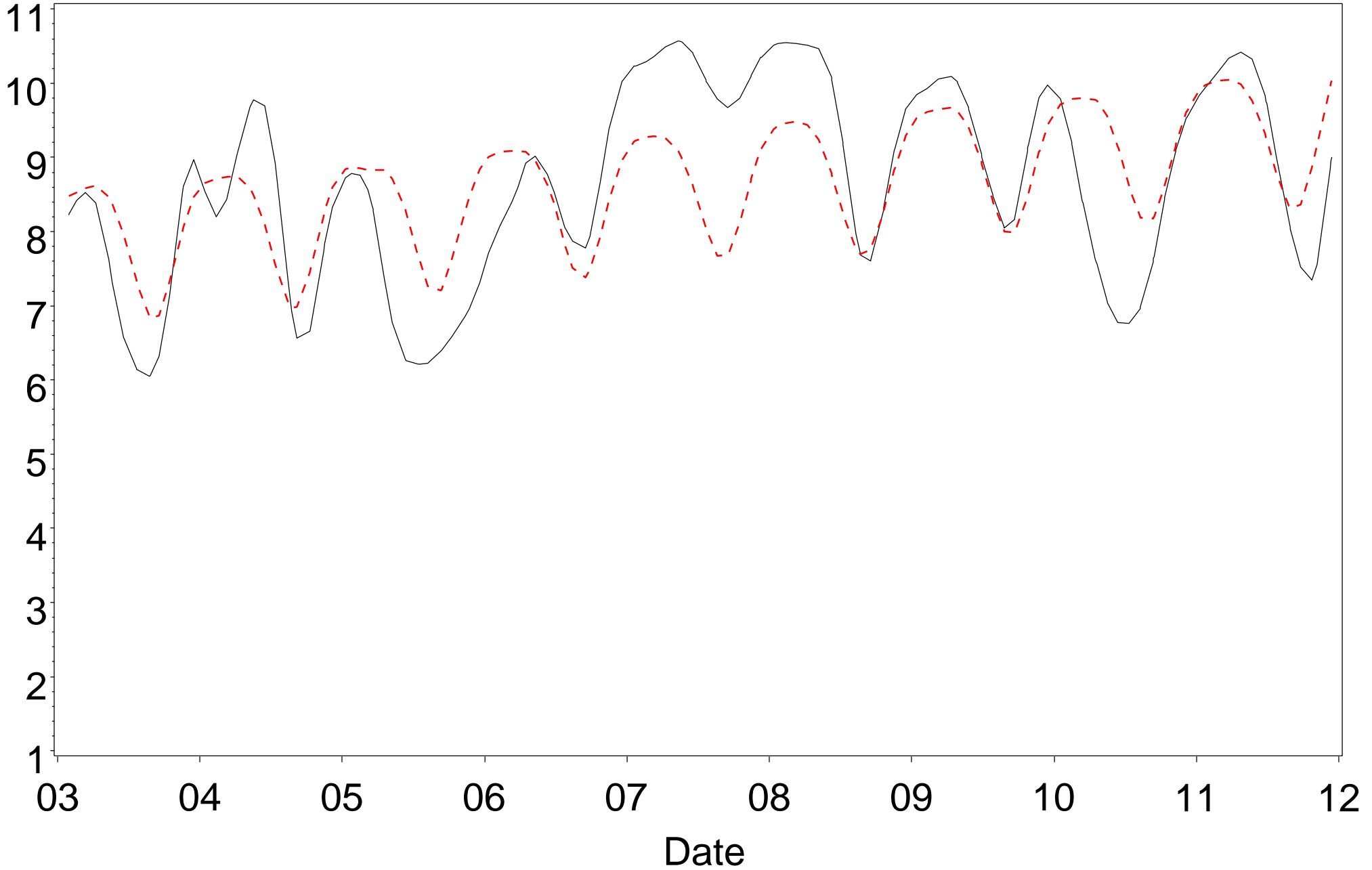
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface

COND



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1519.53625477	
1	3	1448.11593700	0.00981157
2	2	1444.64930444	0.00557437
3	1	1442.55665869	0.00008928
4	1	1442.52546175	0.00000002
5	1	1442.52545605	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2271	0.08106	2.80	0.0025
Variance	Intercept	0.7185	0.1784	4.03	<.0001
SP(POW)	Intercept	0.4464	0.1767	2.53	0.0115
Residual		1.2424	0.1081	11.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1442.5
AIC (smaller is better)	1450.5
AICC (smaller is better)	1450.6
BIC (smaller is better)	1459.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		333.86	104.42	11	3.20	0.0085
season	1	0.9547	0.4266	62.3	2.24	0.0288
season	2	0.3747	0.4758	70.8	0.79	0.4336
season	3	-0.4035	0.4896	78.5	-0.82	0.4123
season	4	-1.1169	0.4973	82.4	-2.25	0.0274
season	5	-1.7209	0.4979	81.4	-3.46	0.0009
season	6	-2.4741	0.4963	80.3	-4.98	<.0001
season	7	-2.2767	0.4951	80.4	-4.60	<.0001
season	8	-2.7831	0.4958	82.1	-5.61	<.0001
season	9	-2.3864	0.4905	80.5	-4.87	<.0001
season	10	-1.7802	0.4701	69	-3.79	0.0003
season	11	-0.7628	0.4228	60.4	-1.80	0.0762
season	12	0	.	.	.	.
date1		-0.1624	0.05201	11	-3.12	0.0097
temp_dev		-0.1943	0.08569	233	-2.27	0.0243

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	62.3	7.90	<.0001
date1	1	11	9.74	0.0097
temp_dev	1	233	5.14	0.0243

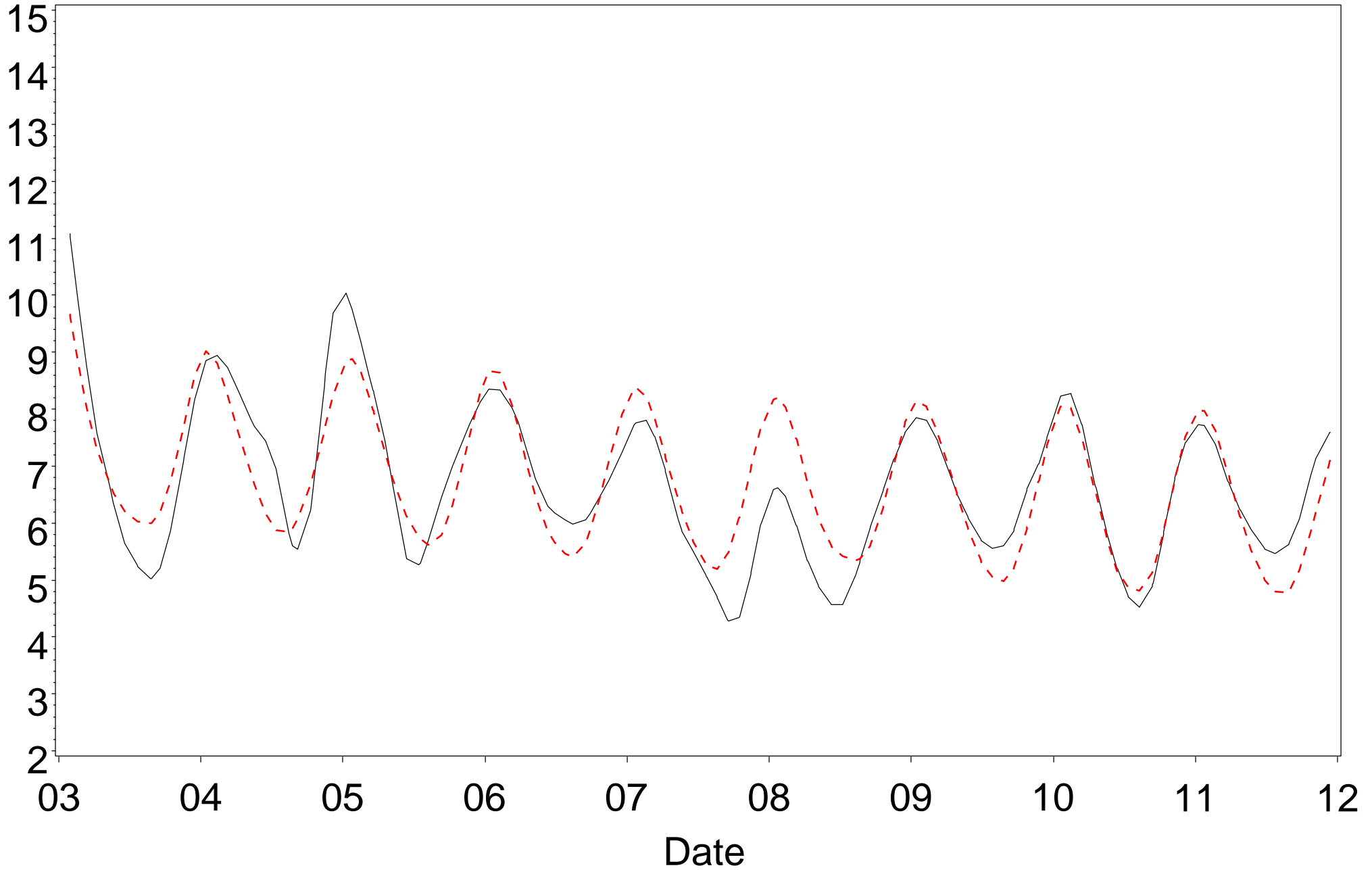
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	733.14435889	
1	2	479.14030397	0.05501069
2	1	470.40141482	0.00925509
3	2	468.88325735	0.00100132
4	1	468.73447003	0.00000847
5	1	468.73327364	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04981	0.01235	4.03	<.0001
Variance	Intercept	0.2170	0.05319	4.08	<.0001
SP(POW)	Intercept	0.6446	0.08920	7.23	<.0001
Residual		0.08402	0.007442	11.29	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	468.7
AIC (smaller is better)	476.7
AICC (smaller is better)	476.8
BIC (smaller is better)	485.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		52.1615	69.0617	9.77	0.76	0.4679
season	1	-0.1810	0.1608	90.1	-1.13	0.2632
season	2	-0.2615	0.1925	85.8	-1.36	0.1778
season	3	-0.5328	0.2092	83.4	-2.55	0.0127
season	4	-0.4684	0.2179	79.3	-2.15	0.0347
season	5	-0.05065	0.2218	75.5	-0.23	0.8200
season	6	-0.03478	0.2226	74.1	-0.16	0.8763
season	7	0.5496	0.2209	75.5	2.49	0.0150
season	8	0.5588	0.2163	79.6	2.58	0.0116
season	9	0.7547	0.2067	84	3.65	0.0005
season	10	0.5688	0.1883	85.1	3.02	0.0033
season	11	0.2085	0.1563	91.5	1.33	0.1856
season	12	0	.	.	.	.
date1		-0.02524	0.03440	9.77	-0.73	0.4804
temp_dev		0.01419	0.02778	339	0.51	0.6099

Mixed Model With Local Nugget

The Mixed Procedure

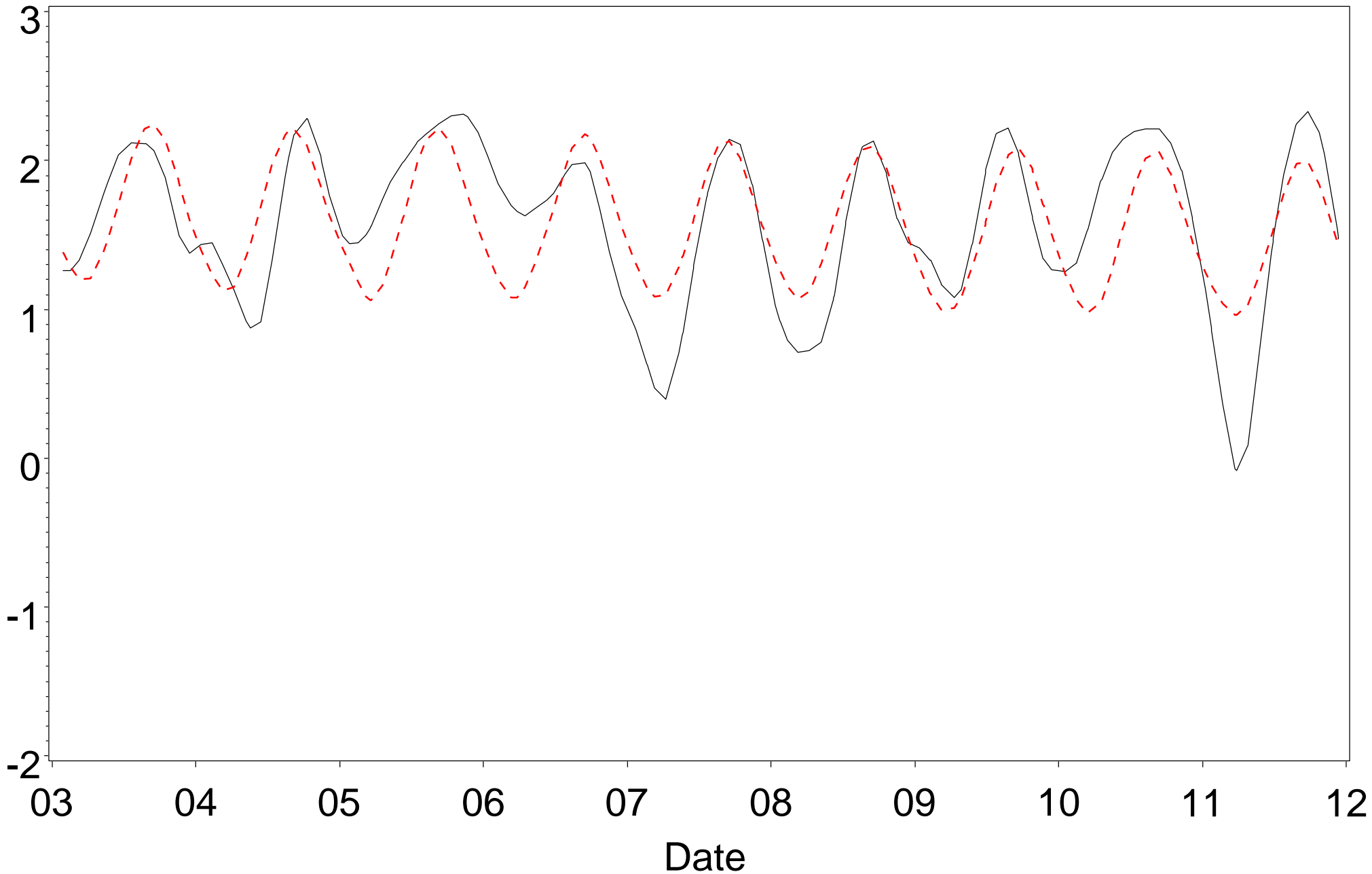
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	83.6	4.36	<.0001
date1	1	9.77	0.54	0.4804
temp_dev	1	339	0.26	0.6099

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale Parameter = Dissolved Silica (as SiO₂) (mg/L) and Sample Level = Surface

DSI_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	299
Number of Observations Not Used	123

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	870.57582568	
1	3	849.03863624	0.00272456
2	1	848.52805430	0.00020730
3	1	848.49283505	0.00000112
4	1	848.49265268	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04618	0.04779	0.97	0.1669
Variance	Intercept	0.2164	0.09254	2.34	0.0097
SP(POW)	Intercept	0.7105	0.1603	4.43	<.0001
Residual		0.8065	0.08739	9.23	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	848.5
AIC (smaller is better)	856.5
AICC (smaller is better)	856.6
BIC (smaller is better)	865.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		160.34	87.0448	6.99	1.84	0.1081
season	1	-0.1206	0.3188	108	-0.38	0.7059
season	2	-0.1341	0.3336	67.1	-0.40	0.6891
season	3	0.009370	0.3419	61.7	0.03	0.9782
season	4	-0.3742	0.3455	60.8	-1.08	0.2830
season	5	0.5746	0.3794	59.1	1.51	0.1352
season	6	0.002615	0.3753	57.9	0.01	0.9945
season	7	0.4355	0.3497	54.5	1.25	0.2183
season	8	0.7513	0.3599	58.3	2.09	0.0412
season	9	0.8907	0.3525	64.2	2.53	0.0140
season	10	0.6670	0.3312	74.7	2.01	0.0476
season	11	-0.00232	0.3229	111	-0.01	0.9943
season	12	0	.	.	.	.
date1		-0.07890	0.04335	6.99	-1.82	0.1116
temp_dev		-0.06572	0.06875	146	-0.96	0.3407

Mixed Model With Local Nugget

The Mixed Procedure

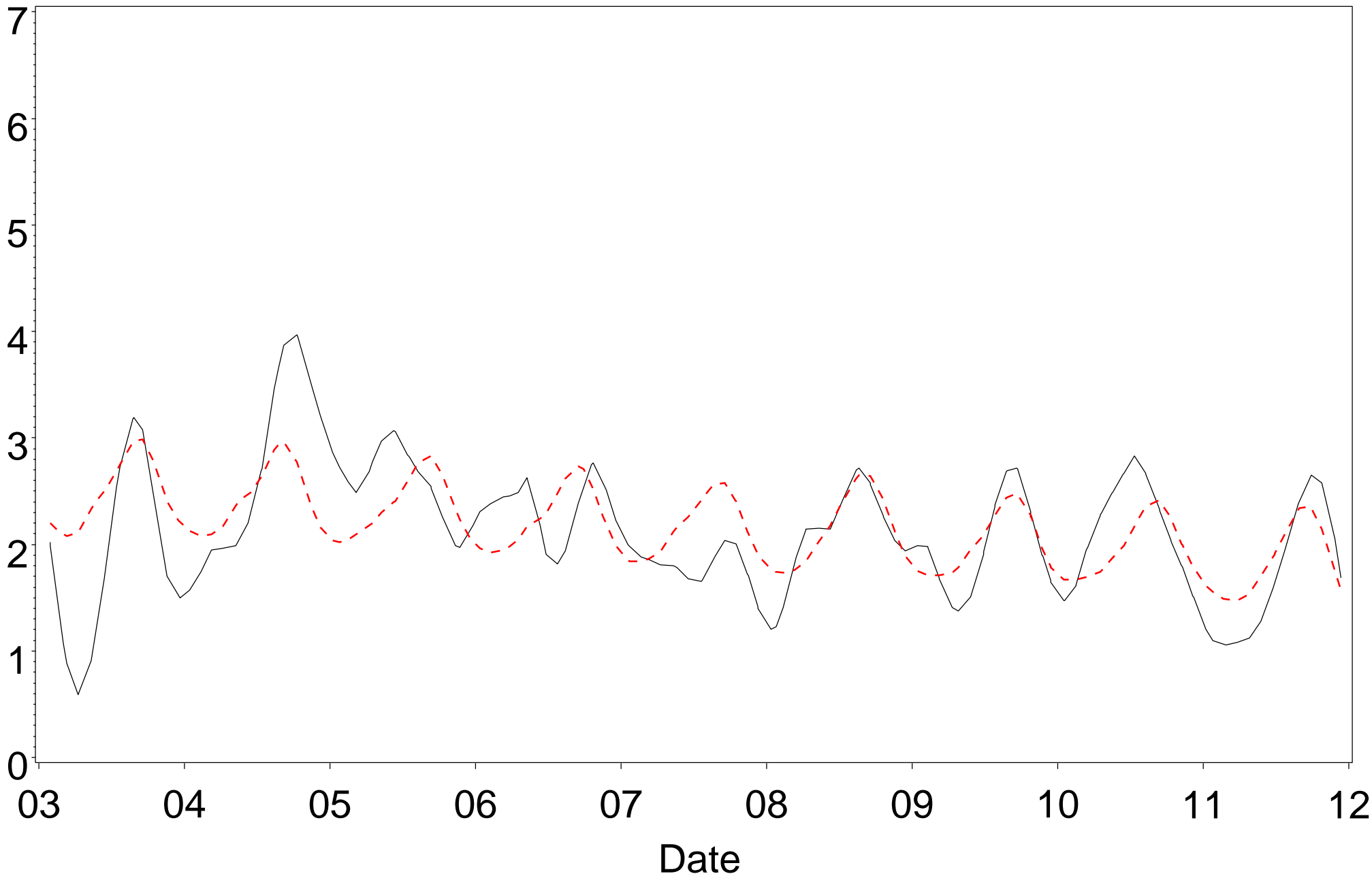
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.2	2.50	0.0106
date1	1	6.99	3.31	0.1116
temp_dev	1	146	0.91	0.3407

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1158.60599369	
1	3	1111.85911914	0.06370183
2	2	1103.67521566	0.02999157
3	2	1098.32504256	0.00015506
4	1	1098.29729503	0.00000029
5	1	1098.29724472	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04668	0.02760	1.69	0.0454
Variance	Intercept	0.3420	0.07928	4.31	<.0001
SP(POW)	Intercept	0.1882	0.1543	1.22	0.2226
Residual		0.5403	0.04692	11.51	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1098.3
AIC (smaller is better)	1106.3
AICC (smaller is better)	1106.4
BIC (smaller is better)	1115.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-41.2075	59.2675	21.8	-0.70	0.4942
season	1	-0.2826	0.3162	66.7	-0.89	0.3747
season	2	-0.5601	0.3376	84.5	-1.66	0.1009
season	3	-0.4594	0.3352	82.3	-1.37	0.1742
season	4	-0.6411	0.3362	83.5	-1.91	0.0600
season	5	0.01128	0.3359	83.2	0.03	0.9733
season	6	-0.1651	0.3344	82.2	-0.49	0.6228
season	7	-0.3210	0.3337	81.8	-0.96	0.3389
season	8	-0.1429	0.3357	83.4	-0.43	0.6715
season	9	0.07829	0.3371	85.6	0.23	0.8169
season	10	-0.1919	0.3350	84.6	-0.57	0.5683
season	11	0.1364	0.3152	63.9	0.43	0.6666
season	12	0	.	.	.	.
date1		0.01892	0.02952	21.8	0.64	0.5281
temp_dev		0.03434	0.05669	282	0.61	0.5451

Mixed Model With Local Nugget

The Mixed Procedure

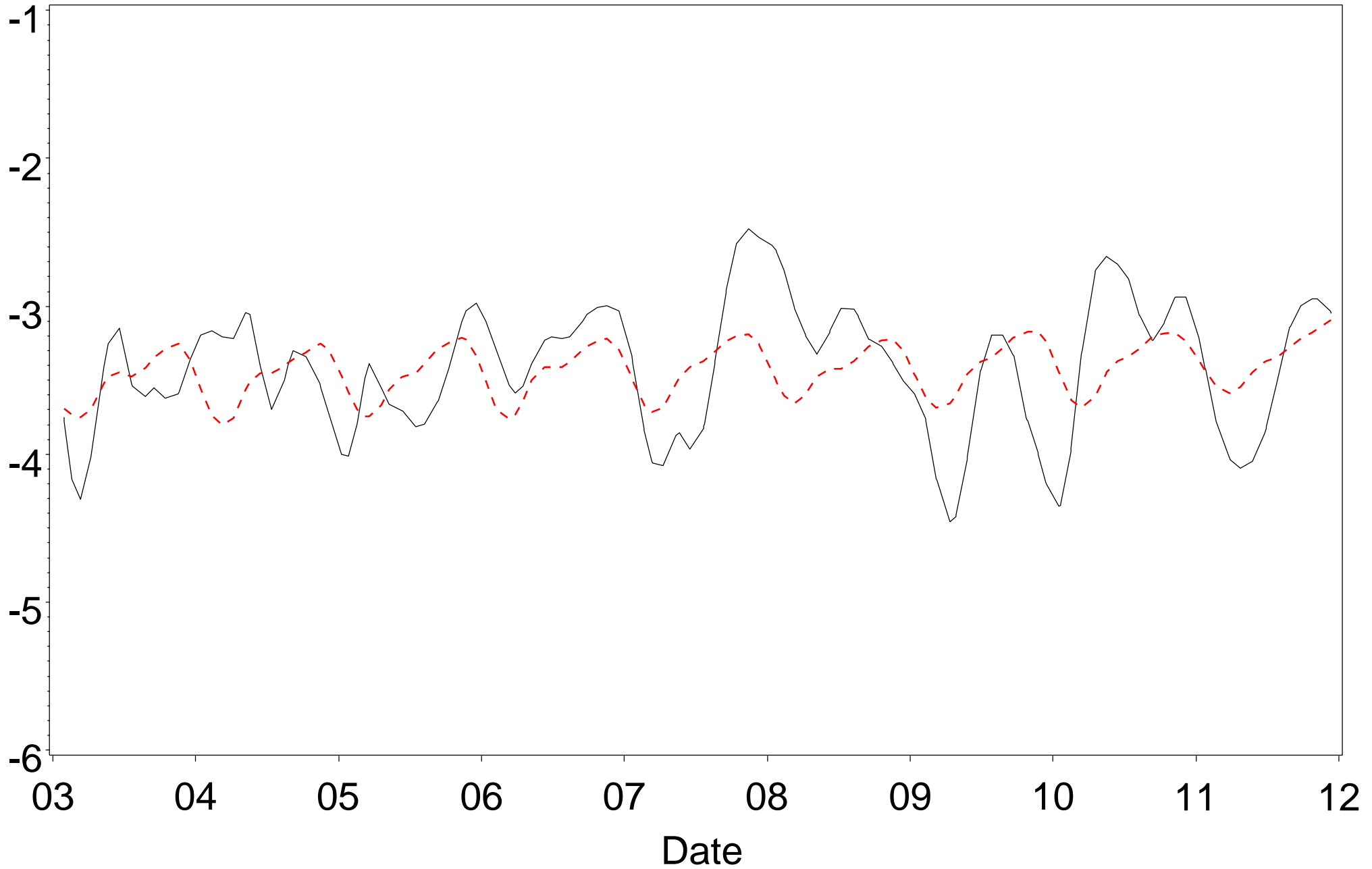
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.4	1.05	0.4160
date1	1	21.8	0.41	0.5281
temp_dev	1	282	0.37	0.5451

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	419
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1503.95354964	
1	3	1269.52711243	0.53786932
2	2	1259.97870245	0.01884085
3	2	1254.18351187	0.01208691
4	2	1252.12107029	0.00535716
5	1	1250.61823793	0.00023182
6	1	1250.55634931	0.00000211
7	1	1250.55581210	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.1801	0.05587	3.22	0.0006
Variance	Intercept	1.4960	0.3393	4.41	<.0001
SP(POW)	Intercept	0.5701	0.09840	5.79	<.0001
Residual		0.6191	0.05431	11.40	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1250.6
AIC (smaller is better)	1258.6
AICC (smaller is better)	1258.7
BIC (smaller is better)	1267.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		306.38	165.06	11.6	1.86	0.0890
season	1	-0.00776	0.4520	77.8	-0.02	0.9864
season	2	0.008078	0.5351	79.2	0.02	0.9880
season	3	-0.6141	0.5728	77.4	-1.07	0.2870
season	4	-0.9990	0.5924	73.5	-1.69	0.0960
season	5	-0.5435	0.6003	69.8	-0.91	0.3684
season	6	-0.6241	0.6015	68.4	-1.04	0.3032
season	7	0.1053	0.6098	71.3	0.17	0.8634
season	8	0.1536	0.5892	74	0.26	0.7950
season	9	1.2050	0.5682	78.3	2.12	0.0371
season	10	0.3686	0.5250	78.3	0.70	0.4847
season	11	0.4371	0.4395	77	0.99	0.3230
season	12	0	.	.	.	.
date1		-0.1541	0.08221	11.6	-1.87	0.0862
temp_dev		0.006935	0.07420	351	0.09	0.9256

Mixed Model With Local Nugget

The Mixed Procedure

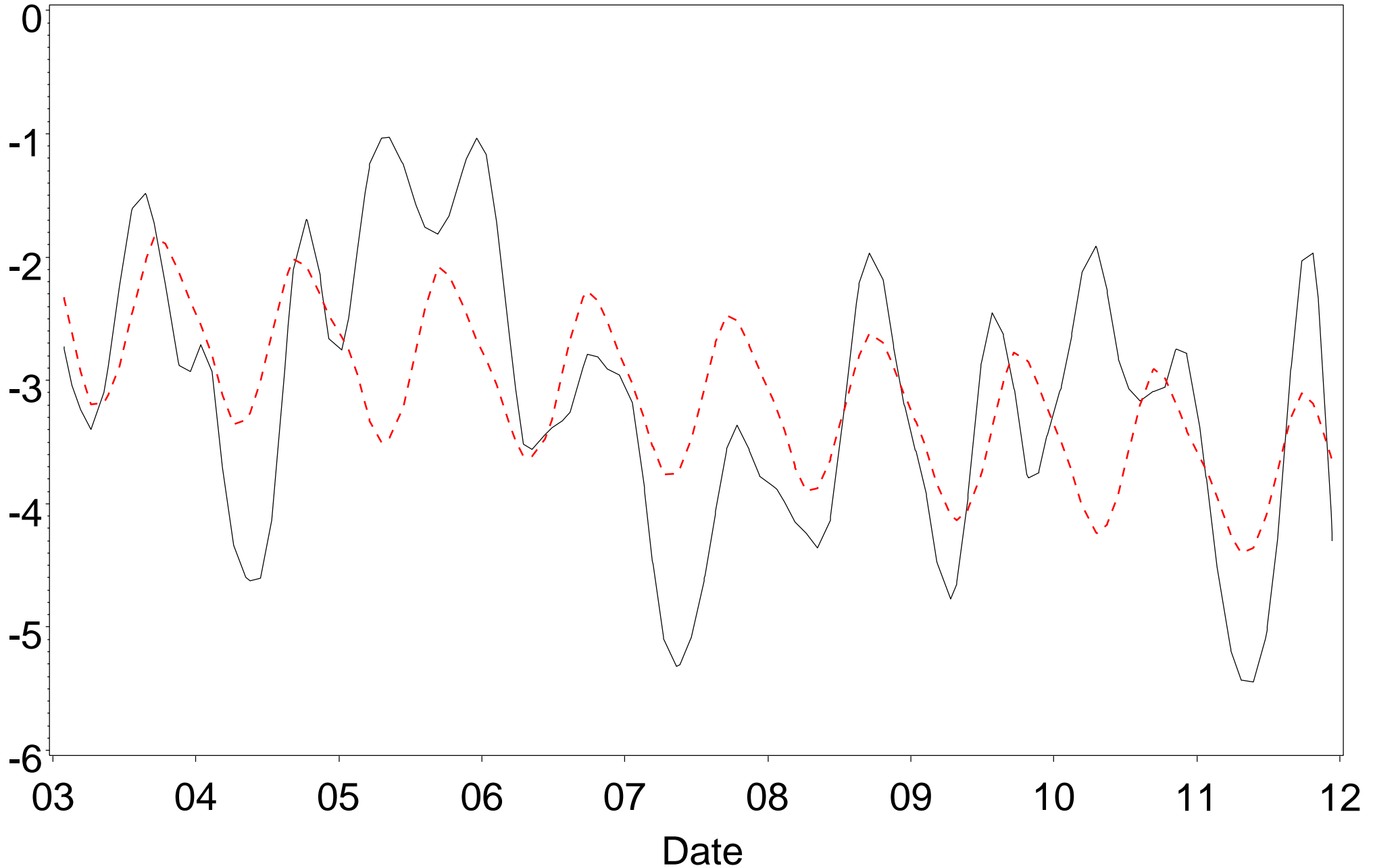
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73	1.62	0.1114
date1	1	11.6	3.52	0.0862
temp_dev	1	351	0.01	0.9256

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	416
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1319.28261786	
1	2	1129.01146081	0.01583947
2	1	1125.16304299	0.00626893
3	2	1123.99565403	0.00104702
4	1	1123.78527578	0.00000585
5	1	1123.78414103	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1496	0.04587	3.26	0.0006
Variance	Intercept	0.8622	0.2180	3.96	<.0001
SP(POW)	Intercept	0.6444	0.09886	6.52	<.0001
Residual		0.5006	0.04429	11.30	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1123.8
AIC (smaller is better)	1131.8
AICC (smaller is better)	1131.9
BIC (smaller is better)	1140.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		348.54	137.77	9.14	2.53	0.0319
season	1	-0.2515	0.3378	80.2	-0.74	0.4586
season	2	-0.1842	0.3991	74.9	-0.46	0.6458
season	3	-0.5427	0.4302	74.2	-1.26	0.2111
season	4	-0.4997	0.4483	73.2	-1.11	0.2686
season	5	-0.4587	0.4560	71	-1.01	0.3178
season	6	-0.1003	0.4574	70	-0.22	0.8271
season	7	0.3086	0.4537	70.7	0.68	0.4985
season	8	0.01867	0.4546	73.2	0.04	0.9674
season	9	0.7314	0.4364	74.7	1.68	0.0979
season	10	0.3279	0.3907	73.9	0.84	0.4040
season	11	-0.3125	0.3290	81.3	-0.95	0.3451
season	12	0	.	.	.	.
date1		-0.1761	0.06862	9.14	-2.57	0.0300
temp_dev		-0.03102	0.06270	301	-0.49	0.6211

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.3	1.36	0.2092
date1	1	9.14	6.59	0.0300
temp_dev	1	301	0.24	0.6211

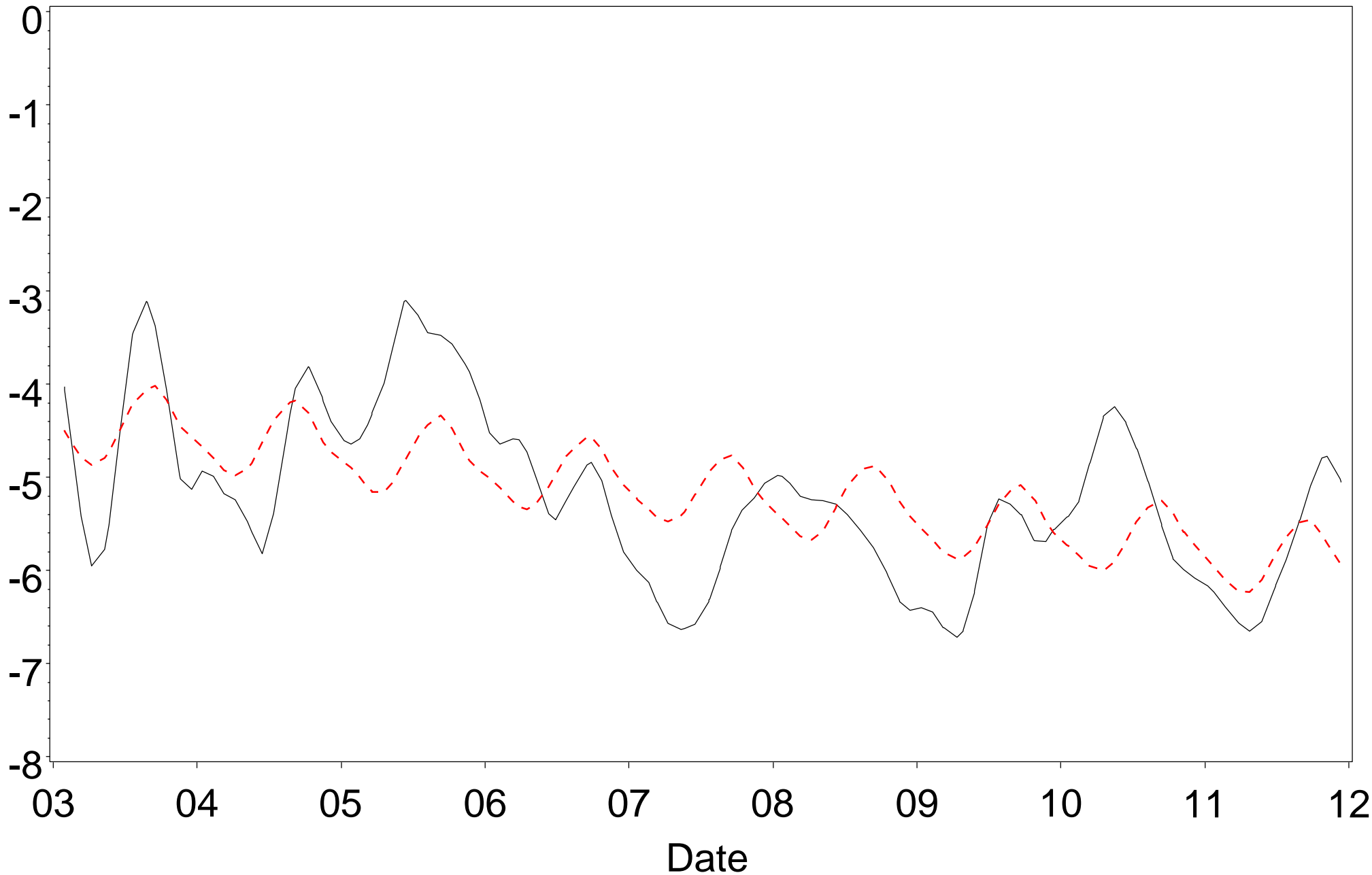
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Parameter = Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

Log Scale

NO2_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	416
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1509.01599706	
1	3	1292.62883486	0.04328865
2	2	1279.28500523	0.01724034
3	2	1275.84493940	0.01492382
4	1	1271.15877060	0.00215728
5	1	1270.55054281	0.00005029
6	1	1270.53702160	0.00000002
7	1	1270.53701757	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.1878	0.06009	3.13	0.0009
Variance	Intercept	1.5201	0.3414	4.45	<.0001
SP(POW)	Intercept	0.5582	0.1006	5.55	<.0001
Residual		0.6724	0.05941	11.32	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1270.5
AIC (smaller is better)	1278.5
AICC (smaller is better)	1278.6
BIC (smaller is better)	1287.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		260.69	164.24	11.9	1.59	0.1387
season	1	0.03750	0.4633	76.9	0.08	0.9357
season	2	-0.1062	0.5469	79.2	-0.19	0.8466
season	3	-0.5294	0.5832	77.4	-0.91	0.3668
season	4	-1.0164	0.6022	73.6	-1.69	0.0957
season	5	-0.5464	0.6095	70	-0.90	0.3731
season	6	-0.7093	0.6117	69.1	-1.16	0.2502
season	7	0.07269	0.6195	71.4	0.12	0.9069
season	8	0.2076	0.5990	74.1	0.35	0.7299
season	9	1.0673	0.5789	78.3	1.84	0.0690
season	10	0.2951	0.5363	77.9	0.55	0.5838
season	11	0.5068	0.4509	75.8	1.12	0.2646
season	12	0	.	.	.	.
date1		-0.1314	0.08180	11.9	-1.61	0.1343
temp_dev		-0.00839	0.07680	346	-0.11	0.9131

Mixed Model With Local Nugget

The Mixed Procedure

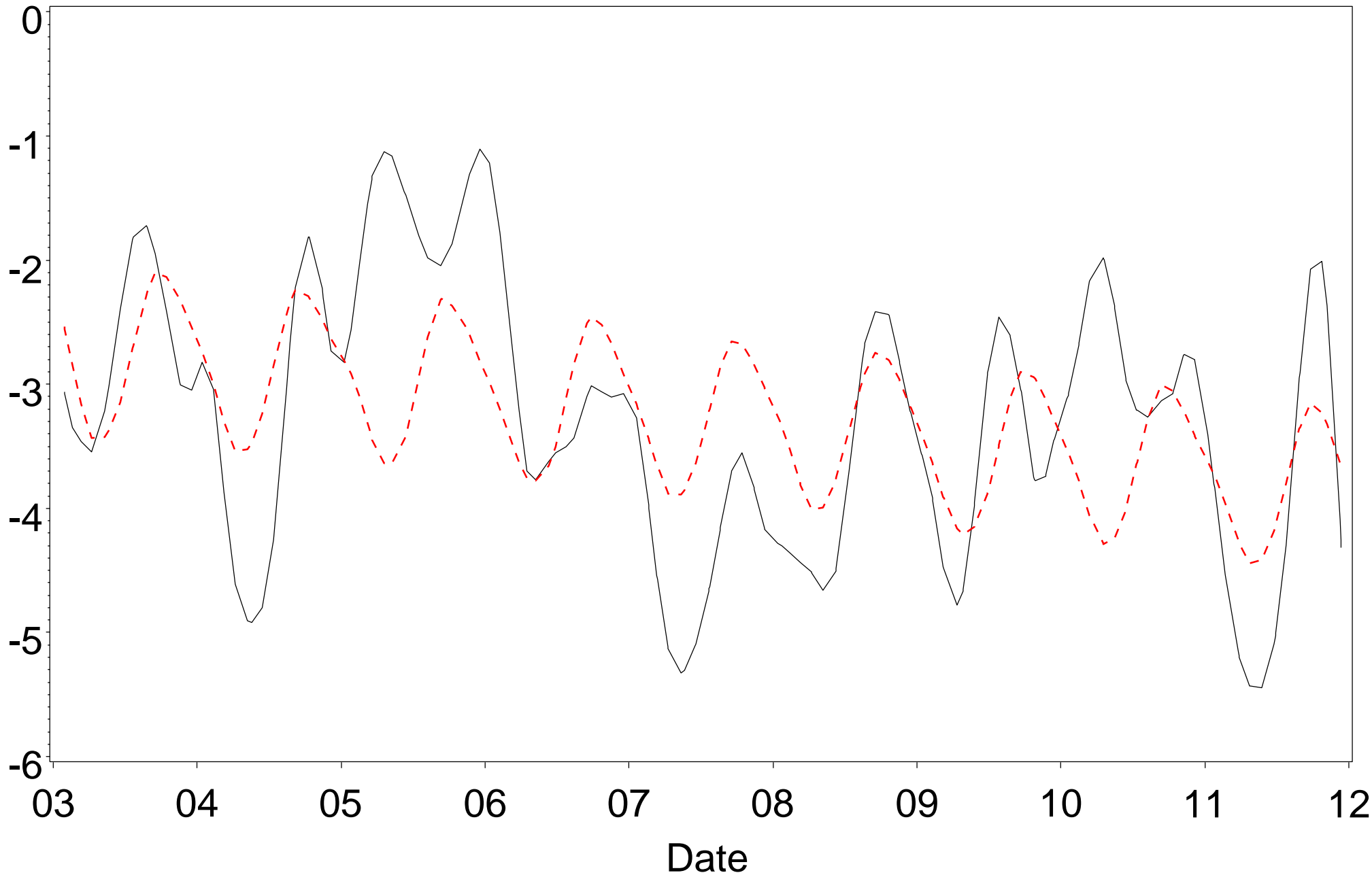
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.5	1.42	0.1824
date1	1	11.9	2.58	0.1343
temp_dev	1	346	0.01	0.9131

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO3_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	412
Number of Observations Not Used	10

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	366.34881457	
1	3	297.92326436	0.61450934
2	2	289.93770454	0.87468641
3	2	273.54719974	0.00376198
4	2	272.90829044	0.00033489
5	1	272.82769350	0.00000212
6	1	272.82720551	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02040	0.007208	2.83	0.0023
Variance	Intercept	0.04228	0.008831	4.79	<.0001
SP(POW)	Intercept	-0.03876	0.1570	-0.25	0.8050
Residual		0.06615	0.005842	11.32	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	272.8
AIC (smaller is better)	280.8
AICC (smaller is better)	280.9
BIC (smaller is better)	289.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-24.6365	18.5820	34	-1.33	0.1937
season	1	-0.04368	0.1243	66.7	-0.35	0.7263
season	2	-0.1113	0.1250	103	-0.89	0.3754
season	3	-0.1179	0.1194	103	-0.99	0.3255
season	4	-0.1231	0.1195	103	-1.03	0.3053
season	5	-0.05324	0.1190	101	-0.45	0.6555
season	6	-0.2942	0.1184	99.9	-2.49	0.0146
season	7	-0.1910	0.1184	100	-1.61	0.1098
season	8	-0.3541	0.1191	102	-2.97	0.0037
season	9	-0.2519	0.1196	105	-2.11	0.0376
season	10	-0.2380	0.1204	104	-1.98	0.0508
season	11	-0.2146	0.1217	66.7	-1.76	0.0823
season	12	0	.	.	.	.
date1		0.01620	0.009256	34	1.75	0.0891
temp_dev		0.009397	0.02111	271	0.45	0.6566

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.9	1.68	0.0938
date1	1	34	3.06	0.0891
temp_dev	1	271	0.20	0.6566

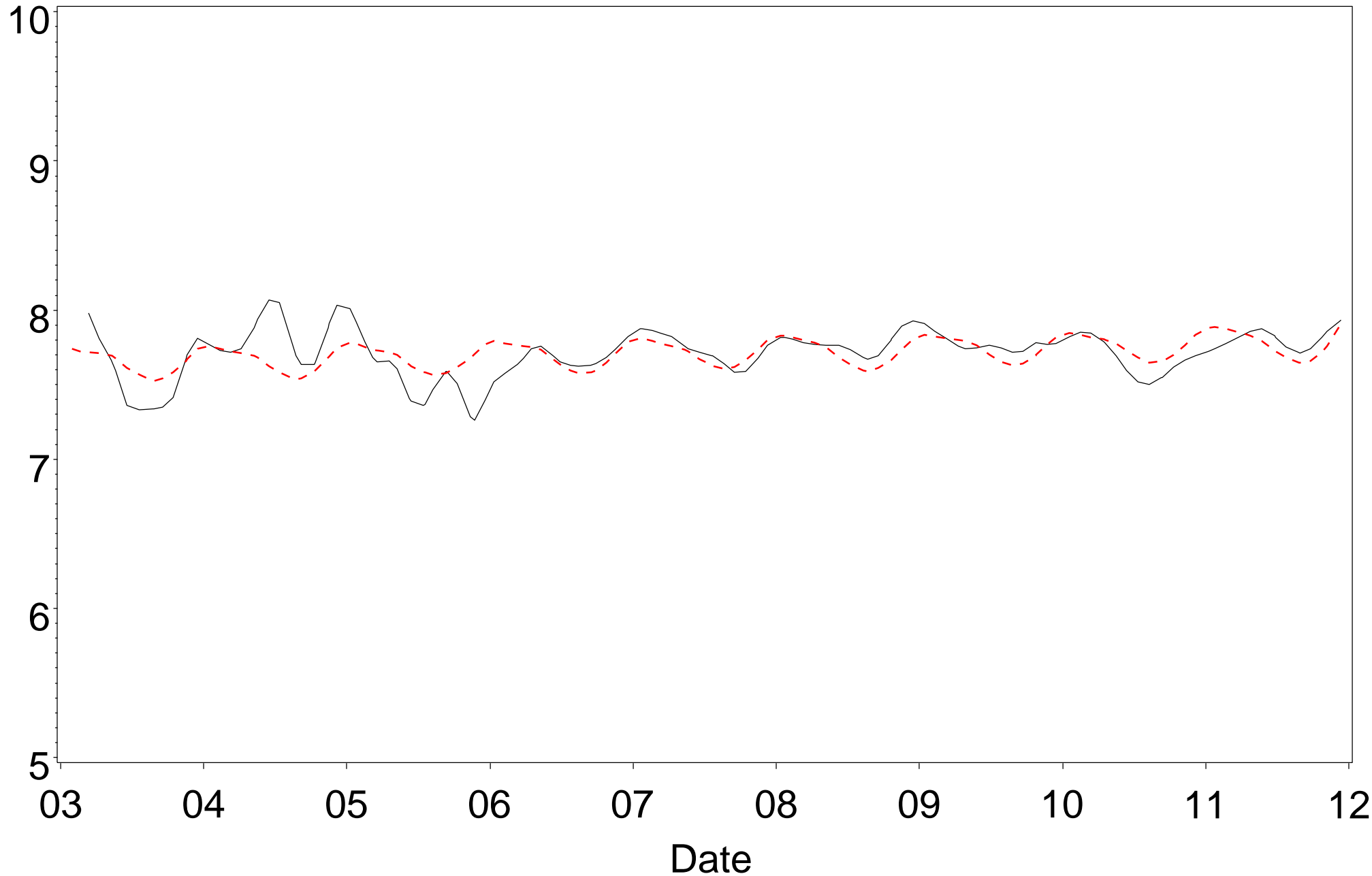
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = pH (SU) and Sample Level = Surface

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	815.37464589	
1	3	704.70647529	7.08955458
2	2	694.01387037	0.07340986
3	2	692.46894192	0.00967617
4	1	692.16534880	0.00024658
5	1	692.15810380	0.00000020
6	1	692.15809796	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08505	0.02175	3.91	<.0001
Variance	Intercept	0.1331	0.02858	4.66	<.0001
SP(POW)	Intercept	0.2492	0.1462	1.70	0.0884
Residual		0.1694	0.01479	11.45	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	692.2
AIC (smaller is better)	700.2
AICC (smaller is better)	700.3
BIC (smaller is better)	709.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-86.9884	38.0803	19.1	-2.28	0.0340
season	1	-0.00997	0.1889	80.3	-0.05	0.9580
season	2	0.08059	0.2045	96.1	0.39	0.6943
season	3	-0.09966	0.2066	93.8	-0.48	0.6307
season	4	0.4340	0.2063	90.8	2.10	0.0382
season	5	0.6366	0.2051	88.3	3.10	0.0026
season	6	0.9128	0.2041	87	4.47	<.0001
season	7	0.9411	0.2043	87.7	4.61	<.0001
season	8	0.9205	0.2057	90.5	4.48	<.0001
season	9	0.9246	0.2064	95.6	4.48	<.0001
season	10	0.5638	0.2031	96.5	2.78	0.0066
season	11	0.2721	0.1891	78.7	1.44	0.1541
season	12	0	.	.	.	.
date1		0.04168	0.01897	19.1	2.20	0.0405
temp_dev		0.03916	0.03541	297	1.11	0.2697

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.2	6.14	<.0001
date1	1	19.1	4.83	0.0405
temp_dev	1	297	1.22	0.2697

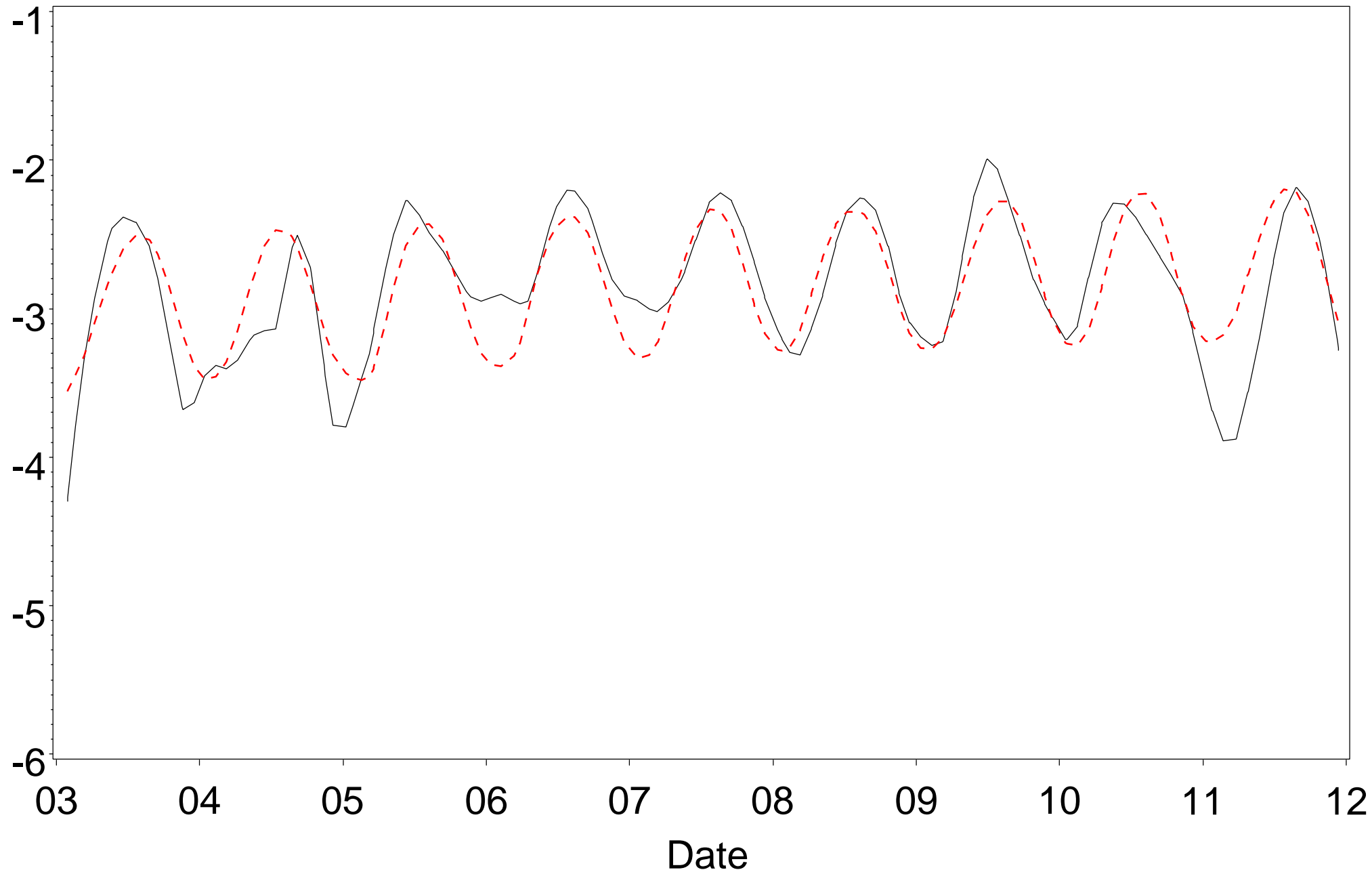
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1539.71577870	
1	2	1194.22161032	0.04615300
2	1	1182.07474360	0.00714931
3	1	1180.31254220	0.00057239
4	1	1180.18101528	0.00000724
5	1	1180.17944270	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.6801	0.1431	4.75	<.0001
Variance	Intercept	1.6891	0.5409	3.12	0.0009
SP(POW)	Intercept	0.7792	0.07515	10.37	<.0001
Residual		0.4170	0.03763	11.08	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1180.2
AIC (smaller is better)	1188.2
AICC (smaller is better)	1188.3
BIC (smaller is better)	1197.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-312.80	234.05	5.87	-1.34	0.2309
season	1	0.08436	0.3636	88.9	0.23	0.8170
season	2	0.05215	0.4456	78.2	0.12	0.9071
season	3	-0.06945	0.4964	76.3	-0.14	0.8891
season	4	0.2326	0.5231	74.5	0.44	0.6579
season	5	-0.1057	0.5370	72.7	-0.20	0.8445
season	6	-0.4440	0.5407	72.2	-0.82	0.4143
season	7	-1.2340	0.5346	72.7	-2.31	0.0238
season	8	-1.8402	0.5178	74.1	-3.55	0.0007
season	9	-1.9147	0.4874	76.3	-3.93	0.0002
season	10	-1.1182	0.4336	77.6	-2.58	0.0118
season	11	-0.4430	0.3531	94.1	-1.25	0.2127
season	12	0	.	.	.	.
date1		0.1567	0.1166	5.87	1.34	0.2285
temp_dev		0.02455	0.06435	309	0.38	0.7031

Mixed Model With Local Nugget

The Mixed Procedure

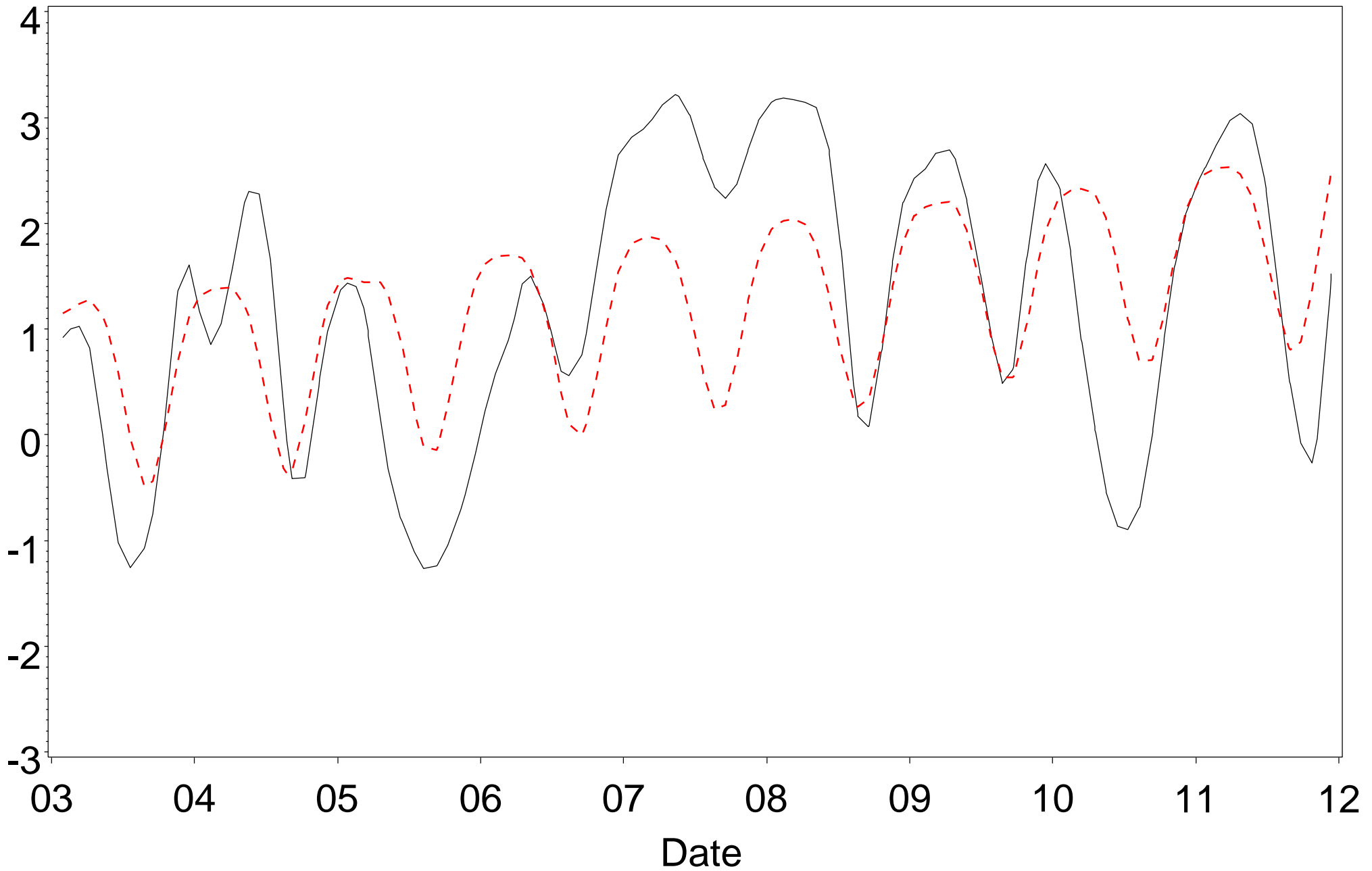
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	83.1	2.38	0.0131
date1	1	5.87	1.81	0.2285
temp_dev	1	309	0.15	0.7031

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale
Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1506.15096552	
1	4	-1577.40260494	.
2	2	-1651.52100249	.
3	1	-1656.25161290	0.52345085
4	2	-1670.54615263	0.00556586
5	2	-1671.77914847	0.00158864
6	1	-1674.01265177	0.00015746
7	1	-1674.21788966	0.00000246
8	1	-1674.22090921	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000020	0.000023	0.86	0.1951
Variance	Intercept	0.000902	0.000157	5.74	<.0001
SP(POW)	Intercept	0.02744	0.1276	0.22	0.8297
Residual		0.000515	0.000046	11.22	<.0001

Fit Statistics	
-2 Res Log Likelihood	-1674.2
AIC (smaller is better)	-1666.2
AICC (smaller is better)	-1666.1
BIC (smaller is better)	-1657.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		3.4882	2.4529	27.6	1.42	0.1662
season	1	-0.09631	0.01520	67.3	-6.34	<.0001
season	2	-0.07937	0.01554	92.5	-5.11	<.0001
season	3	0.04757	0.01532	89.5	3.11	0.0025
season	4	0.1461	0.01534	90.4	9.53	<.0001
season	5	0.2854	0.01535	90.9	18.60	<.0001
season	6	0.3385	0.01531	90.2	22.11	<.0001
season	7	0.3800	0.01529	89.8	24.85	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.3500	0.01532	90.4	22.85	<.0001
season	9	0.3316	0.01535	91	21.61	<.0001
season	10	0.2193	0.01544	91.5	14.20	<.0001
season	11	0.06097	0.01517	62.7	4.02	0.0002
season	12	0	.	.	.	.
date1		-0.00022	0.001222	27.6	-0.18	0.8580
temp_dev		0.08022	0.001947	282	41.19	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.8	250.09	<.0001
date1	1	27.6	0.03	0.8580
temp_dev	1	282	1696.84	<.0001

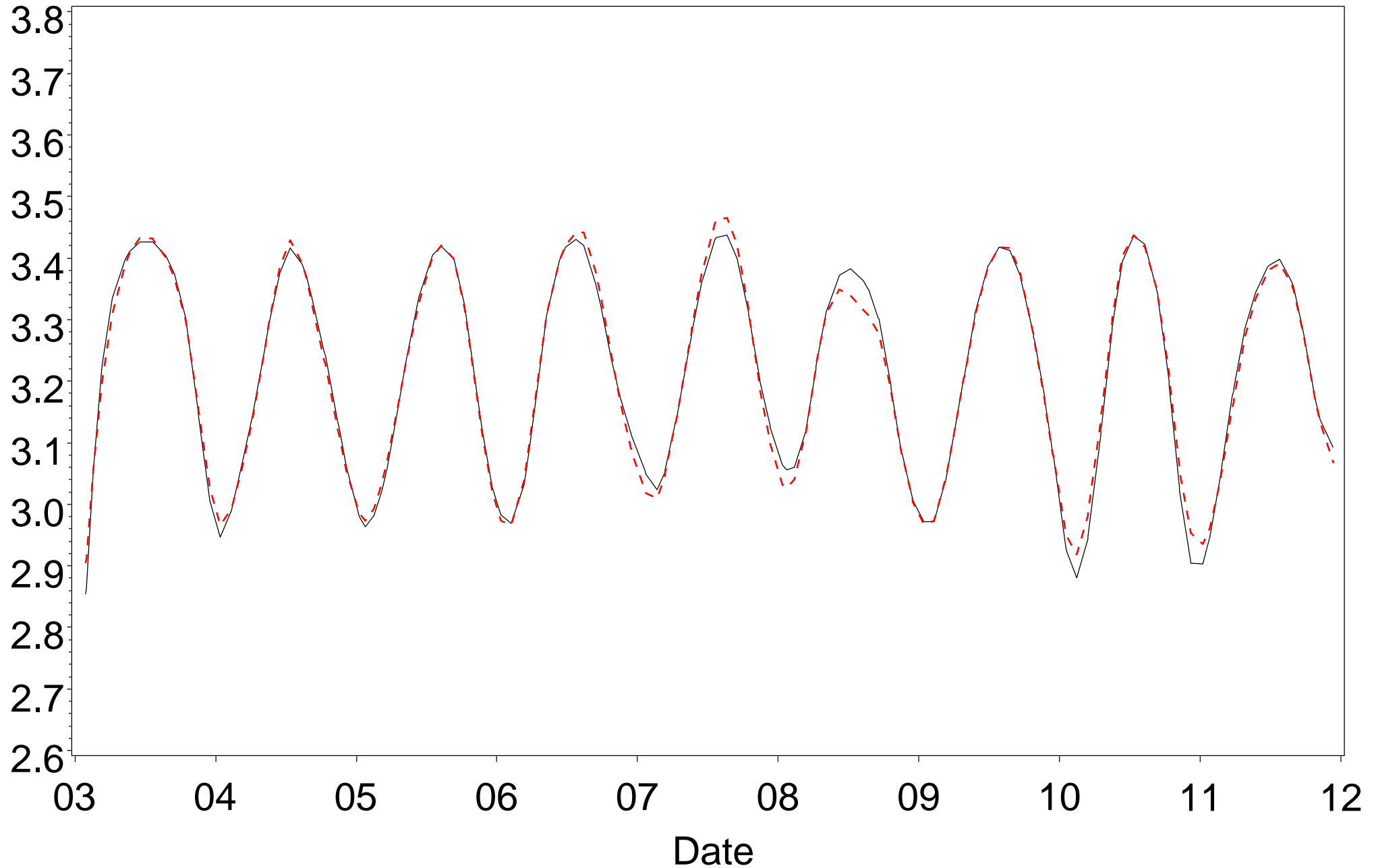
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Temperature (Degree C) and Sample Level = Surface

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	492.25936532	
1	2	303.37415985	0.02374105
2	1	297.26839471	0.00302306
3	2	296.55100454	0.00009435
4	1	296.52936240	0.00000003
5	1	296.52935491	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02583	0.007661	3.37	0.0004
Variance	Intercept	0.1147	0.02824	4.06	<.0001
SP(POW)	Intercept	0.6289	0.1045	6.02	<.0001
Residual		0.05972	0.005465	10.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	296.5
AIC (smaller is better)	304.5
AICC (smaller is better)	304.6
BIC (smaller is better)	313.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-8.0365	48.9929	9.12	-0.16	0.8733
season	1	0.04600	0.1233	72.9	0.37	0.7101
season	2	0.09829	0.1460	71.5	0.67	0.5030
season	3	0.05695	0.1576	73	0.36	0.7189
season	4	0.04373	0.1638	72.4	0.27	0.7903
season	5	0.1418	0.1665	70.3	0.85	0.3971
season	6	0.2612	0.1669	69.4	1.56	0.1222
season	7	0.4277	0.1657	70.1	2.58	0.0119
season	8	0.3475	0.1627	72.3	2.14	0.0361
season	9	0.2938	0.1560	73.2	1.88	0.0636
season	10	0.3115	0.1430	70.2	2.18	0.0327
season	11	0.1127	0.1201	73.3	0.94	0.3514
season	12	0	.	.	.	.
date1		0.003856	0.02440	9.12	0.16	0.8779
temp_dev		0.04243	0.02231	296	1.90	0.0581

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	67.8	0.99	0.4612
date1	1	9.12	0.02	0.8779
temp_dev	1	296	3.62	0.0581

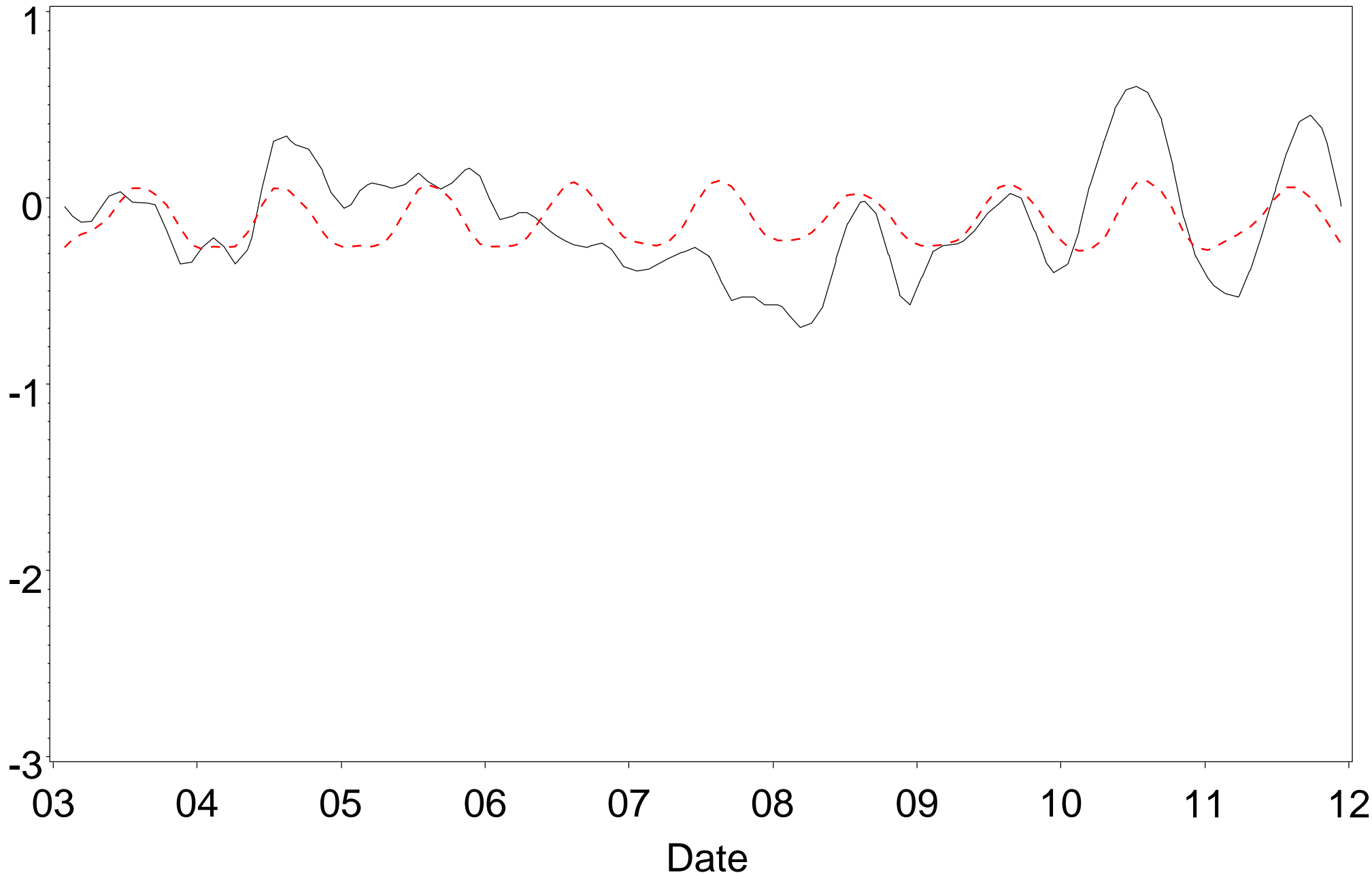
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	545.01342514	
1	2	310.25885254	0.01512317
2	1	306.47020673	0.00175499
3	1	306.05664133	0.00006254
4	1	306.04260163	0.00000002
5	1	306.04259628	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03339	0.008737	3.82	<.0001
Variance	Intercept	0.1353	0.03691	3.67	0.0001
SP(POW)	Intercept	0.7001	0.09292	7.54	<.0001
Residual		0.05923	0.005399	10.97	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	306.0
AIC (smaller is better)	314.0
AICC (smaller is better)	314.1
BIC (smaller is better)	323.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		14.9880	58.5017	7.56	0.26	0.8046
season	1	0.01546	0.1222	74.6	0.13	0.8997
season	2	0.06933	0.1464	67.8	0.47	0.6374
season	3	0.009286	0.1601	67.9	0.06	0.9539
season	4	-0.02481	0.1677	67.6	-0.15	0.8829
season	5	0.09201	0.1712	66.4	0.54	0.5929
season	6	0.1905	0.1720	65.8	1.11	0.2723
season	7	0.3796	0.1704	66.1	2.23	0.0293
season	8	0.3225	0.1663	67.2	1.94	0.0566
season	9	0.3203	0.1580	67.9	2.03	0.0465
season	10	0.2899	0.1430	67	2.03	0.0467
season	11	0.1153	0.1189	76.9	0.97	0.3353
season	12	0	.	.	.	.
date1		-0.00755	0.02914	7.56	-0.26	0.8025
temp_dev		0.03881	0.02239	286	1.73	0.0841

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	68.6	0.94	0.5064
date1	1	7.56	0.07	0.8025
temp_dev	1	286	3.01	0.0841

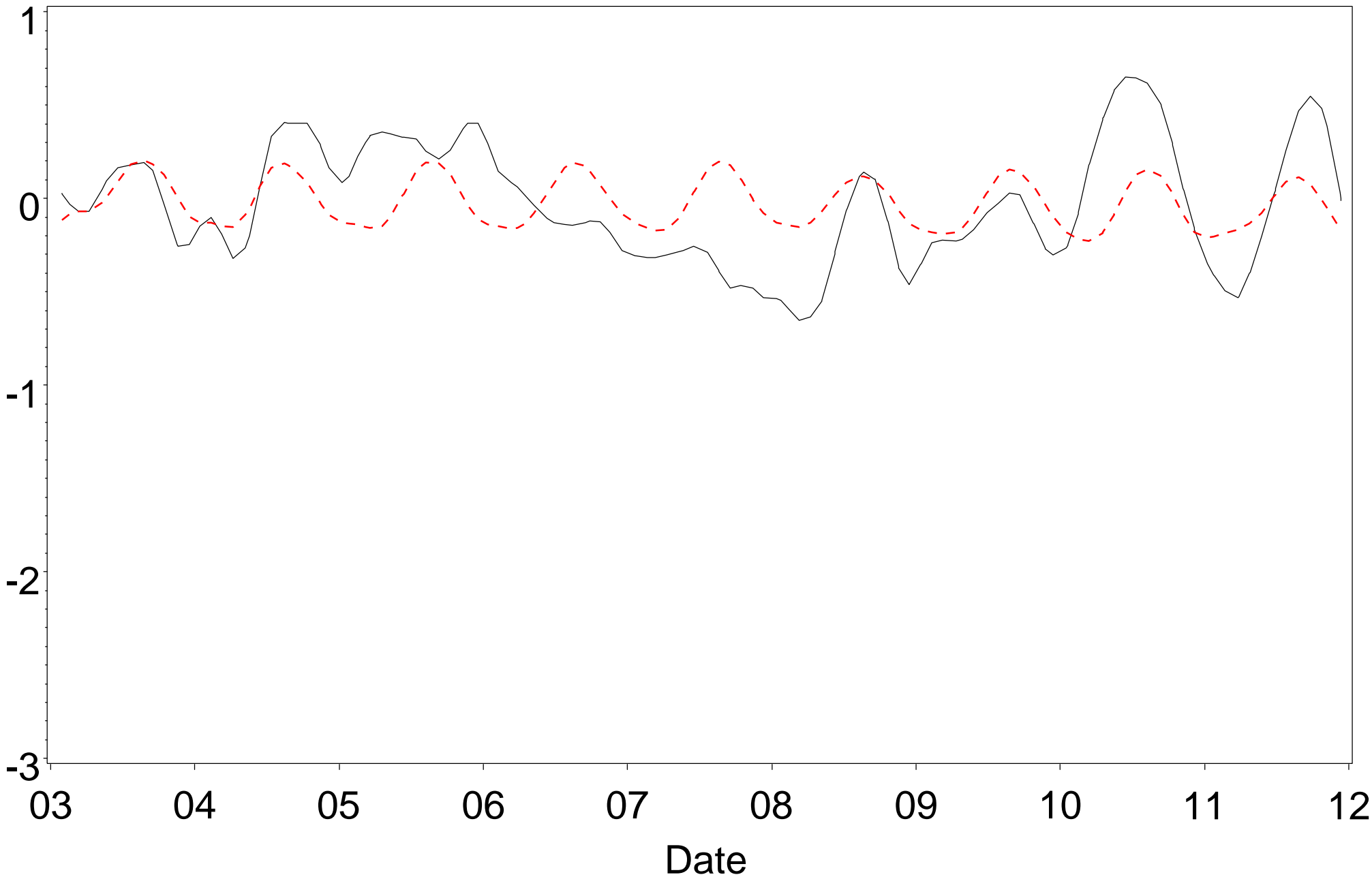
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	417
Number of Observations Not Used	5

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	638.54923261	
1	2	486.68159262	0.07917336
2	1	473.79443451	0.02720834
3	1	469.50730640	0.00376772
4	1	468.93788689	0.00017049
5	1	468.91388968	0.00000055
6	1	468.91381540	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1470	0.03504	4.19	<.0001
Variance	Intercept	0.09478	0.02212	4.28	<.0001
SP(POW)	Intercept	0.5510	0.1115	4.94	<.0001
Residual		0.08245	0.007796	10.58	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	468.9
AIC (smaller is better)	476.9
AICC (smaller is better)	477.0
BIC (smaller is better)	485.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-64.6028	41.6194	12.1	-1.55	0.1464
season	1	0.04795	0.1300	88.7	0.37	0.7132
season	2	-0.02055	0.1497	86.1	-0.14	0.8912
season	3	-0.05672	0.1595	86.4	-0.36	0.7230
season	4	0.03555	0.1623	83	0.22	0.8272
season	5	0.07585	0.1631	78.6	0.47	0.6431
season	6	0.1320	0.1630	76.9	0.81	0.4204
season	7	0.3335	0.1663	80.4	2.01	0.0483
season	8	0.4445	0.1615	83.5	2.75	0.0072
season	9	0.4005	0.1577	87.9	2.54	0.0128
season	10	0.5432	0.1470	85	3.70	0.0004
season	11	0.1522	0.1295	93	1.18	0.2428
season	12	0	.	.	.	.
date1		0.03332	0.02073	12.1	1.61	0.1338
temp_dev		-0.01512	0.02632	252	-0.57	0.5662

Mixed Model With Local Nugget

The Mixed Procedure

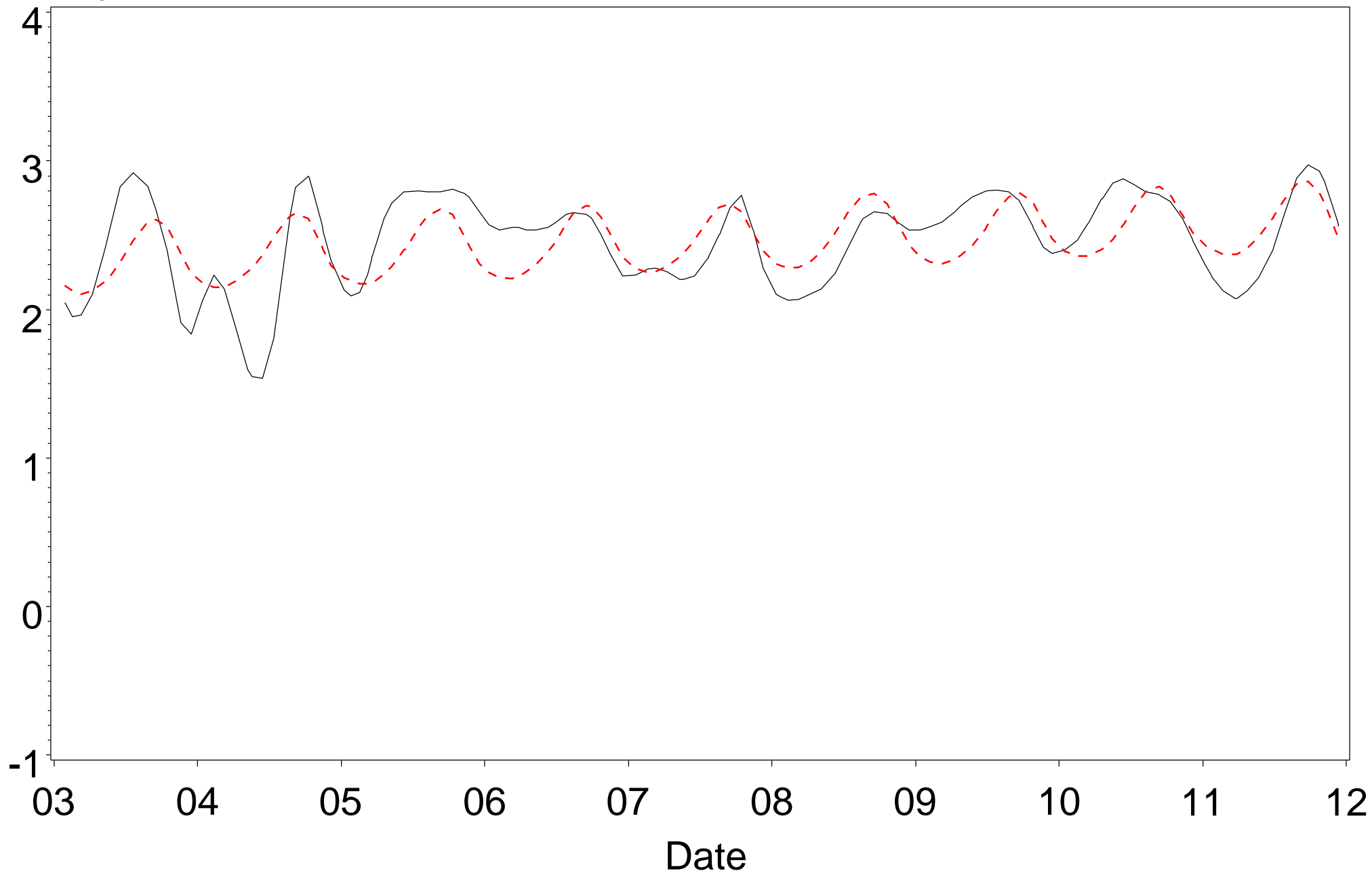
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82.4	2.14	0.0257
date1	1	12.1	2.58	0.1338
temp_dev	1	252	0.33	0.5662

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	532.28373504	
1	2	358.48131729	0.01827789
2	2	354.51953148	0.00845161
3	1	352.67689627	0.00033306
4	1	352.60883215	0.00000074
5	1	352.60868483	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04111	0.01068	3.85	<.0001
Variance	Intercept	0.08919	0.02115	4.22	<.0001
SP(POW)	Intercept	0.5597	0.1133	4.94	<.0001
Residual		0.06964	0.006093	11.43	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	352.6
AIC (smaller is better)	360.6
AICC (smaller is better)	360.7
BIC (smaller is better)	369.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-46.0069	40.2955	10.9	-1.14	0.2779
season	1	-0.05939	0.1222	80.8	-0.49	0.6284
season	2	-0.2071	0.1414	79.8	-1.46	0.1469
season	3	-0.07838	0.1503	80.7	-0.52	0.6036
season	4	0.3078	0.1543	77.6	1.99	0.0496
season	5	0.3739	0.1556	73.9	2.40	0.0188
season	6	0.5678	0.1557	72.4	3.65	0.0005
season	7	0.6867	0.1550	73.9	4.43	<.0001
season	8	0.4908	0.1534	77.7	3.20	0.0020
season	9	0.4845	0.1491	81.3	3.25	0.0017
season	10	0.2037	0.1390	78.8	1.47	0.1467
season	11	0.1565	0.1203	82.5	1.30	0.1970
season	12	0	.	.	.	.
date1		0.02164	0.02007	10.9	1.08	0.3042
temp_dev		0.02110	0.02346	278	0.90	0.3692

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.2	4.11	<.0001
date1	1	10.9	1.16	0.3042
temp_dev	1	278	0.81	0.3692

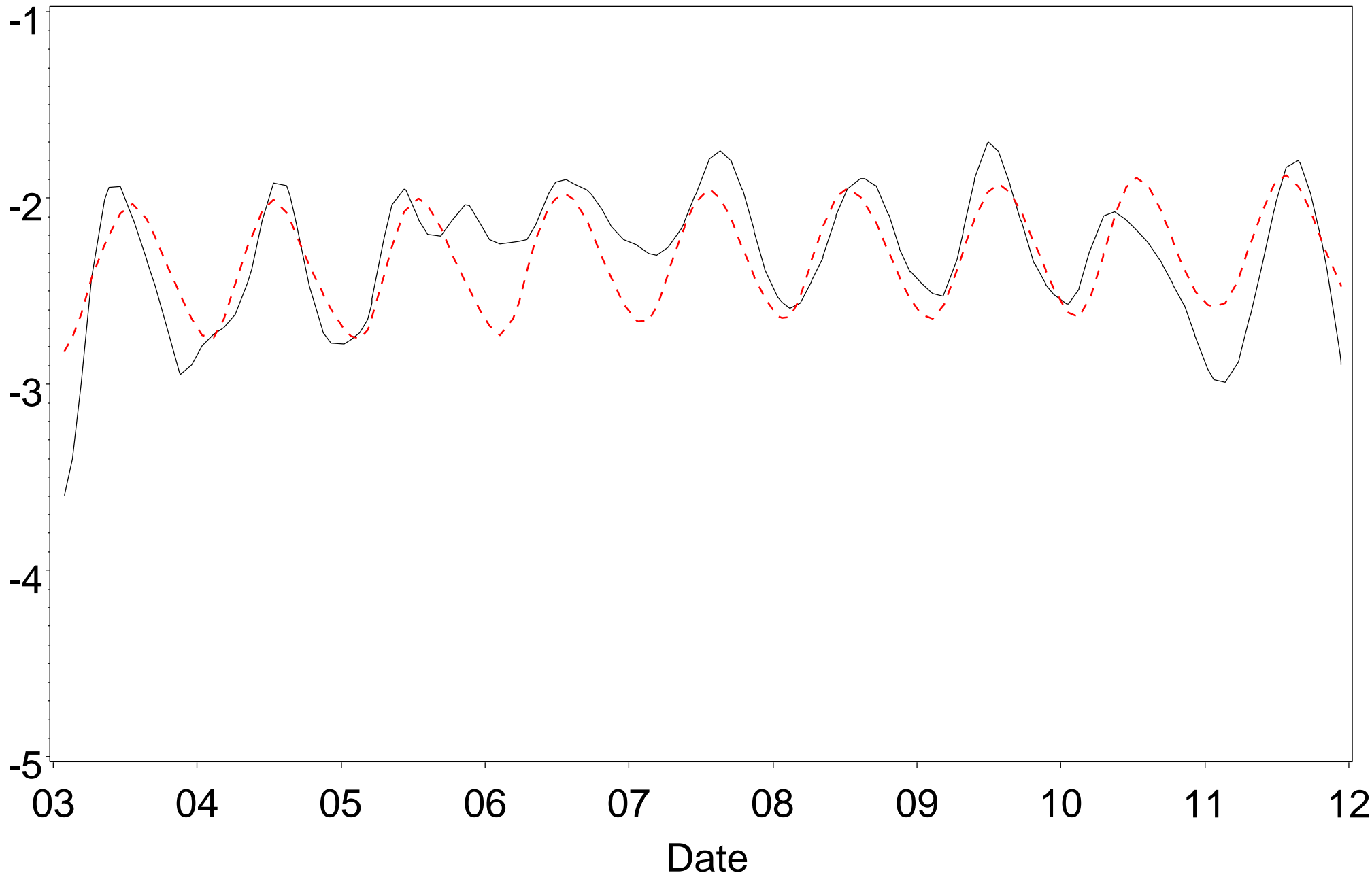
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface

TPO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	422
Number of Observations Not Used	0

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1133.90606616	
1	2	1029.83772863	0.03616745
2	1	1023.51950173	0.01012063
3	2	1022.06359701	0.00051243
4	1	1021.99237578	0.00000061
5	1	1021.99229276	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1053	0.03370	3.12	0.0009
Variance	Intercept	0.3996	0.09103	4.39	<.0001
SP(POW)	Intercept	0.4871	0.1237	3.94	<.0001
Residual		0.3991	0.03586	11.13	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1022.0
AIC (smaller is better)	1030.0
AICC (smaller is better)	1030.1
BIC (smaller is better)	1039.0

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-8.6120	79.6604	13	-0.11	0.9156
season	1	-0.07497	0.2799	80	-0.27	0.7895
season	2	-0.00563	0.3184	82.9	-0.02	0.9859
season	3	0.1615	0.3324	82.9	0.49	0.6282
season	4	-0.08081	0.3393	81	-0.24	0.8123
season	5	-0.6078	0.3408	77.8	-1.78	0.0785
season	6	-0.7821	0.3404	76.2	-2.30	0.0243
season	7	-0.8075	0.3393	77.2	-2.38	0.0198
season	8	-0.6288	0.3379	81.3	-1.86	0.0664
season	9	-0.9306	0.3315	84.8	-2.81	0.0062
season	10	-0.8223	0.3139	81.8	-2.62	0.0105
season	11	-0.1326	0.2758	78.8	-0.48	0.6319
season	12	0	.	.	.	.
date1		0.005308	0.03968	13	0.13	0.8956
temp_dev		-0.04026	0.05306	283	-0.76	0.4486

Mixed Model With Local Nugget

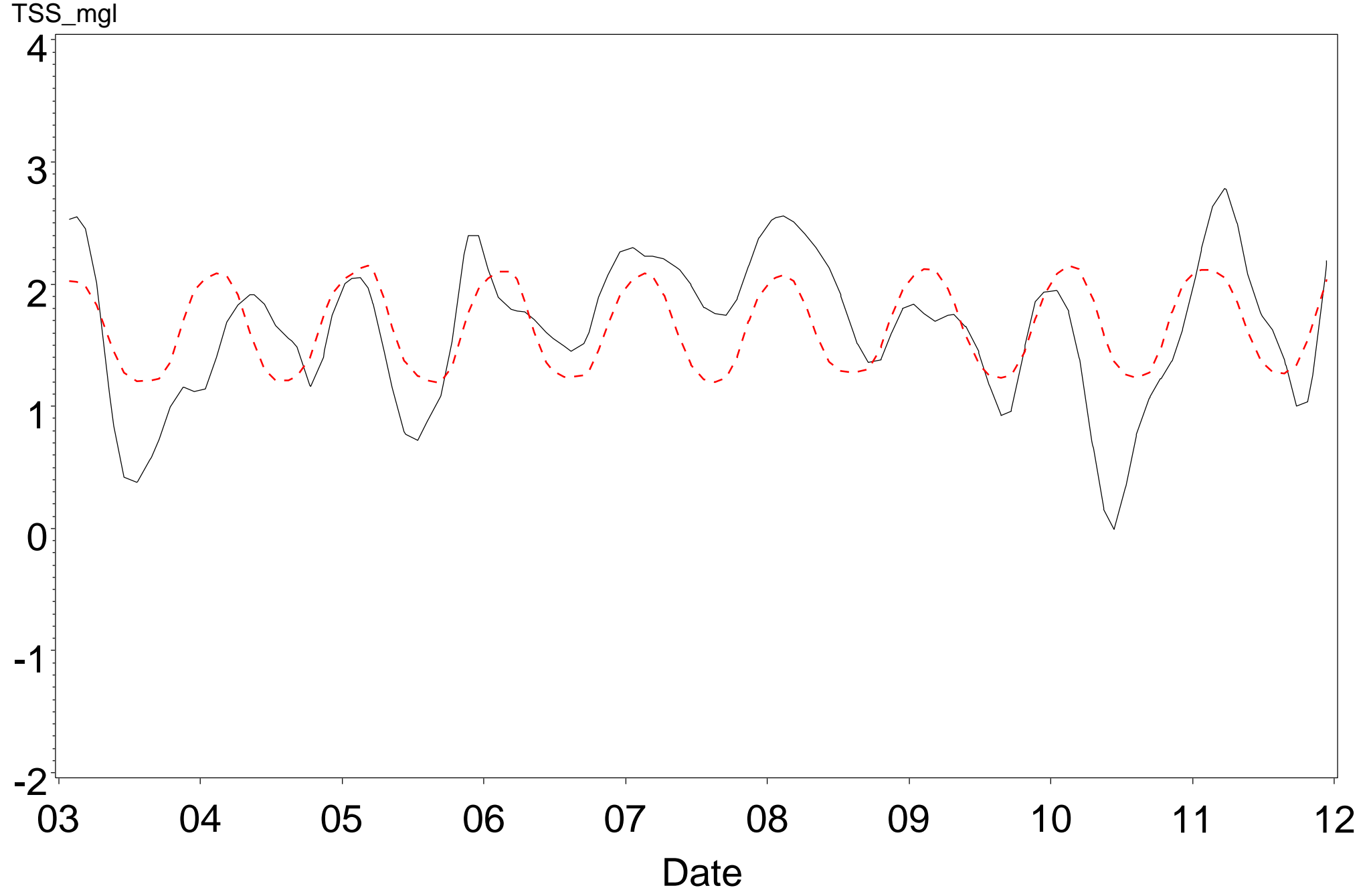
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.7	1.96	0.0445
date1	1	13	0.02	0.8956
temp_dev	1	283	0.58	0.4486

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	117	42 386 387 388 389 391 392 393 394 395 396 403 404 411 412 413 414 417 418 419 422 423 424 427 428 429 430 434 435 436 437 441 442 443 444 447 448 449 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 C38 C39 C40 C42 C43 C44 C45 386 387 388 389 392 393 394 395 396 403 404 411 412 413 414 417 418 422 423 424 427 430 434 435 436 437 441 442 448 450 451 452 453 454 455 456 457 461 462 463 464 467 468 469 470 471 472 CRFM R392 R418 R429 R435 R464 grid

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	70
Subjects	1
Max Obs Per Subject	422

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	422
Number of Observations Used	381
Number of Observations Not Used	41

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	821.39930546	
1	2	693.73788791	1.52764597
2	2	689.83817216	0.66273267
3	2	683.94024014	0.12298234
4	1	683.34471283	0.00166884
5	1	683.33726436	0.00000041
6	1	683.33726257	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03772	0.01546	2.44	0.0073
Variance	Intercept	0.2447	0.05159	4.74	<.0001
SP(POW)	Intercept	0.4121	0.1292	3.19	0.0014
Residual		0.2010	0.01923	10.45	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	683.3
AIC (smaller is better)	691.3
AICC (smaller is better)	691.4
BIC (smaller is better)	700.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		136.31	58.0329	15.7	2.35	0.0323
season	1	-0.02592	0.2297	68.2	-0.11	0.9105
season	2	0.01229	0.2559	78.1	0.05	0.9618
season	3	0.2699	0.2591	82.3	1.04	0.3006
season	4	0.1082	0.2720	84.5	0.40	0.6919
season	5	0.1047	0.2692	78.6	0.39	0.6984
season	6	-0.1367	0.2645	78	-0.52	0.6067
season	7	0.2676	0.2726	81.6	0.98	0.3292
season	8	0.08254	0.2620	80.7	0.31	0.7536
season	9	0.1425	0.2604	84.7	0.55	0.5856
season	10	-0.1625	0.2471	78	-0.66	0.5126
season	11	0.05209	0.2182	65.9	0.24	0.8121
season	12	0	.	.	.	.
date1		-0.06753	0.02890	15.7	-2.34	0.0331
temp_dev		0.03505	0.04135	277	0.85	0.3974

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	69.6	0.69	0.7455
date1	1	15.7	5.46	0.0331
temp_dev	1	277	0.72	0.3974

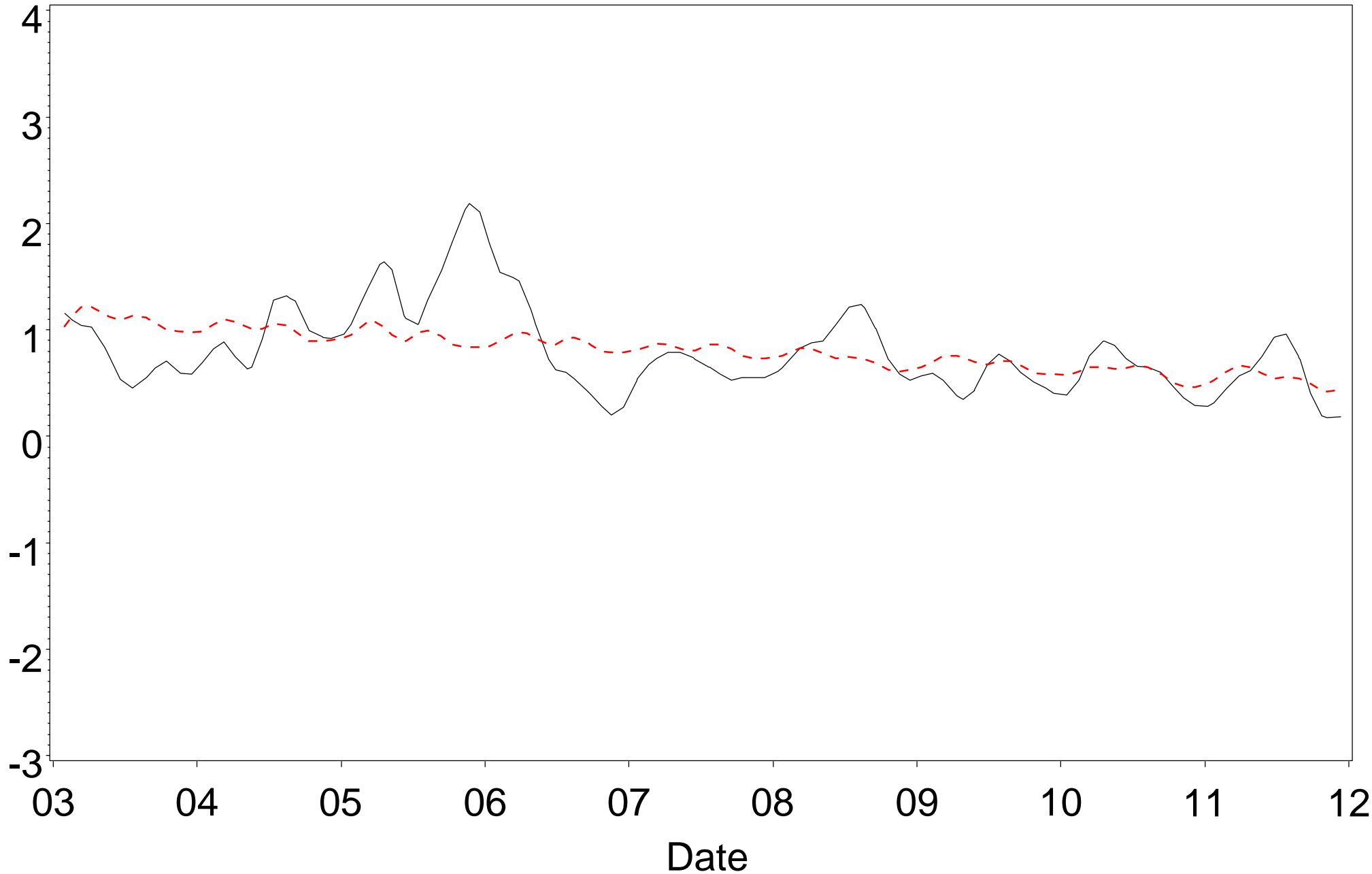
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Caloosahatchee

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	332
Number of Observations Not Used	4

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	732.53211730	
1	2	703.51176702	0.07621674
2	2	701.78140813	0.02361995
3	1	700.31889117	0.00024189
4	1	700.30470659	0.00000009
5	1	700.30470156	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02034	0.01432	1.42	0.0777
Variance	Intercept	0.1348	0.04634	2.91	0.0018
SP(POW)	Intercept	0.4469	0.1810	2.47	0.0135
Residual		0.3719	0.03319	11.21	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	700.3
AIC (smaller is better)	708.3
AICC (smaller is better)	708.4
BIC (smaller is better)	711.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-257.08	91.6599	8.48	-2.80	0.0218
season	1	-0.00354	0.2401	52.1	-0.01	0.9883
season	2	-0.2854	0.2639	49.1	-1.08	0.2848
season	3	-0.1210	0.2749	49.2	-0.44	0.6617
season	4	-0.4885	0.2784	47.6	-1.75	0.0858
season	5	-0.3776	0.2787	45.8	-1.35	0.1821
season	6	-0.2557	0.2794	45.6	-0.92	0.3648
season	7	0.2611	0.2797	46.2	0.93	0.3555
season	8	0.3577	0.2903	49	1.23	0.2238
season	9	-0.3303	0.2866	49.2	-1.15	0.2547
season	10	0.05120	0.2752	49.2	0.19	0.8532
season	11	0.1345	0.2459	50	0.55	0.5870
season	12	0	.	.	.	.
date1		0.1292	0.04570	8.48	2.83	0.0210
temp_dev		0.1122	0.05086	89.4	2.21	0.0300

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	47.8	1.87	0.0686
date1	1	8.48	7.99	0.0210
temp_dev	1	89.4	4.86	0.0300

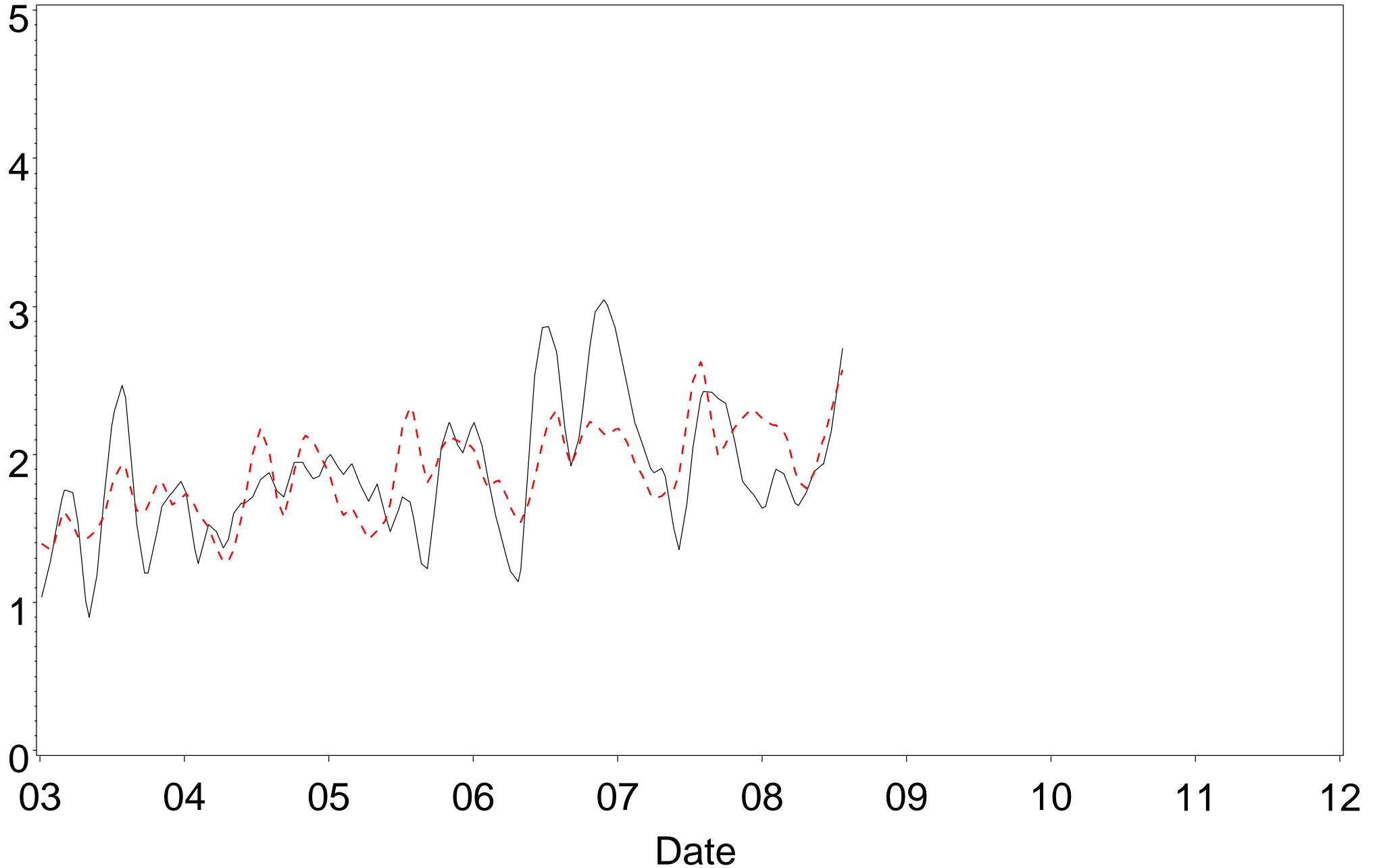
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	333
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	557.90016920	
1	2	233.38282398	0.05205074
2	1	222.26574718	0.01213549
3	2	219.39969496	0.00768539
4	2	218.31319108	0.00325362
5	1	217.65531495	0.00009812
6	1	217.63677054	0.00000018
7	1	217.63673725	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04104	0.01529	2.68	0.0036
Variance	Intercept	0.2559	0.07102	3.60	0.0002
SP(POW)	Intercept	0.5275	0.1298	4.06	<.0001
Residual		0.05276	0.004737	11.14	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	217.6
AIC (smaller is better)	225.6
AICC (smaller is better)	225.8
BIC (smaller is better)	229.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		331.99	125.37	7.12	2.65	0.0325
season	1	-0.1299	0.2309	47.9	-0.56	0.5763
season	2	-0.2196	0.2756	51.9	-0.80	0.4291
season	3	-0.3215	0.2963	48.8	-1.09	0.2832
season	4	-0.3024	0.3057	43.7	-0.99	0.3279
season	5	-0.6552	0.3096	40.1	-2.12	0.0406
season	6	-0.3544	0.3107	38.7	-1.14	0.2610
season	7	0.4246	0.3101	39.6	1.37	0.1787
season	8	0.7118	0.3158	45.2	2.25	0.0291
season	9	0.9496	0.3078	49.5	3.09	0.0033
season	10	0.6216	0.2851	51.9	2.18	0.0338
season	11	0.2957	0.2336	45.7	1.27	0.2121
season	12	0	.	.	.	.
date1		-0.1635	0.06250	7.12	-2.62	0.0341
temp_dev		-0.01849	0.03270	224	-0.57	0.5723

Mixed Model With Local Nugget

The Mixed Procedure

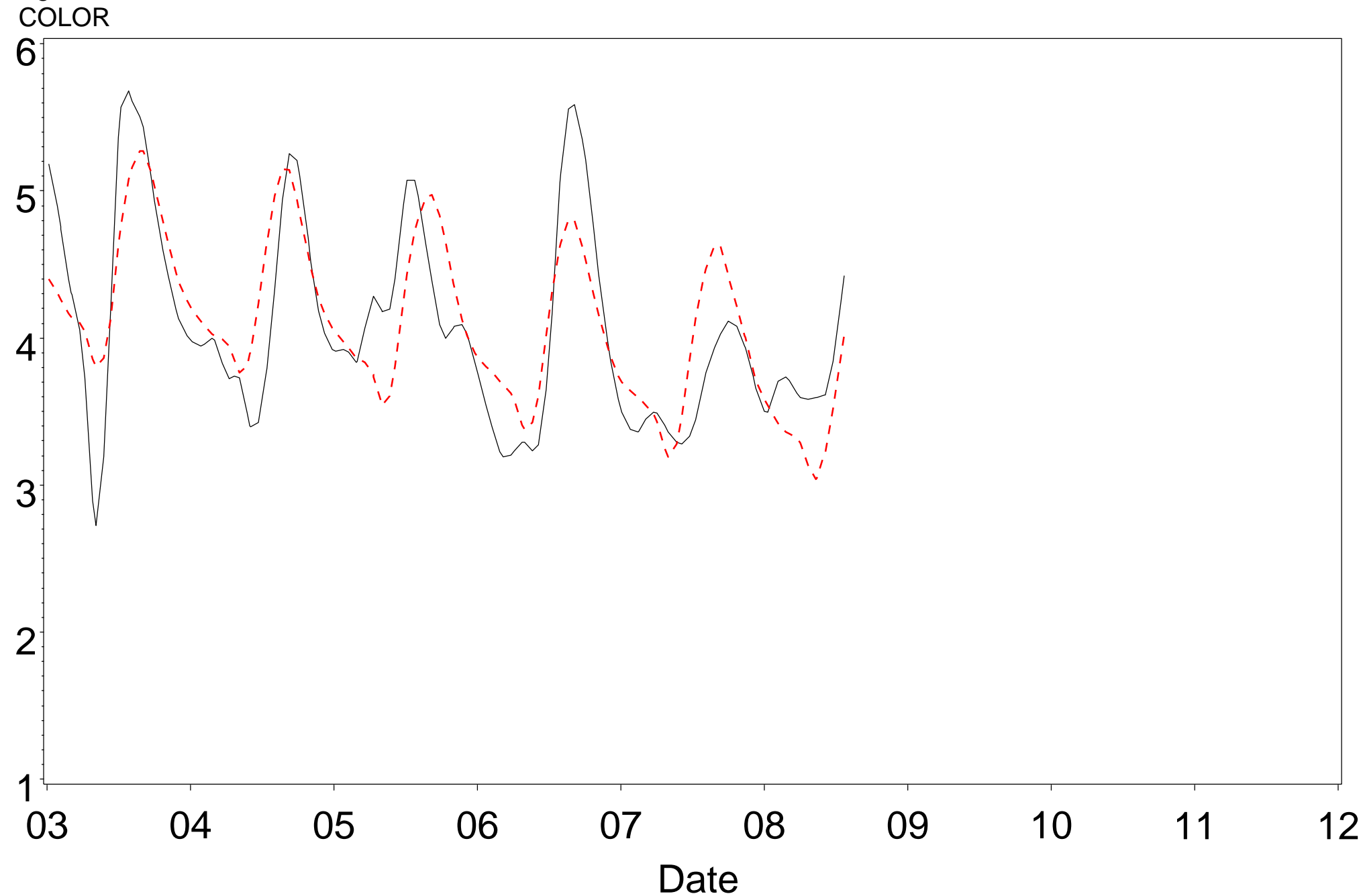
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.1	3.23	0.0027
date1	1	7.12	6.84	0.0341
temp_dev	1	224	0.32	0.5723

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	922.47038649	
1	2	720.52670098	0.08347663
2	1	713.87344626	0.03031553
3	2	711.68061496	0.01175396
4	1	710.86790104	0.00056706
5	1	710.83202519	0.00000140
6	1	710.83193928	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2369	0.08748	2.71	0.0034
Variance	Intercept	0.5000	0.1418	3.53	0.0002
SP(POW)	Intercept	0.5355	0.1298	4.12	<.0001
Residual		0.2862	0.02560	11.18	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	710.8
AIC (smaller is better)	718.8
AICC (smaller is better)	719.0
BIC (smaller is better)	722.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-574.26	179.87	7.62	-3.19	0.0136
season	1	-0.1802	0.3415	49.5	-0.53	0.6000
season	2	0.2181	0.4005	50.4	0.54	0.5885
season	3	0.04881	0.4296	49.2	0.11	0.9100
season	4	0.1763	0.4428	45.5	0.40	0.6924
season	5	0.3418	0.4480	42.5	0.76	0.4496
season	6	-0.1981	0.4494	41.2	-0.44	0.6616
season	7	-0.8552	0.4490	42.1	-1.90	0.0637
season	8	-1.1104	0.4578	46.8	-2.43	0.0192
season	9	-1.6761	0.4462	49.5	-3.76	0.0005
season	10	-1.0119	0.4139	49.9	-2.44	0.0181
season	11	-0.2452	0.3458	47.2	-0.71	0.4819
season	12	0	.	.	.	.
date1		0.2914	0.08968	7.61	3.25	0.0125
temp_dev		0.2518	0.06216	132	4.05	<.0001

Mixed Model With Local Nugget

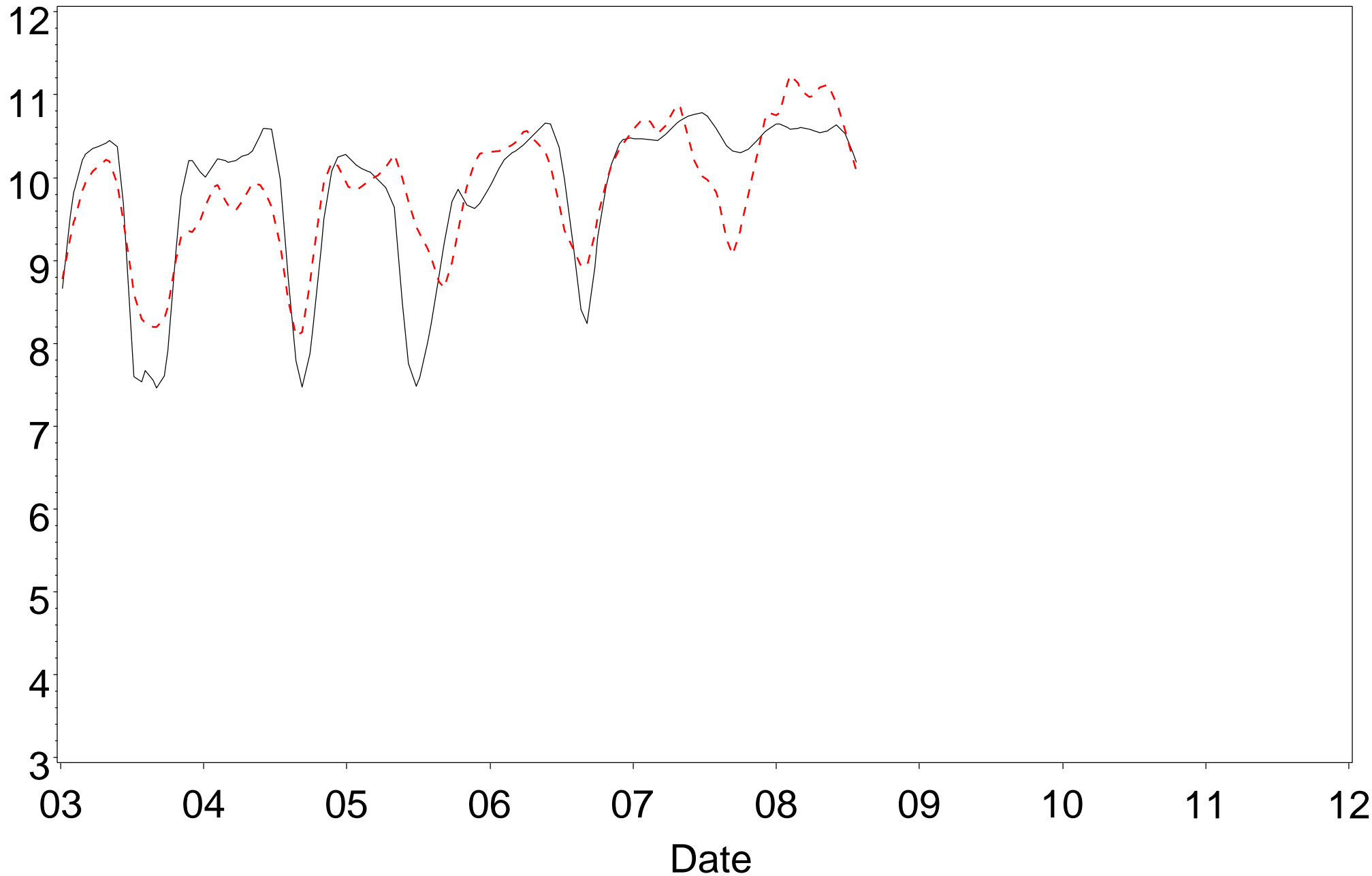
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	45.8	2.62	0.0112
date1	1	7.61	10.56	0.0125
temp_dev	1	132	16.41	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
COND
Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	908.90871712	
1	4	807.28800241	.
2	1	777.06669494	0.06662553
3	2	768.33685190	0.08062477
4	2	763.39201320	0.03831685
5	2	759.51614692	0.00362288
6	1	759.17897160	0.00008161
7	1	759.17186444	0.00000007
8	1	759.17185881	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01588	0.01324	1.20	0.1151
Variance	Intercept	0.5614	0.1247	4.50	<.0001
SP(POW)	Intercept	0.09039	0.1589	0.57	0.5695
Residual		0.3620	0.03222	11.24	<.0001

Fit Statistics	
-2 Res Log Likelihood	759.2
AIC (smaller is better)	767.2
AICC (smaller is better)	767.3
BIC (smaller is better)	770.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		421.35	128.71	16.1	3.27	0.0048
season	1	-0.03272	0.4667	38.7	-0.07	0.9445
season	2	0.3630	0.4866	52.4	0.75	0.4589
season	3	0.5020	0.4847	52.3	1.04	0.3052
season	4	-0.4431	0.4837	52.1	-0.92	0.3639
season	5	-0.8906	0.4830	52	-1.84	0.0709
season	6	-1.0098	0.4827	51.9	-2.09	0.0414
season	7	-1.9481	0.4836	52.2	-4.03	0.0002

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-2.2313	0.5063	52.4	-4.41	<.0001
season	9	-2.0853	0.5064	52.3	-4.12	0.0001
season	10	-1.3219	0.5080	52.3	-2.60	0.0120
season	11	0.02529	0.4844	36.2	0.05	0.9587
season	12	0	.	.	.	.
date1		-0.2062	0.06416	16.1	-3.21	0.0054
temp_dev		-0.02040	0.07539	186	-0.27	0.7870

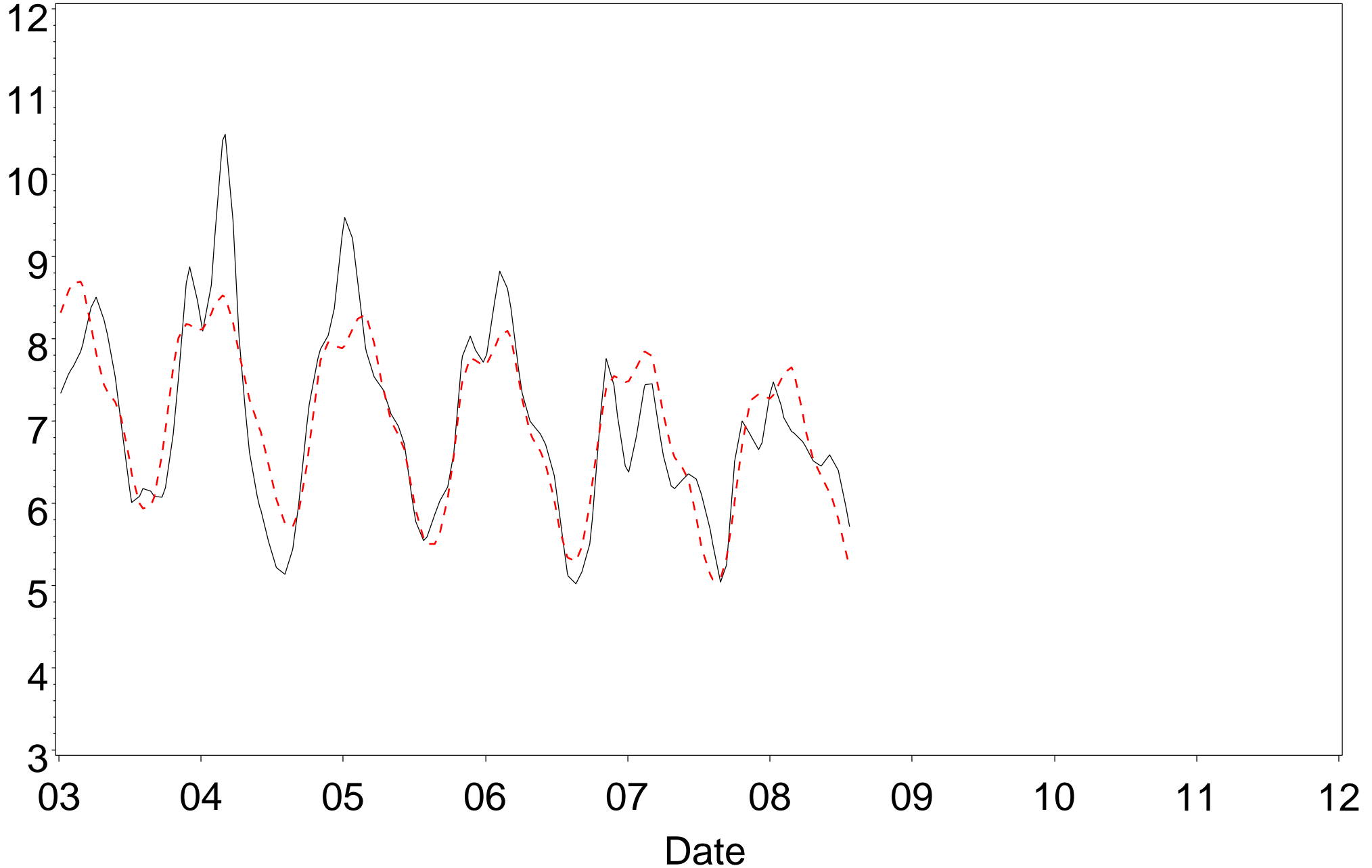
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	41.3	7.17	<.0001
date1	1	16.1	10.33	0.0054
temp_dev	1	186	0.07	0.7870

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
DO_mgl

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	287
Number of Observations Not Used	49

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1032.69537905	
1	5	1007.08803928	0.16268849
2	2	1003.08135600	0.20900662
3	2	999.55435524	0.00021094
4	2	999.50480193	0.00000305
5	1	999.50403369	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1097	0.08082	1.36	0.0874
Variance	Intercept	0.7209	0.2303	3.13	0.0009
SP(POW)	Intercept	0.2616	0.1882	1.39	0.1647
Residual		1.4899	0.1473	10.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	999.5
AIC (smaller is better)	1007.5
AICC (smaller is better)	1007.7
BIC (smaller is better)	1011.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		581.03	185.39	11.8	3.13	0.0088
season	1	0.01599	0.6046	41.8	0.03	0.9790
season	2	-0.02706	0.6395	43.4	-0.04	0.9664
season	3	0.03312	0.6463	42.8	0.05	0.9594
season	4	-0.1475	0.6238	43.1	-0.24	0.8141
season	5	-0.2579	0.6481	42.9	-0.40	0.6926
season	6	0.001359	0.6165	41.6	0.00	0.9983
season	7	1.3312	0.6457	42.3	2.06	0.0454
season	8	0.6308	0.6562	45.2	0.96	0.3415
season	9	1.9472	0.6864	43.9	2.84	0.0069
season	10	1.3628	0.6341	42.8	2.15	0.0373
season	11	0.7199	0.5829	36.8	1.24	0.2246
season	12	0	.	.	.	.
date1		-0.2889	0.09242	11.8	-3.13	0.0089
temp_dev		-0.1473	0.1232	89.5	-1.20	0.2351

Mixed Model With Local Nugget

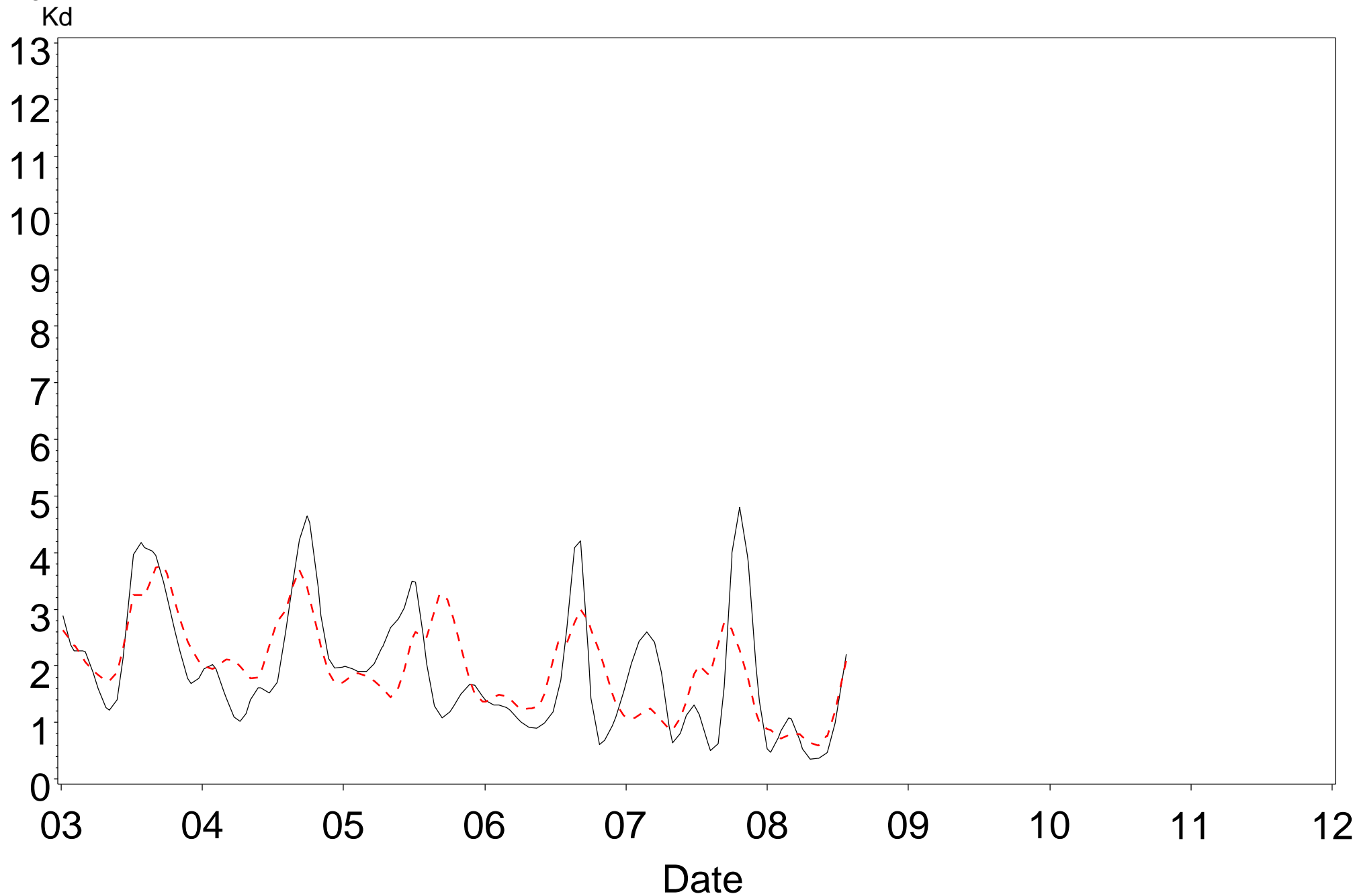
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39.4	2.02	0.0522
date1	1	11.8	9.77	0.0089
temp_dev	1	89.5	1.43	0.2351

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	319
Number of Observations Not Used	17

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	757.74002805	
1	2	548.86678019	0.23610229
2	1	547.24006061	0.07490706
3	2	546.89129646	0.03282592
4	1	546.65386087	0.00034876
5	1	546.65139624	0.00000038
6	1	546.65139364	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.5210	0.2013	2.59	0.0048
SP(POW)	Intercept	0.7063	0.1246	5.67	<.0001
Residual		0.2130	0.01898	11.22	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	546.7
AIC (smaller is better)	552.7
AICC (smaller is better)	552.7
BIC (smaller is better)	555.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-534.35	226.43	4.02	-2.36	0.0774
season	1	0.03234	0.2894	43.1	0.11	0.9115
season	2	0.03642	0.3529	41.9	0.10	0.9183
season	3	0.04327	0.3908	42.3	0.11	0.9124
season	4	-0.05517	0.4136	41.6	-0.13	0.8945
season	5	0.01976	0.4301	41.5	0.05	0.9636
season	6	0.6015	0.4412	41	1.36	0.1802
season	7	0.2587	0.4415	41.2	0.59	0.5611
season	8	0.2930	0.4301	41.8	0.68	0.4995
season	9	0.3768	0.4056	42.1	0.93	0.3582
season	10	0.2528	0.3645	41.8	0.69	0.4918
season	11	-0.01010	0.2912	42	-0.03	0.9725
season	12	0	.	.	.	.
date1		0.2646	0.1129	4.02	2.34	0.0788
temp_dev		0.01833	0.05165	113	0.35	0.7233

Mixed Model With Local Nugget

The Mixed Procedure

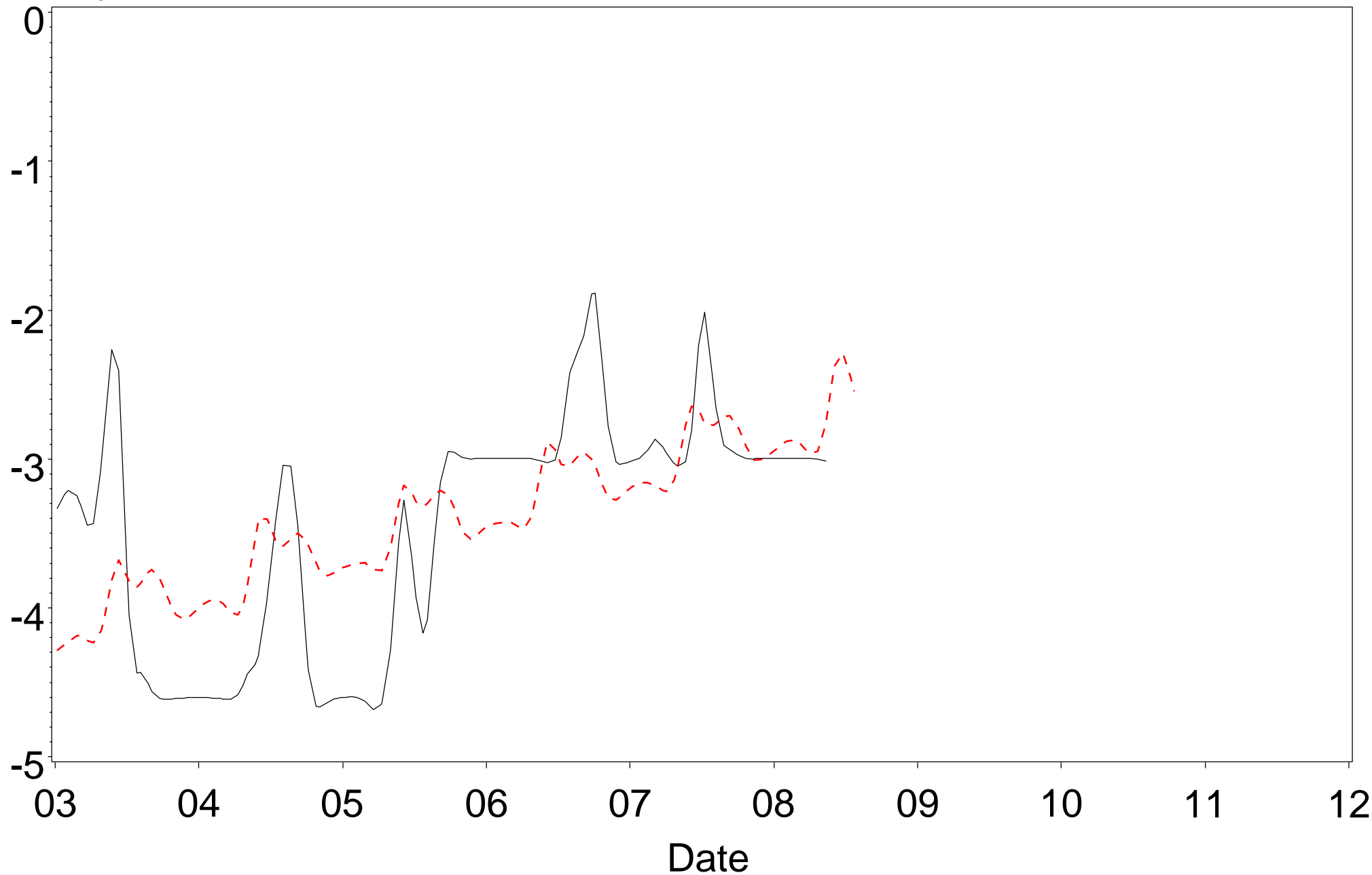
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	40.7	0.53	0.8692
date1	1	4.02	5.49	0.0788
temp_dev	1	113	0.13	0.7233

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	324
Number of Observations Not Used	12

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	56.76896423	
1	4	-125.45106944	.
2	2	-146.18439374	0.01923206
3	2	-154.35179389	0.00469953
4	1	-156.44182616	0.00117489
5	1	-156.94539429	0.00014381
6	1	-157.00217705	0.00000304
7	1	-157.00329945	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002408	0.001182	2.04	0.0208
Variance	Intercept	0.04727	0.01014	4.66	<.0001
SP(POW)	Intercept	0.002678	0.1479	0.02	0.9856
Residual		0.01816	0.001645	11.04	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-157.0
AIC (smaller is better)	-149.0
AICC (smaller is better)	-148.9
BIC (smaller is better)	-145.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		30.9177	34.4895	18.6	0.90	0.3815
season	1	0.04398	0.1371	37.7	0.32	0.7502
season	2	0.07244	0.1382	50.5	0.52	0.6026
season	3	0.05735	0.1371	50.7	0.42	0.6775
season	4	-0.04708	0.1371	50.8	-0.34	0.7327
season	5	0.1858	0.1435	50.6	1.29	0.2013
season	6	0.04460	0.1369	50.5	0.33	0.7459
season	7	0.07187	0.1370	50.7	0.52	0.6023
season	8	0.09774	0.1435	50.8	0.68	0.4988
season	9	-0.1415	0.1432	50.7	-0.99	0.3276
season	10	0.1899	0.1444	50.5	1.32	0.1944
season	11	0.02449	0.1523	38	0.16	0.8731
season	12	0	.	.	.	.
date1		-0.01155	0.01719	18.6	-0.67	0.5101
temp_dev		0.02454	0.01881	240	1.31	0.1931

Mixed Model With Local Nugget

The Mixed Procedure

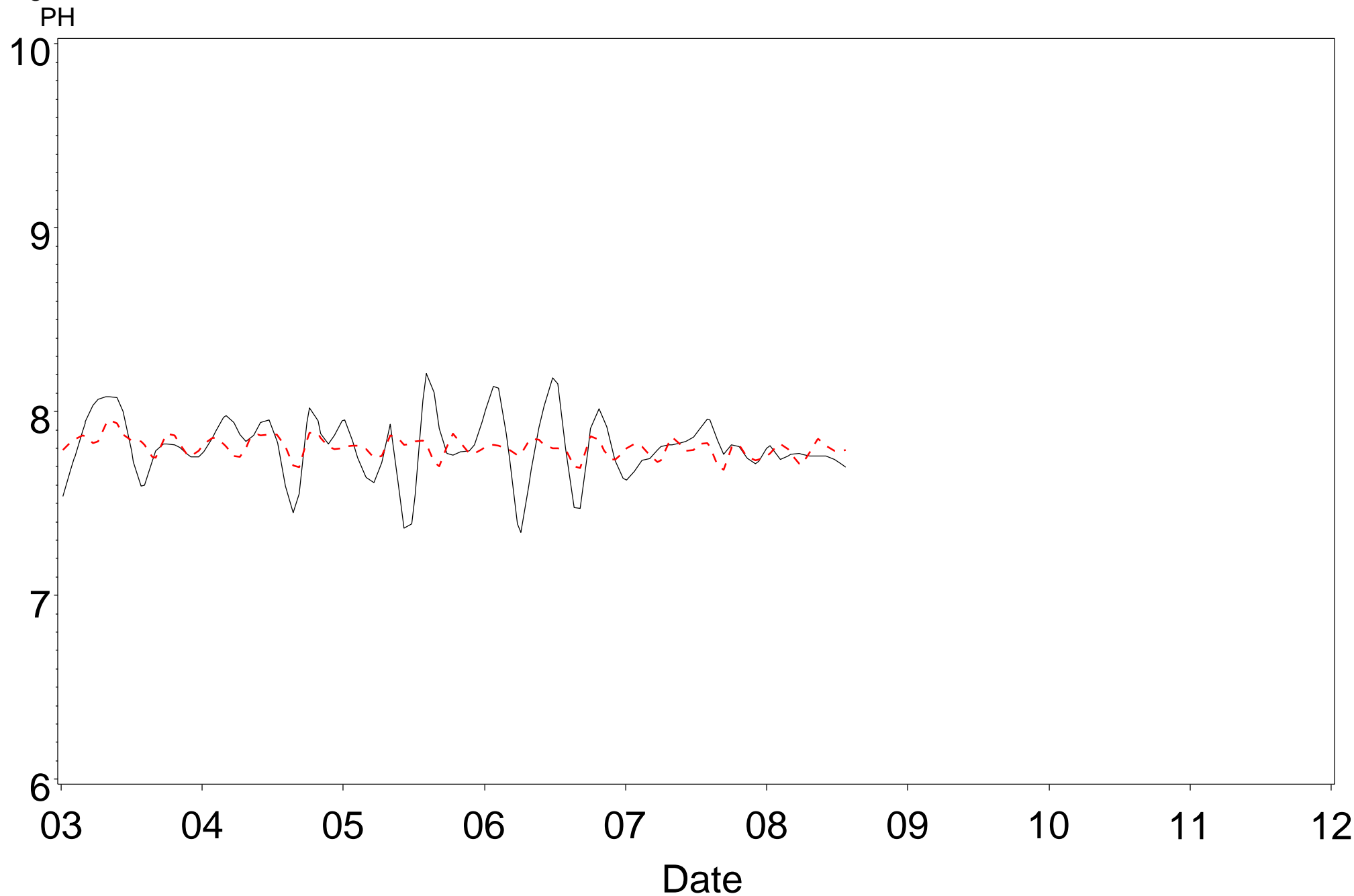
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	40.8	0.81	0.6346
date1	1	18.6	0.45	0.5101
temp_dev	1	240	1.70	0.1931

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale

Parameter = pH (SU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	918.85517008	
1	2	649.01552485	0.24806493
2	1	639.91857847	0.07673907
3	2	637.31391605	0.03557299
4	2	636.33256574	0.00371424
5	1	636.23880580	0.00002211
6	1	636.23827164	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2417	0.08746	2.76	0.0029
Variance	Intercept	0.5833	0.1625	3.59	0.0002
SP(POW)	Intercept	0.5418	0.1252	4.33	<.0001
Residual		0.2087	0.01868	11.17	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	636.2
AIC (smaller is better)	644.2
AICC (smaller is better)	644.4
BIC (smaller is better)	647.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-579.03	194.37	7.56	-2.98	0.0188
season	1	-0.1380	0.3535	49	-0.39	0.6979
season	2	0.1957	0.4196	51.3	0.47	0.6429
season	3	0.03242	0.4517	49.5	0.07	0.9431
season	4	0.1560	0.4666	45.4	0.33	0.7397
season	5	0.3339	0.4729	42.1	0.71	0.4840
season	6	-0.2287	0.4747	40.8	-0.48	0.6325
season	7	-0.9381	0.4739	41.6	-1.98	0.0544
season	8	-1.2167	0.4820	46.6	-2.52	0.0151
season	9	-1.8293	0.4690	50	-3.90	0.0003
season	10	-0.9949	0.4336	51	-2.29	0.0259
season	11	-0.2753	0.3577	46.9	-0.77	0.4454
season	12	0	.	.	.	.
date1		0.2901	0.09691	7.56	2.99	0.0184
temp_dev		0.2212	0.05858	166	3.78	0.0002

Mixed Model With Local Nugget

The Mixed Procedure

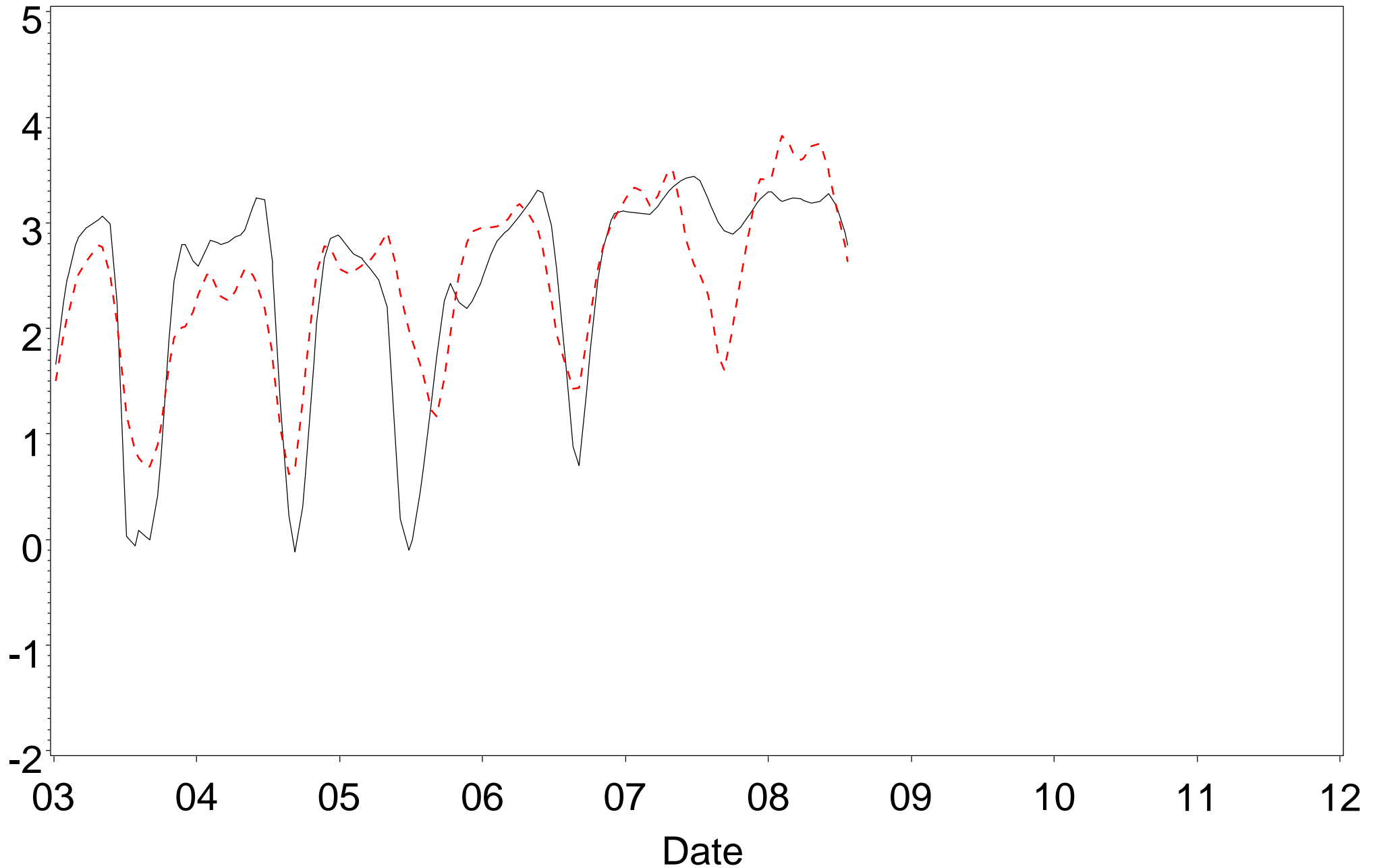
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	45.4	2.63	0.0108
date1	1	7.56	8.96	0.0184
temp_dev	1	166	14.27	0.0002

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	334
Number of Observations Not Used	2

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1252.38583059	
1	4	-1654.21976299	.
2	2	-1692.16471727	0.00944291
3	2	-1705.72253420	0.00309386
4	2	-1709.78539930	0.00032534
5	1	-1710.20055153	0.00001296
6	1	-1710.21592671	0.00000003
7	1	-1710.21596432	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		3.182E-6	3.707E-6	0.86	0.1953
Variance	Intercept	0.001370	0.000282	4.85	<.0001
SP(POW)	Intercept	-0.1299	0.1676	-0.77	0.4384
Residual		0.000118	0.000011	11.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-1710.2
AIC (smaller is better)	-1702.2
AICC (smaller is better)	-1702.1
BIC (smaller is better)	-1698.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		2.7308	4.9701	16.4	0.55	0.5901
season	1	-0.03352	0.02390	29.8	-1.40	0.1711
season	2	-0.07930	0.02280	50	-3.48	0.0011
season	3	0.01727	0.02257	48.4	0.76	0.4481
season	4	0.1469	0.02268	49.1	6.48	<.0001
season	5	0.1982	0.02264	49	8.75	<.0001
season	6	0.3085	0.02265	49	13.62	<.0001
season	7	0.3641	0.02264	49	16.08	<.0001
season	8	0.3420	0.02375	49.3	14.40	<.0001
season	9	0.3031	0.02357	48.3	12.86	<.0001
season	10	0.2698	0.02380	49.9	11.34	<.0001
season	11	0.1060	0.02508	28.2	4.23	0.0002
season	12	0	.	.	.	.
date1		0.000160	0.002478	16.4	0.06	0.9491
temp_dev		0.05289	0.001734	313	30.50	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

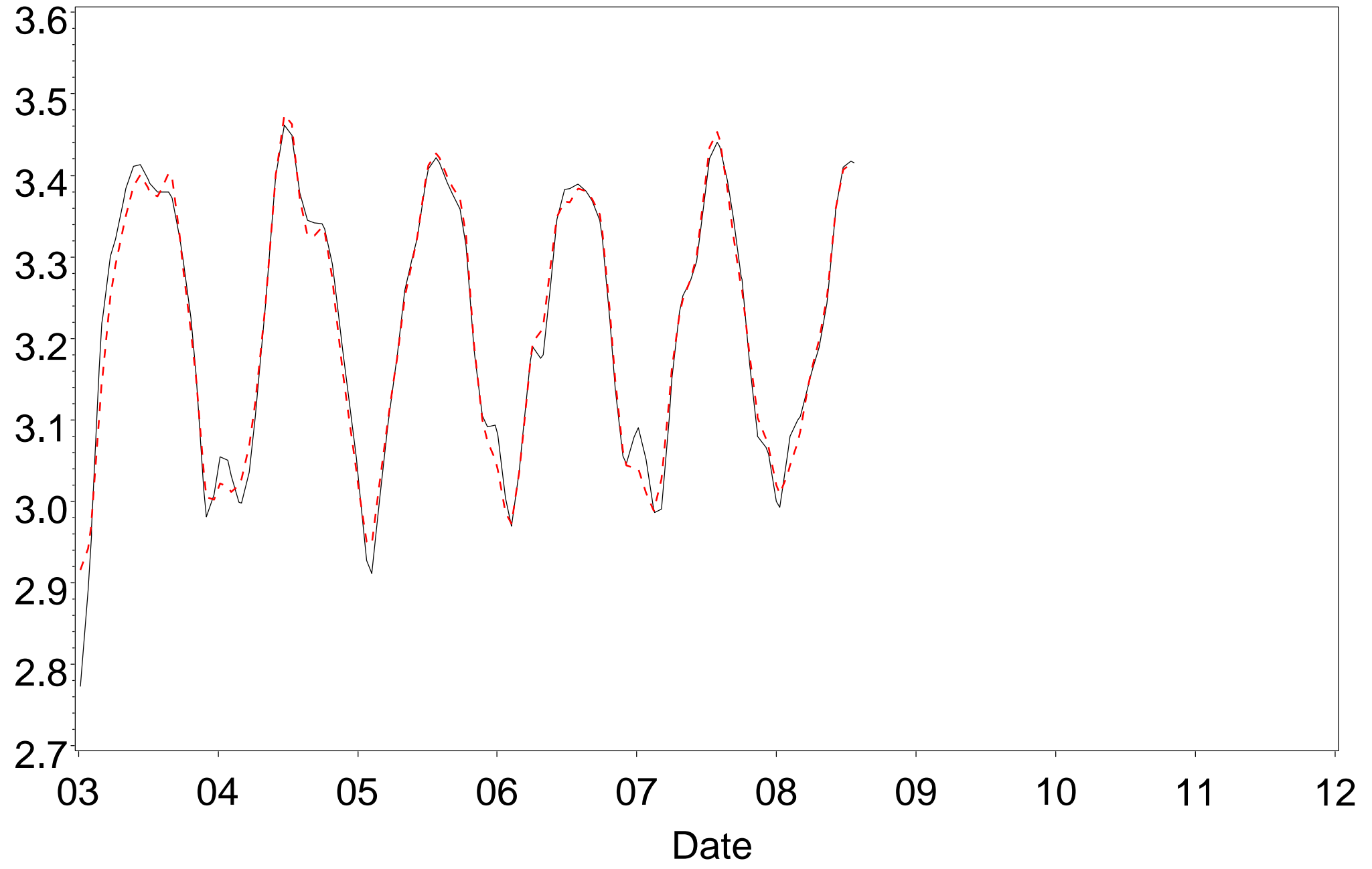
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	36.5	123.24	<.0001
date1	1	16.4	0.00	0.9491
temp_dev	1	313	930.39	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
TEMP_C

Parameter = Temperature (Degree C) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	333
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	856.66478538	
1	2	576.94777154	0.82671369
2	1	572.35513902	0.13079785
3	2	571.17484416	0.04834850
4	2	570.75419214	0.00443053
5	1	570.71809801	0.00002810
6	1	570.71787842	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.6754	0.2316	2.92	0.0018
SP(POW)	Intercept	0.6720	0.1171	5.74	<.0001
Residual		0.2014	0.01753	11.49	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	570.7
AIC (smaller is better)	576.7
AICC (smaller is better)	576.8
BIC (smaller is better)	579.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-105.21	240.42	5.04	-0.44	0.6798
season	1	0.1205	0.3316	46.8	0.36	0.7180
season	2	0.008838	0.4056	47.3	0.02	0.9827
season	3	0.03775	0.4476	47.1	0.08	0.9331
season	4	0.03423	0.4720	45.1	0.07	0.9425
season	5	0.4581	0.4850	43.1	0.94	0.3502
season	6	0.2106	0.4897	42	0.43	0.6694
season	7	0.4146	0.4873	42.4	0.85	0.3996
season	8	0.1232	0.4855	45.8	0.25	0.8009
season	9	-0.1918	0.4629	47.1	-0.41	0.6805
season	10	-0.5137	0.4184	47.2	-1.23	0.2256
season	11	-0.8083	0.3338	45.5	-2.42	0.0195
season	12	0	.	.	.	.
date1		0.05231	0.1199	5.04	0.44	0.6806
temp_dev		0.05672	0.05422	154	1.05	0.2972

Mixed Model With Local Nugget

The Mixed Procedure

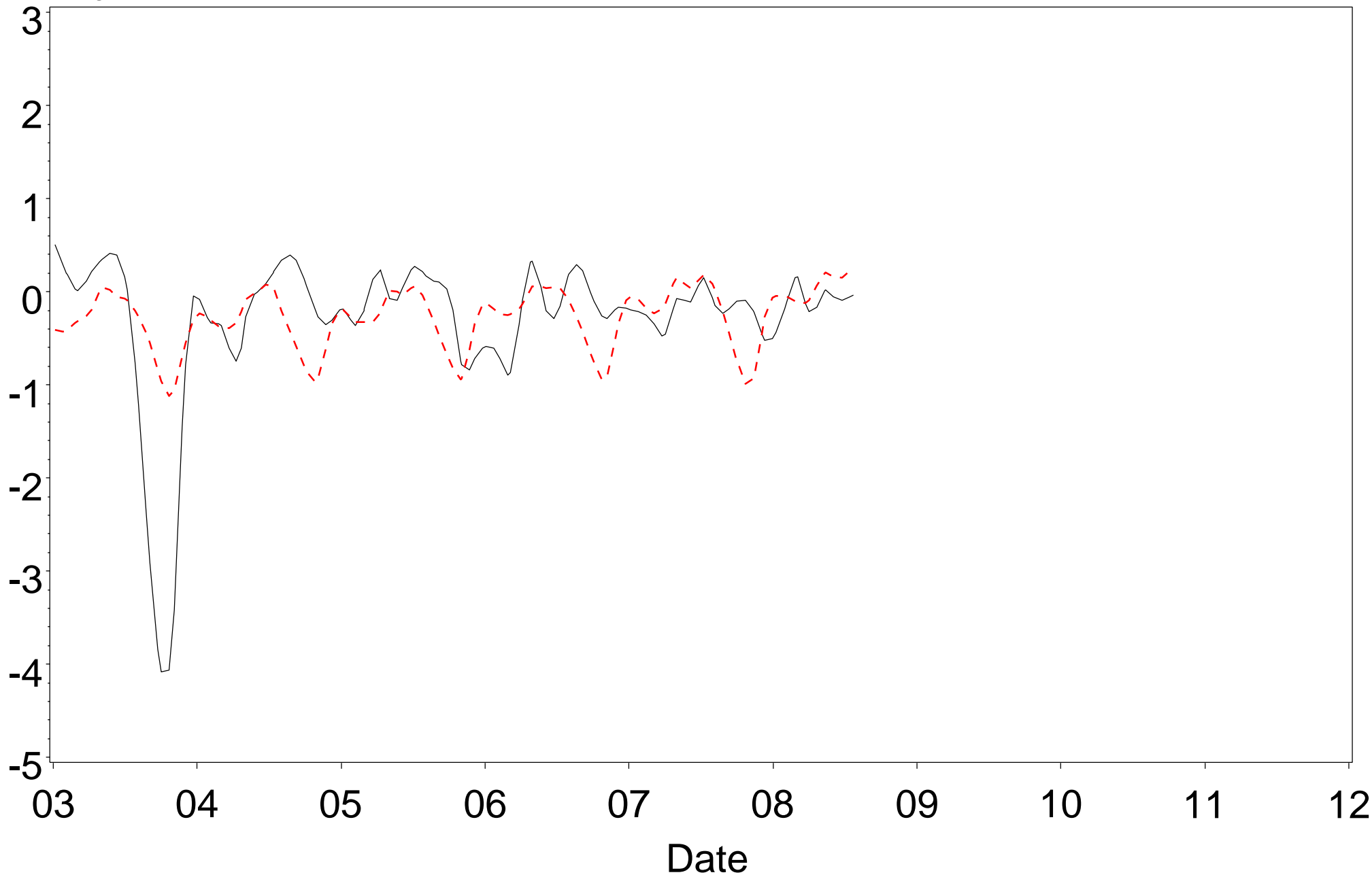
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	43.9	1.08	0.4011
date1	1	5.04	0.19	0.6806
temp_dev	1	154	1.09	0.2972

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	327
Number of Observations Not Used	9

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	673.91220159	
1	2	488.96381820	0.12492941
2	1	482.48696113	0.03010549
3	2	480.66964893	0.01209218
4	2	480.01584927	0.00117233
5	1	479.95719197	0.00000808
6	1	479.95680525	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.3652	0.1118	3.27	0.0005
SP(POW)	Intercept	0.5777	0.1381	4.18	<.0001
Residual		0.1601	0.01411	11.35	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	480.0
AIC (smaller is better)	486.0
AICC (smaller is better)	486.0
BIC (smaller is better)	488.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-47.7184	158.14	5.96	-0.30	0.7731
season	1	0.1134	0.2755	42.6	0.41	0.6826
season	2	0.006253	0.3293	45.8	0.02	0.9849
season	3	0.03107	0.3562	45.5	0.09	0.9309
season	4	0.04091	0.3699	42.6	0.11	0.9124
season	5	0.4535	0.3763	40	1.20	0.2353
season	6	0.2158	0.3784	38.8	0.57	0.5718
season	7	0.4308	0.3772	39.5	1.14	0.2603
season	8	0.1243	0.3819	43.8	0.33	0.7464
season	9	0.03266	0.3698	45.9	0.09	0.9300
season	10	-0.3259	0.3405	45.5	-0.96	0.3435
season	11	-0.2918	0.2999	40.7	-0.97	0.3363
season	12	0	.	.	.	.
date1		0.02366	0.07884	5.96	0.30	0.7743
temp_dev		0.1081	0.04805	143	2.25	0.0261

Mixed Model With Local Nugget

The Mixed Procedure

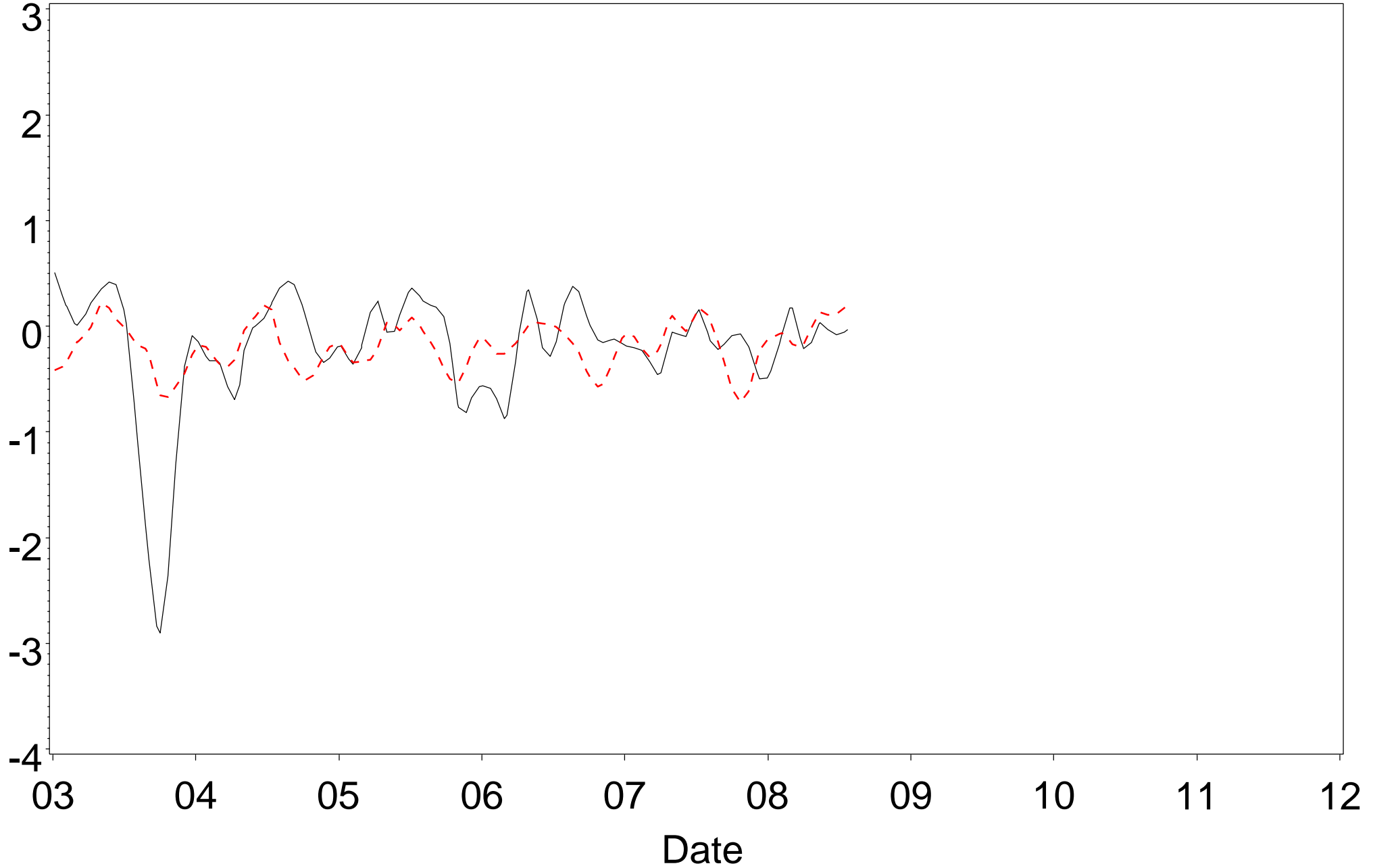
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39.9	0.74	0.6921
date1	1	5.96	0.09	0.7743
temp_dev	1	143	5.06	0.0261

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	333
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	495.54153357	
1	3	357.78387655	0.02340705
2	2	356.16472990	0.01859121
3	1	353.78365856	0.00102246
4	1	353.65865094	0.00000718
5	1	353.65781191	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02179	0.009849	2.21	0.0135
Variance	Intercept	0.1323	0.03822	3.46	0.0003
SP(POW)	Intercept	0.5267	0.1482	3.55	0.0004
Residual		0.1043	0.009406	11.09	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	353.7
AIC (smaller is better)	361.7
AICC (smaller is better)	361.8
BIC (smaller is better)	365.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		223.74	91.5497	7.15	2.44	0.0438
season	1	-0.00129	0.1829	41.1	-0.01	0.9944
season	2	-0.2693	0.2127	43.9	-1.27	0.2122
season	3	-0.01977	0.2275	45.6	-0.09	0.9311
season	4	-0.2796	0.2340	43.9	-1.20	0.2384
season	5	-0.1856	0.2364	41.8	-0.79	0.4368
season	6	-0.2233	0.2370	40.8	-0.94	0.3515
season	7	0.2229	0.2369	41.7	0.94	0.3522
season	8	0.5565	0.2421	44.8	2.30	0.0263
season	9	0.5653	0.2363	45.5	2.39	0.0209
season	10	0.5085	0.2204	43.4	2.31	0.0259
season	11	0.1858	0.1854	38.8	1.00	0.3225
season	12	0	.	.	.	.
date1		-0.1103	0.04564	7.15	-2.42	0.0455
temp_dev		-0.00396	0.03497	99.9	-0.11	0.9101

Mixed Model With Local Nugget

The Mixed Procedure

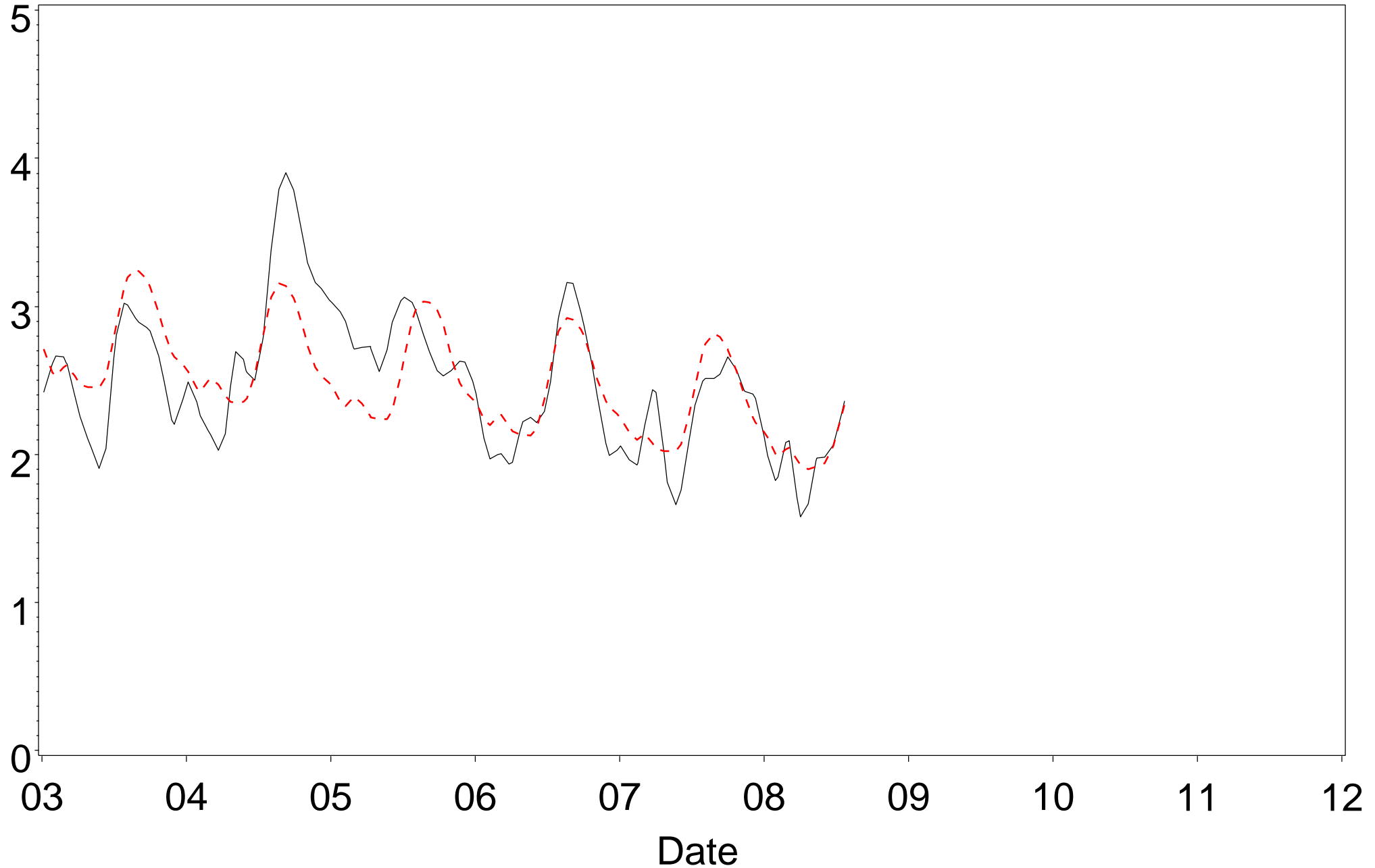
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39.1	2.47	0.0187
date1	1	7.15	5.84	0.0455
temp_dev	1	99.9	0.01	0.9101

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	333
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	708.88449854	
1	4	433.80615316	0.20129478
2	1	415.45554368	.
3	1	412.04013389	0.01788578
4	4	410.90081059	0.00863452
5	2	409.99977072	0.00111201
6	1	409.89521880	0.00001291
7	1	409.89407171	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000495	0.002972	0.17	0.4339
Variance	Intercept	0.4213	0.1281	3.29	0.0005
SP(POW)	Intercept	0.6121	0.1200	5.10	<.0001
Residual		0.1179	0.01060	11.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	409.9
AIC (smaller is better)	417.9
AICC (smaller is better)	418.0
BIC (smaller is better)	421.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-141.47	177.75	6.26	-0.80	0.4552
season	1	-0.04288	0.2773	47	-0.15	0.8777
season	2	-0.09587	0.3360	49.3	-0.29	0.7766
season	3	-0.05108	0.3669	48.4	-0.14	0.8899
season	4	0.1181	0.3835	45.2	0.31	0.7595
season	5	-0.2115	0.3917	42.5	-0.54	0.5921
season	6	-0.3174	0.3945	41.2	-0.80	0.4256
season	7	0.09682	0.3930	41.8	0.25	0.8066
season	8	0.08240	0.3951	46.3	0.21	0.8357
season	9	0.2114	0.3801	48.6	0.56	0.5807
season	10	-0.00407	0.3470	49.1	-0.01	0.9907
season	11	-0.5160	0.2798	45.3	-1.84	0.0717
season	12	0	.	.	.	.
date1		0.06976	0.08862	6.26	0.79	0.4599
temp_dev		0.004791	0.04365	176	0.11	0.9127

Mixed Model With Local Nugget

The Mixed Procedure

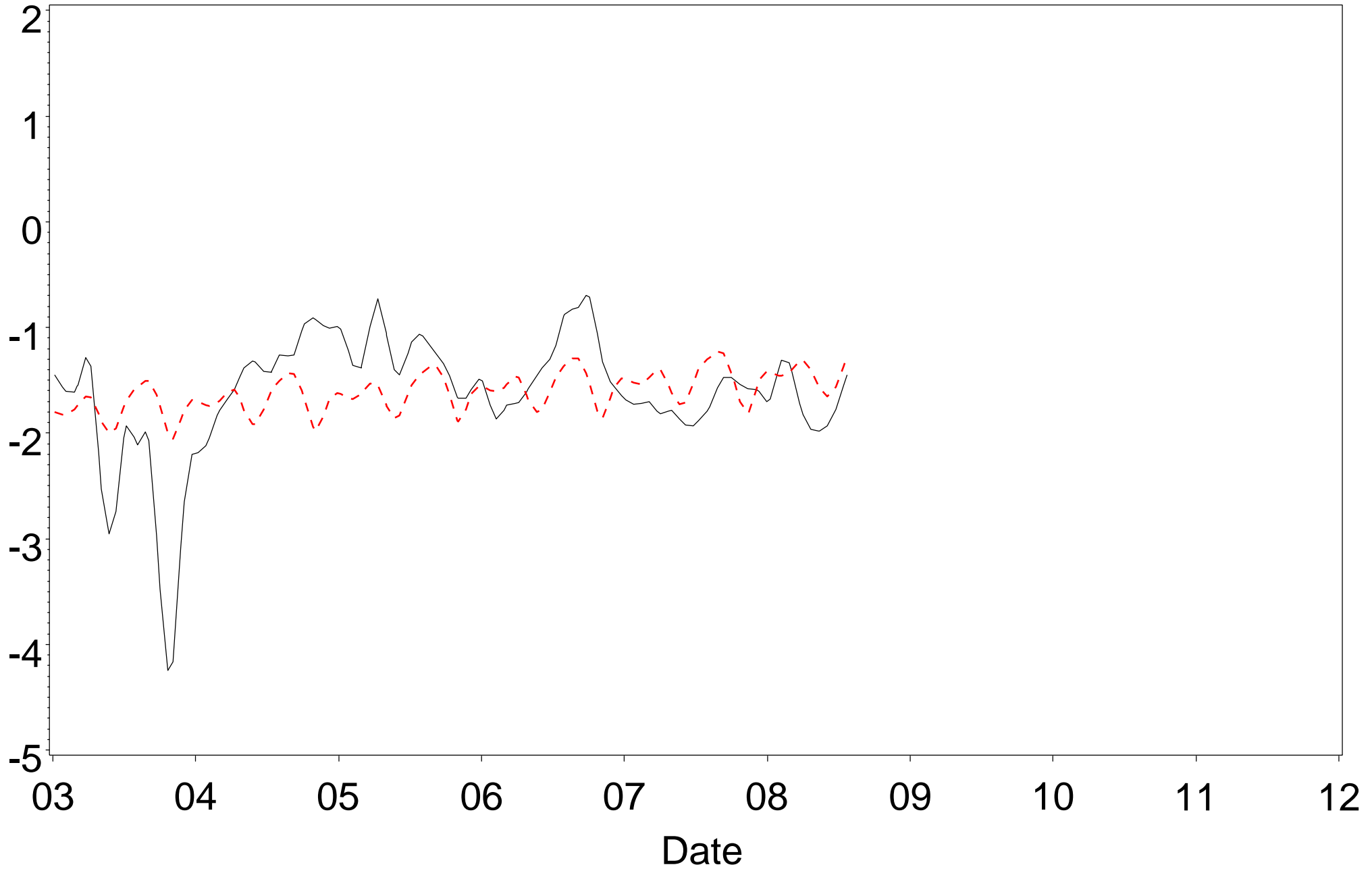
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	43.8	0.95	0.5042
date1	1	6.26	0.62	0.4599
temp_dev	1	176	0.01	0.9127

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
TP_mgl

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	333
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	872.13635612	
1	2	745.94929202	0.05055137
2	1	740.75297506	0.05226786
3	2	738.77665927	0.03090742
4	1	736.09262798	0.00209000
5	1	735.92778090	0.00001529
6	1	735.92663091	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006001	0.009008	0.67	0.2526
Variance	Intercept	0.4995	0.1253	3.99	<.0001
SP(POW)	Intercept	0.3614	0.1584	2.28	0.0225
Residual		0.3553	0.03174	11.19	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	735.9
AIC (smaller is better)	743.9
AICC (smaller is better)	744.1
BIC (smaller is better)	747.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-160.89	151.99	9.8	-1.06	0.3152
season	1	-0.2605	0.3886	40.6	-0.67	0.5064
season	2	0.4994	0.4387	49	1.14	0.2606
season	3	0.4997	0.4541	48.6	1.10	0.2765
season	4	0.1714	0.4577	46.1	0.37	0.7097
season	5	-0.3133	0.4580	44.5	-0.68	0.4975
season	6	-0.4097	0.4579	43.9	-0.89	0.3758
season	7	-0.3603	0.4587	44.5	-0.79	0.4363
season	8	-0.8474	0.4771	47.4	-1.78	0.0822
season	9	-0.9827	0.4738	48.9	-2.07	0.0434
season	10	-0.5957	0.4567	48.8	-1.30	0.1982
season	11	-0.2026	0.3977	38	-0.51	0.6133
season	12	0	.	.	.	.
date1		0.08135	0.07578	9.79	1.07	0.3088
temp_dev		0.06595	0.06933	134	0.95	0.3432

Mixed Model With Local Nugget

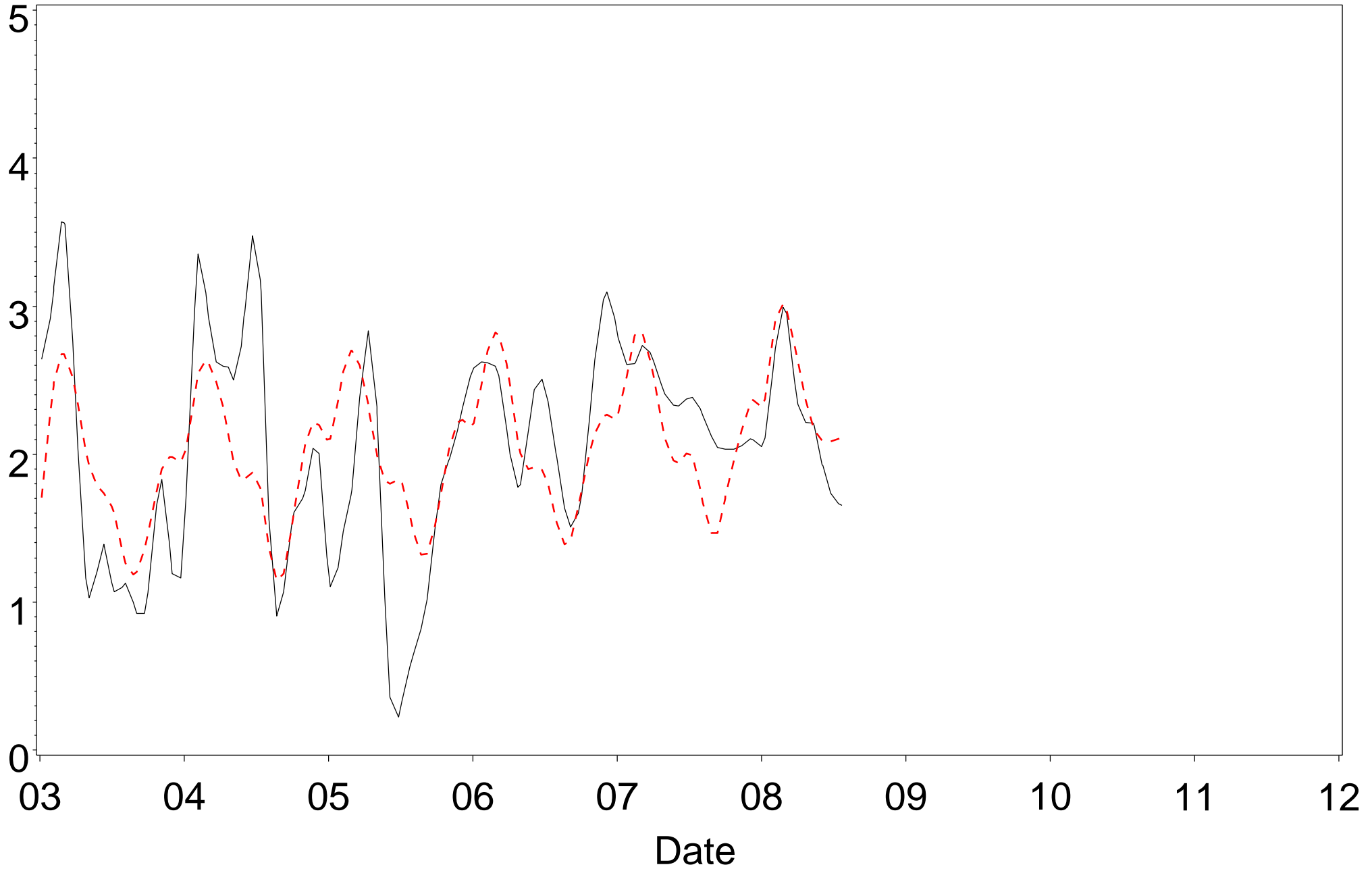
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39.9	1.55	0.1506
date1	1	9.79	1.15	0.3088
temp_dev	1	134	0.90	0.3432

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale
TSS_mgl
Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	18	10 13 14 15 16 20 21 22 23 29 30 31 41 42 6 7 8 9

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	18
Subjects	1
Max Obs Per Subject	336

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	336
Number of Observations Used	323
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	563.68765716	
1	2	447.53214324	0.06828996
2	2	442.01706836	0.06097940
3	2	439.84119256	0.03264682
4	1	437.46820097	0.00215737
5	1	437.31867622	0.00002482
6	1	437.31703886	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03192	0.01435	2.22	0.0131
Variance	Intercept	0.1784	0.04504	3.96	<.0001
SP(POW)	Intercept	0.3217	0.1653	1.95	0.0516
Residual		0.1363	0.01248	10.92	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	437.3
AIC (smaller is better)	445.3
AICC (smaller is better)	445.4
BIC (smaller is better)	448.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-83.4320	88.0359	10.1	-0.95	0.3654
season	1	-0.02382	0.2396	39.5	-0.10	0.9213
season	2	0.1989	0.2672	48	0.74	0.4603
season	3	0.2544	0.2749	47.8	0.93	0.3594
season	4	0.1433	0.2761	45.6	0.52	0.6064
season	5	-0.1911	0.2869	45.7	-0.67	0.5087
season	6	-0.04264	0.2752	43.6	-0.15	0.8776
season	7	-0.1777	0.2760	44.2	-0.64	0.5229
season	8	-0.02494	0.2879	46.6	-0.09	0.9313
season	9	-0.1561	0.2870	48	-0.54	0.5890
season	10	-0.2840	0.2783	47.9	-1.02	0.3126
season	11	-0.1195	0.2642	37.7	-0.45	0.6537
season	12	0	.	.	.	.
date1		0.04221	0.04389	10.1	0.96	0.3586
temp_dev		0.09984	0.04375	132	2.28	0.0241

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39.3	0.62	0.7989
date1	1	10.1	0.93	0.3586
temp_dev	1	132	5.21	0.0241

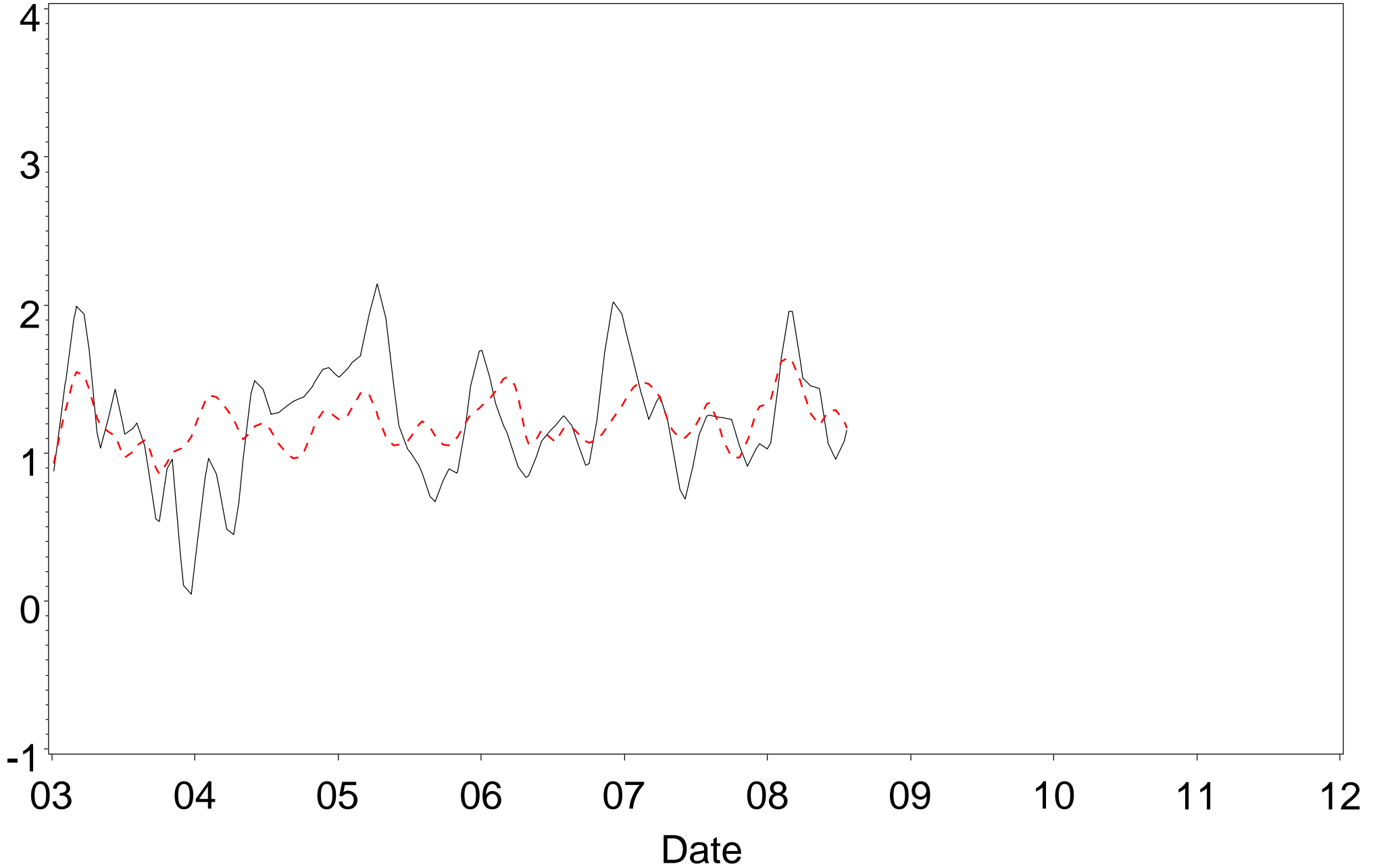
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Myakka

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	330
Number of Observations Not Used	8

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	827.65426818	
1	2	798.87942538	0.08640482
2	2	795.18973349	0.03994880
3	2	790.41139114	0.00206701
4	1	790.19349270	0.00000469
5	1	790.19299893	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01916	0.01791	1.07	0.1424
Variance	Intercept	0.2283	0.06723	3.40	0.0003
SP(POW)	Intercept	0.1635	0.2002	0.82	0.4143
Residual		0.4813	0.04425	10.88	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	790.2
AIC (smaller is better)	798.2
AICC (smaller is better)	798.3
BIC (smaller is better)	803.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-235.32	94.8016	13.4	-2.48	0.0270
season	1	-0.2887	0.3312	39.2	-0.87	0.3888
season	2	-0.3571	0.3506	50.1	-1.02	0.3134
season	3	-0.4382	0.3504	50.1	-1.25	0.2170
season	4	-0.6463	0.3484	49.1	-1.86	0.0696
season	5	-0.5257	0.3505	50.4	-1.50	0.1399
season	6	-1.1274	0.3504	50.4	-3.22	0.0023
season	7	-0.4781	0.3488	49.4	-1.37	0.1767
season	8	0.1014	0.3654	49.9	0.28	0.7826
season	9	-0.4076	0.3656	49.8	-1.11	0.2703
season	10	-0.6100	0.3653	49.7	-1.67	0.1012
season	11	-0.01568	0.3441	37	-0.05	0.9639
season	12	0	.	.	.	.
date1		0.1185	0.04726	13.4	2.51	0.0257
temp_dev		0.2253	0.06042	159	3.73	0.0003

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	40.1	1.75	0.0979
date1	1	13.4	6.29	0.0257
temp_dev	1	159	13.90	0.0003

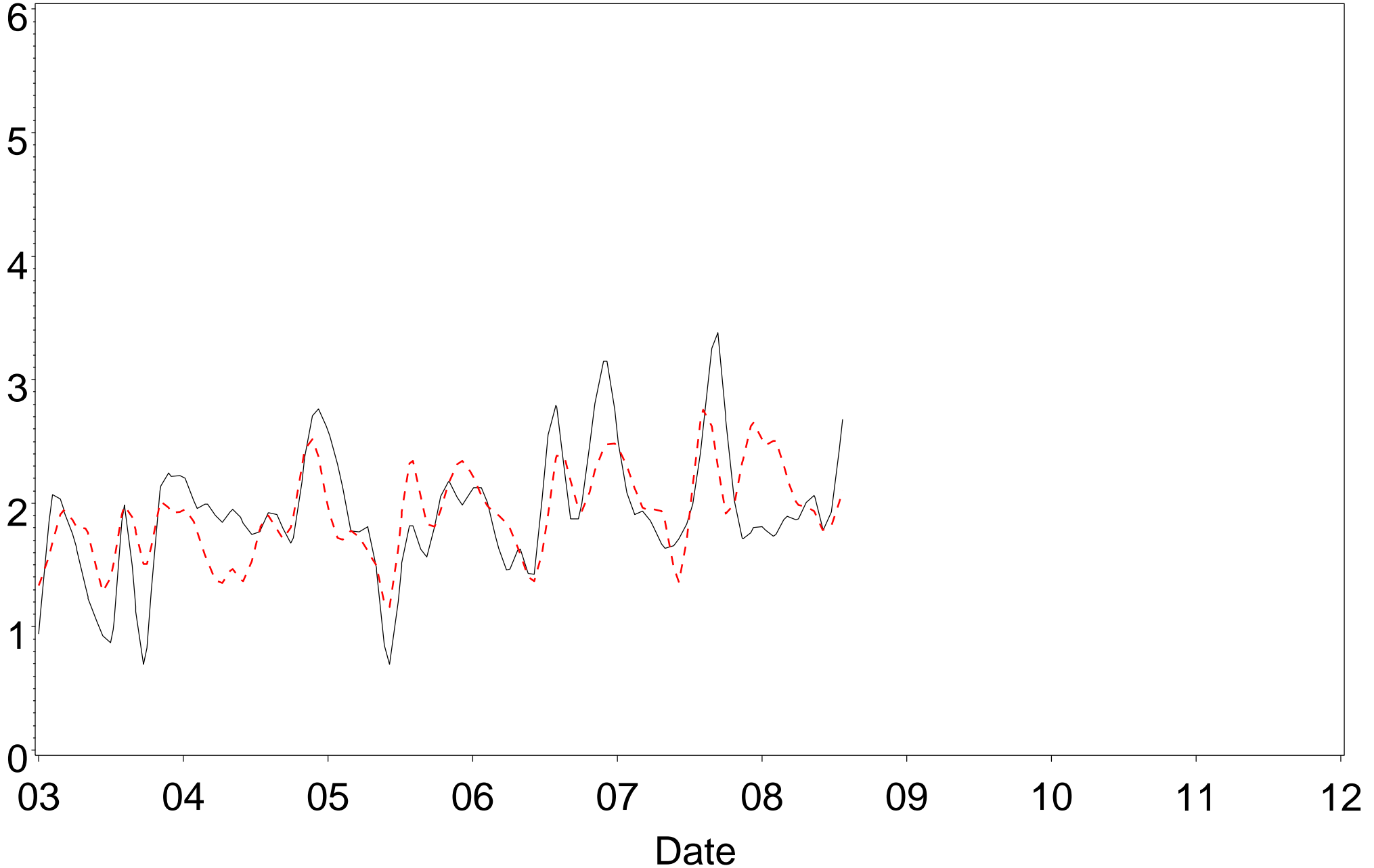
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	332
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	576.70281617	
1	2	348.56608062	0.04004084
2	1	342.98665565	0.00846518
3	2	341.67976314	0.00285826
4	1	341.28543541	0.00018656
5	1	341.26193663	0.00000060
6	1	341.26186359	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1032	0.03128	3.30	0.0005
Variance	Intercept	0.1853	0.05982	3.10	0.0010
SP(POW)	Intercept	0.5902	0.1414	4.17	<.0001
Residual		0.08214	0.007531	10.91	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	341.3
AIC (smaller is better)	349.3
AICC (smaller is better)	349.4
BIC (smaller is better)	354.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		336.32	113.01	5.22	2.98	0.0293
season	1	-0.1233	0.1971	48.1	-0.63	0.5345
season	2	-0.3666	0.2355	50.1	-1.56	0.1258
season	3	-0.1632	0.2547	48.1	-0.64	0.5247
season	4	-0.4381	0.2648	44	-1.65	0.1052
season	5	-0.5393	0.2701	40.9	-2.00	0.0525
season	6	-0.3705	0.2713	39.3	-1.37	0.1799
season	7	0.4544	0.2704	40	1.68	0.1006
season	8	0.6972	0.2735	45.5	2.55	0.0142
season	9	1.1439	0.2639	48.5	4.33	<.0001
season	10	0.7730	0.2426	49.2	3.19	0.0025
season	11	0.1847	0.2001	46.8	0.92	0.3607
season	12	0	.	.	.	.
date1		-0.1657	0.05635	5.22	-2.94	0.0306
temp_dev		-0.02846	0.03080	207	-0.92	0.3566

Mixed Model With Local Nugget

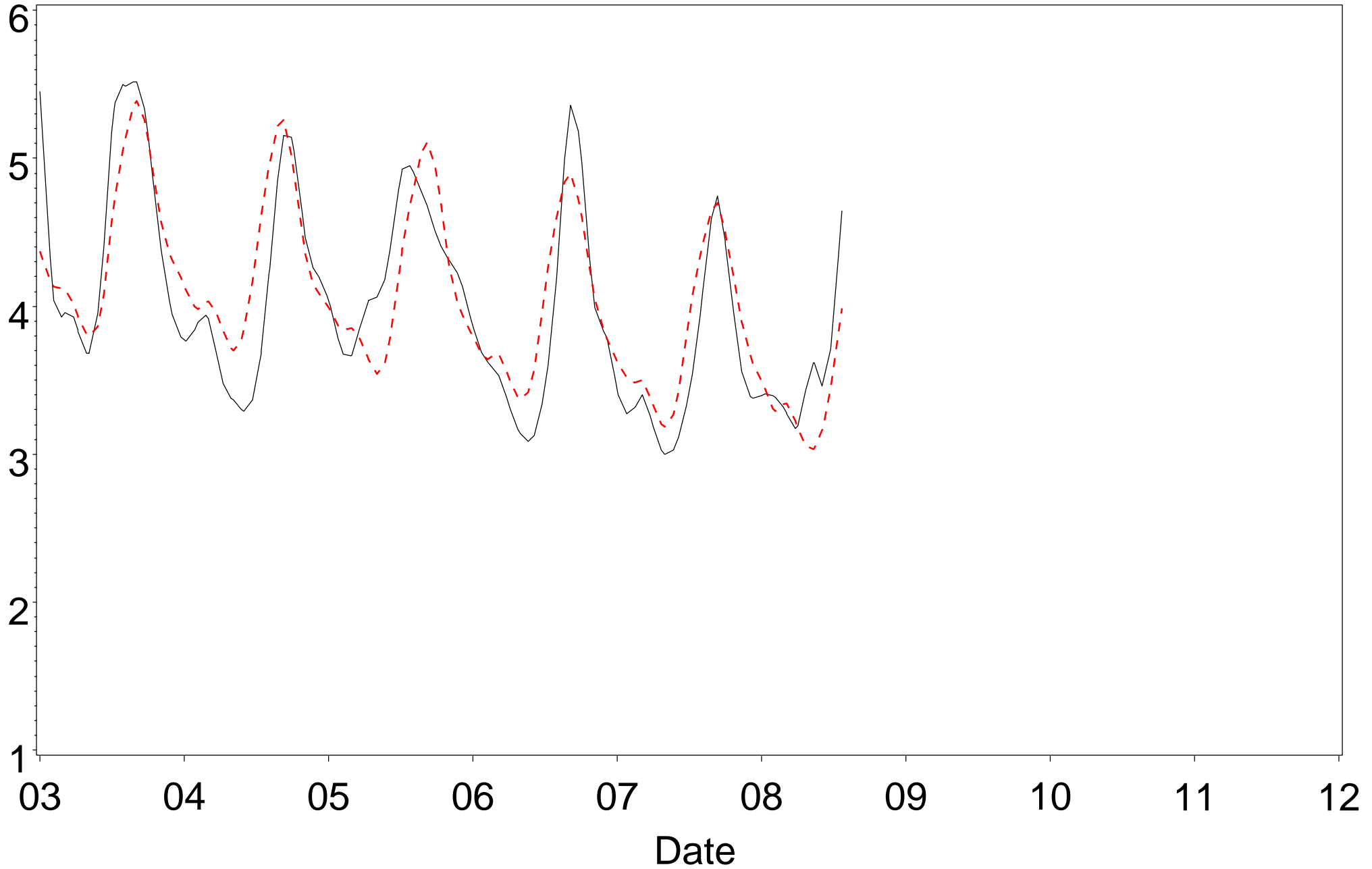
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	43.9	5.23	<.0001
date1	1	5.22	8.65	0.0306
temp_dev	1	207	0.85	0.3566

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace
Parameter = Color (PCU) and Sample Level = Surface

Log Scale
COLOR



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	335
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1023.53491001	
1	2	793.35982558	0.05457953
2	1	786.68253215	0.02053003
3	2	784.35766873	0.01109063
4	1	783.11383950	0.00097539
5	1	783.01514334	0.00000692
6	1	783.01447225	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.3697	0.1117	3.31	0.0005
Variance	Intercept	0.6950	0.1908	3.64	0.0001
SP(POW)	Intercept	0.4919	0.1407	3.50	0.0005
Residual		0.3205	0.02915	11.00	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	783.0
AIC (smaller is better)	791.0
AICC (smaller is better)	791.1
BIC (smaller is better)	796.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-636.44	200.50	7.46	-3.17	0.0144
season	1	-0.2125	0.4112	48.3	-0.52	0.6076
season	2	0.07419	0.4813	52.4	0.15	0.8781
season	3	0.1673	0.5100	49.3	0.33	0.7443
season	4	0.3022	0.5230	44.9	0.58	0.5663
season	5	0.3836	0.5274	41.5	0.73	0.4710
season	6	-0.1315	0.5294	40.5	-0.25	0.8052
season	7	-0.8068	0.5288	41.3	-1.53	0.1347
season	8	-0.8079	0.5424	46.7	-1.49	0.1431
season	9	-1.5147	0.5307	50	-2.85	0.0063
season	10	-1.1030	0.4974	51.7	-2.22	0.0310
season	11	-0.2508	0.4193	46.6	-0.60	0.5526
season	12	0	.	.	.	.
date1		0.3223	0.09996	7.46	3.22	0.0134
temp_dev		0.2734	0.06210	232	4.40	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

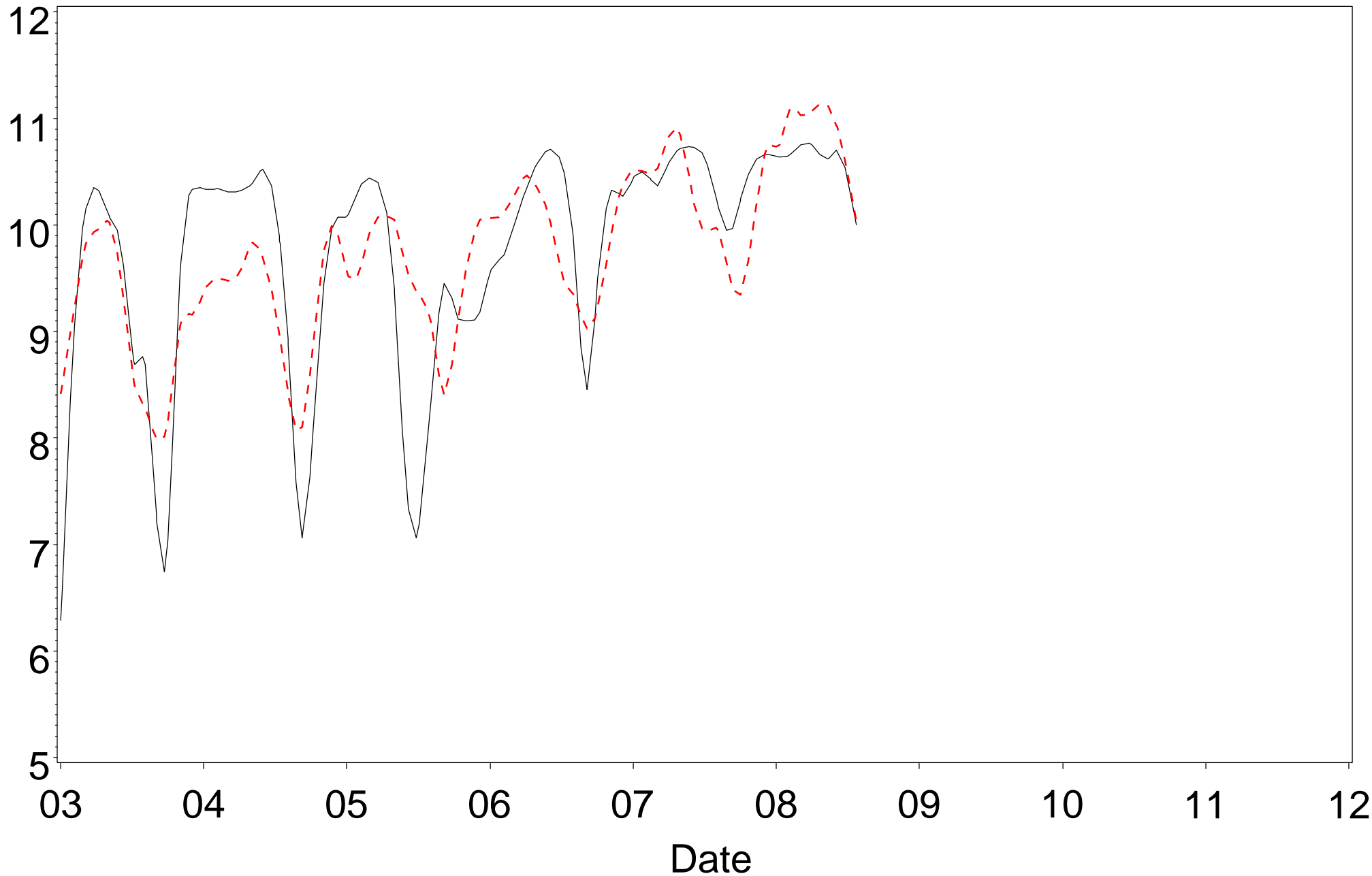
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.5	1.73	0.0972
date1	1	7.46	10.40	0.0134
temp_dev	1	232	19.38	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
COND

Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	335
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1130.22961348	
1	2	1075.97397931	0.01837193
2	2	1070.02068897	0.00979377
3	2	1067.31478532	0.00074152
4	1	1067.13066355	0.00000308
5	1	1067.12992660	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.07953	0.05310	1.50	0.0671
Variance	Intercept	0.7393	0.2022	3.66	0.0001
SP(POW)	Intercept	0.2963	0.1723	1.72	0.0856
Residual		1.0338	0.09476	10.91	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1067.1
AIC (smaller is better)	1075.1
AICC (smaller is better)	1075.3
BIC (smaller is better)	1080.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		334.13	181.14	11.2	1.84	0.0918
season	1	0.5131	0.5314	41.8	0.97	0.3398
season	2	-0.05321	0.5833	49.4	-0.09	0.9277
season	3	0.3577	0.5931	48.7	0.60	0.5493
season	4	-1.1165	0.5944	47.4	-1.88	0.0665
season	5	-1.0176	0.5937	46.7	-1.71	0.0932
season	6	-1.7535	0.5941	46.6	-2.95	0.0049
season	7	-2.0913	0.5952	46.9	-3.51	0.0010
season	8	-2.0389	0.6219	48.4	-3.28	0.0019
season	9	-3.2267	0.6198	49	-5.21	<.0001
season	10	-2.7302	0.6060	48.6	-4.51	<.0001
season	11	-0.4510	0.5486	39.8	-0.82	0.4160
season	12	0	.	.	.	.
date1		-0.1625	0.09030	11.2	-1.80	0.0991
temp_dev		0.2893	0.09416	174	3.07	0.0025

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	40.7	6.68	<.0001
date1	1	11.2	3.24	0.0991
temp_dev	1	174	9.44	0.0025

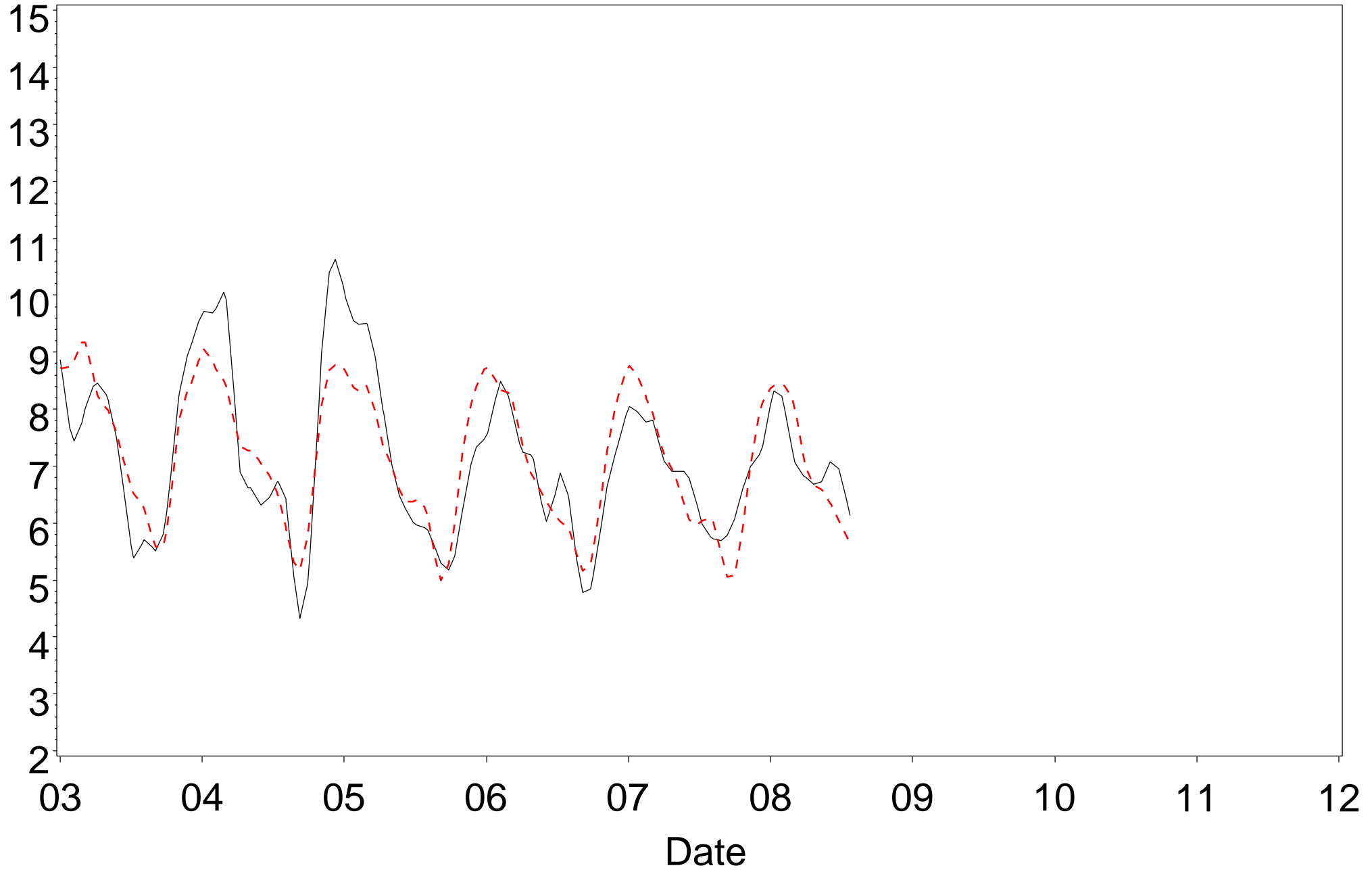
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	296
Number of Observations Not Used	42

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1032.74038469	
1	2	978.55090045	0.01904665
2	2	972.71417809	0.00947426
3	2	970.27307088	0.00070315
4	1	970.10814574	0.00000258
5	1	970.10756037	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.2205	0.09826	2.24	0.0124
Variance	Intercept	0.8145	0.2283	3.57	0.0002
SP(POW)	Intercept	0.2798	0.1942	1.44	0.1496
Residual		1.0812	0.1070	10.10	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	970.1
AIC (smaller is better)	978.1
AICC (smaller is better)	978.3
BIC (smaller is better)	983.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		506.87	191.37	10.5	2.65	0.0234
season	1	-0.05662	0.5971	37	-0.09	0.9250
season	2	0.05399	0.6450	44.4	0.08	0.9337
season	3	-0.02147	0.6516	44.8	-0.03	0.9739
season	4	-0.5542	0.6231	43.9	-0.89	0.3786
season	5	-0.6098	0.6568	45.8	-0.93	0.3580
season	6	-0.3630	0.6222	43.5	-0.58	0.5626
season	7	1.0588	0.6542	45.5	1.62	0.1125
season	8	0.4364	0.6550	45.4	0.67	0.5086
season	9	2.6970	0.6912	45.3	3.90	0.0003
season	10	0.7265	0.6398	43.3	1.14	0.2624
season	11	0.4028	0.5791	32.3	0.70	0.4917
season	12	0	.	.	.	.
date1		-0.2518	0.09540	10.5	-2.64	0.0238
temp_dev		-0.1718	0.1066	168	-1.61	0.1089

Mixed Model With Local Nugget

The Mixed Procedure

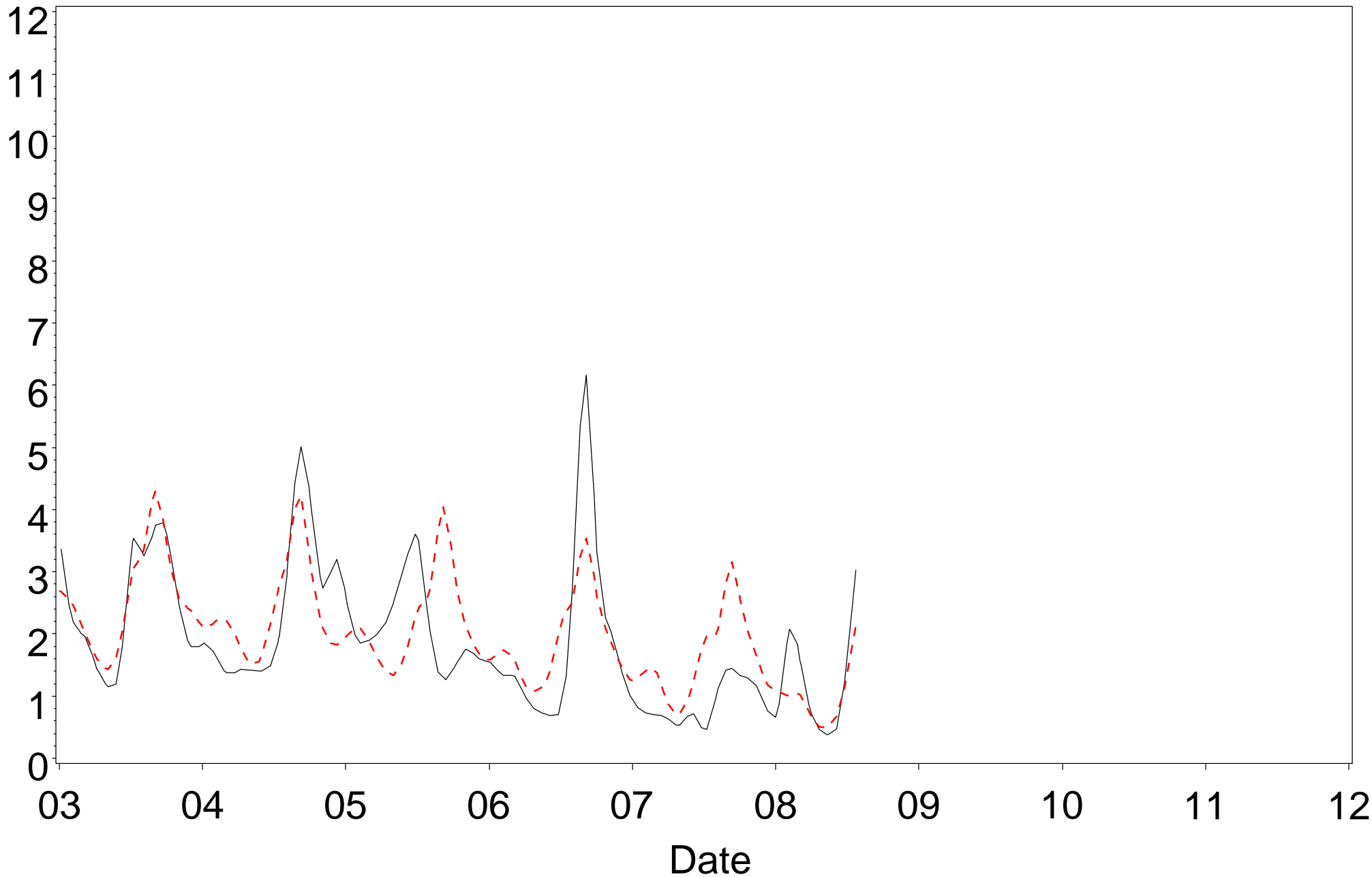
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	35.8	3.10	0.0051
date1	1	10.5	6.97	0.0238
temp_dev	1	168	2.60	0.1089

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	321
Number of Observations Not Used	17

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	810.20659693	
1	3	565.09542320	10.60667988
2	1	559.66929203	0.36425149
3	2	558.61466942	0.10006490
4	2	558.30691720	0.00819936
5	1	558.28190061	0.00002379
6	1	558.28182971	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02345	0.01245	1.88	0.0298
Variance	Intercept	0.6488	0.2349	2.76	0.0029
SP(POW)	Intercept	0.6867	0.1188	5.78	<.0001
Residual		0.1946	0.01812	10.74	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	558.3
AIC (smaller is better)	566.3
AICC (smaller is better)	566.4
BIC (smaller is better)	571.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-373.59	248.86	4.62	-1.50	0.1983
season	1	-0.1964	0.3226	45.6	-0.61	0.5456
season	2	-0.2117	0.3948	45.4	-0.54	0.5944
season	3	-0.1725	0.4364	45	-0.40	0.6945
season	4	-0.2561	0.4608	43.2	-0.56	0.5812
season	5	-0.01327	0.4757	41.9	-0.03	0.9779
season	6	0.6320	0.4910	42.1	1.29	0.2051
season	7	-0.05722	0.4912	42.4	-0.12	0.9078
season	8	-0.2296	0.4793	43.6	-0.48	0.6343
season	9	0.7257	0.4530	44.9	1.60	0.1162
season	10	0.2474	0.4069	44.9	0.61	0.5462
season	11	-0.1549	0.3256	44.9	-0.48	0.6366
season	12	0	.	.	.	.
date1		0.1846	0.1241	4.62	1.49	0.2017
temp_dev		0.03422	0.04725	229	0.72	0.4696

Mixed Model With Local Nugget

The Mixed Procedure

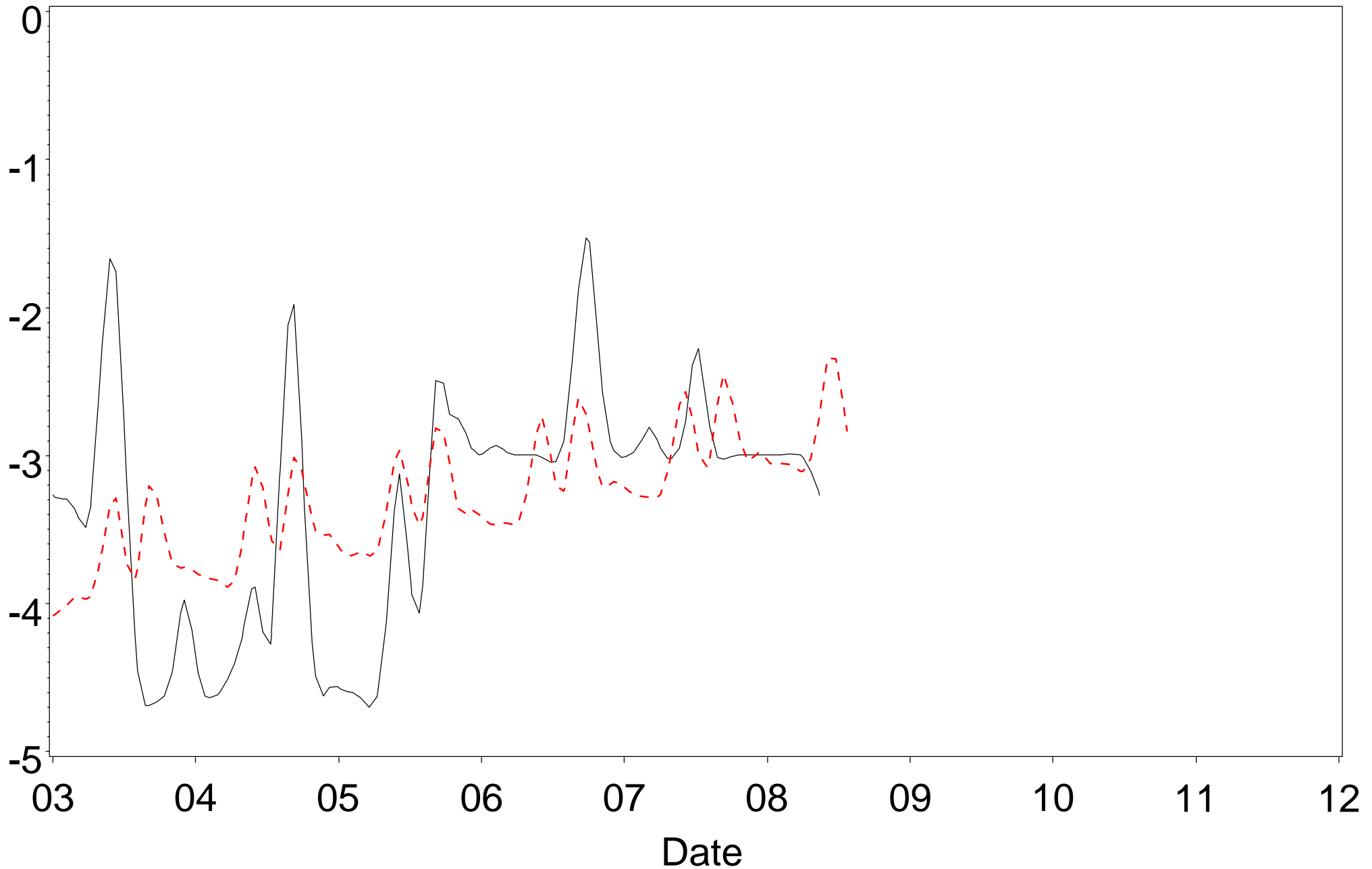
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	42.4	1.74	0.0974
date1	1	4.62	2.21	0.2017
temp_dev	1	229	0.52	0.4696

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	325
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	225.68112051	
1	4	154.80989311	.
2	2	145.16376093	0.04619819
3	2	138.98428288	0.02419349
4	2	132.91121486	0.00213999
5	1	132.40738404	0.00004146
6	1	132.39809059	0.00000004
7	1	132.39808085	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002138	0.002087	1.02	0.1528
Variance	Intercept	0.05431	0.01298	4.18	<.0001
SP(POW)	Intercept	-0.03721	0.1746	-0.21	0.8312
Residual		0.05494	0.005028	10.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	132.4
AIC (smaller is better)	140.4
AICC (smaller is better)	140.5
BIC (smaller is better)	145.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		50.1105	37.7555	18.5	1.33	0.2006
season	1	0.1147	0.1581	35.8	0.73	0.4730
season	2	0.2143	0.1577	51.7	1.36	0.1800
season	3	0.1116	0.1555	51.5	0.72	0.4764
season	4	0.01235	0.1557	51.5	0.08	0.9371
season	5	0.1653	0.1632	51.6	1.01	0.3157
season	6	0.04455	0.1557	51.7	0.29	0.7760
season	7	0.02372	0.1558	51.8	0.15	0.8796
season	8	0.2683	0.1632	51.8	1.64	0.1062
season	9	-0.2954	0.1625	51.6	-1.82	0.0748
season	10	0.06880	0.1646	51.5	0.42	0.6776
season	11	0.05132	0.1759	36.6	0.29	0.7721
season	12	0	.	.	.	.
date1		-0.02112	0.01882	18.5	-1.12	0.2761
temp_dev		0.06796	0.02317	223	2.93	0.0037

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	40.2	1.47	0.1798
date1	1	18.5	1.26	0.2761
temp_dev	1	223	8.61	0.0037

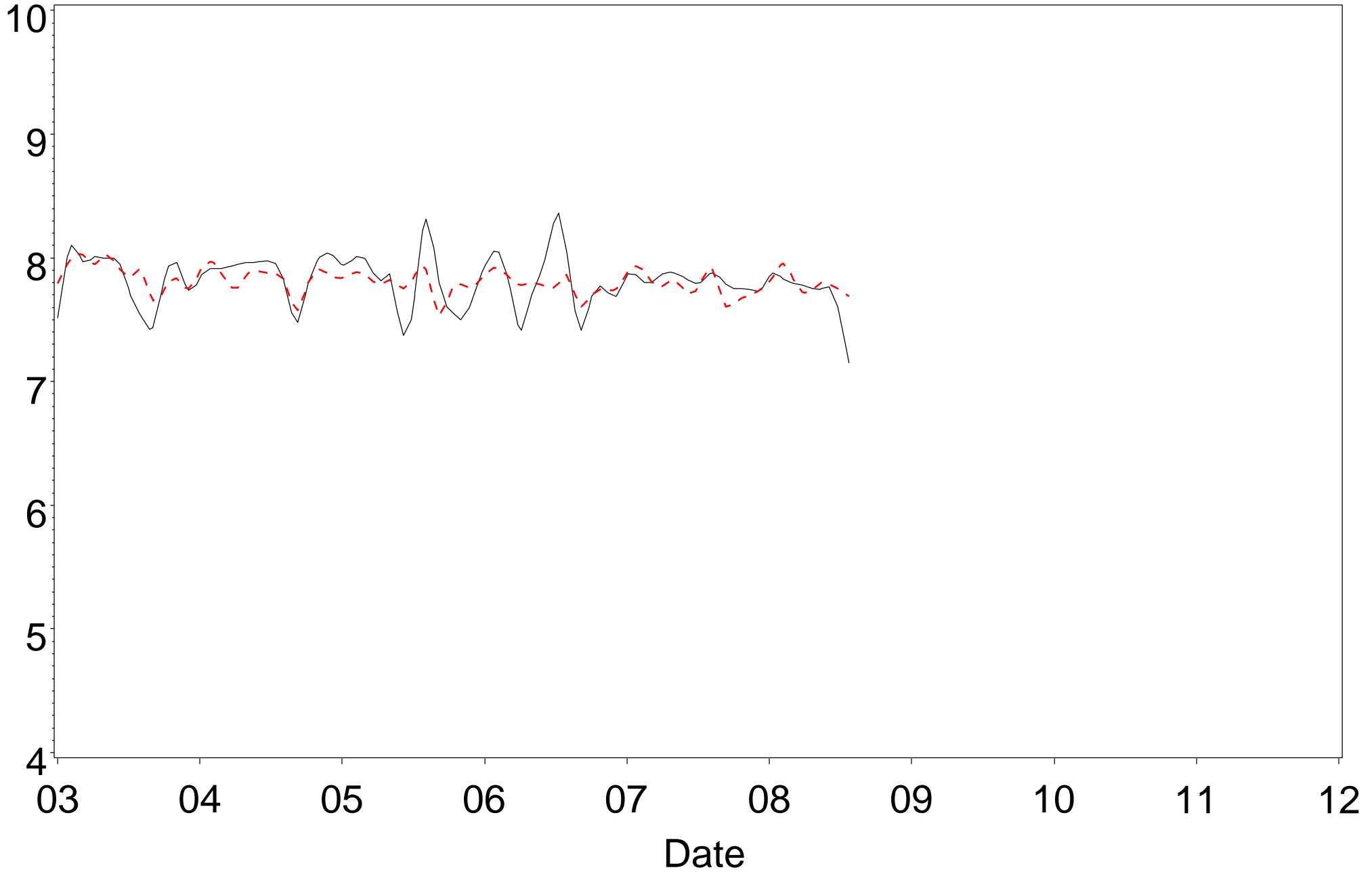
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	335
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1060.68320331	
1	2	823.15004054	0.04879252
2	1	816.31055860	0.01743986
3	2	813.94277005	0.00906467
4	1	812.76170149	0.00086435
5	1	812.66082308	0.00000642
6	1	812.66010506	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.4235	0.1275	3.32	0.0004
Variance	Intercept	0.7856	0.2164	3.63	0.0001
SP(POW)	Intercept	0.4970	0.1397	3.56	0.0004
Residual		0.3486	0.03170	11.00	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	812.7
AIC (smaller is better)	820.7
AICC (smaller is better)	820.8
BIC (smaller is better)	825.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-690.73	214.16	7.39	-3.23	0.0135
season	1	-0.2083	0.4343	48.3	-0.48	0.6336
season	2	0.09359	0.5092	52.4	0.18	0.8549
season	3	0.1862	0.5403	49.3	0.34	0.7319
season	4	0.3314	0.5544	44.8	0.60	0.5530
season	5	0.4171	0.5594	41.5	0.75	0.4601
season	6	-0.1294	0.5617	40.4	-0.23	0.8189
season	7	-0.8689	0.5609	41.3	-1.55	0.1290
season	8	-0.8762	0.5749	46.6	-1.52	0.1342
season	9	-1.6262	0.5621	50	-2.89	0.0056
season	10	-1.1633	0.5261	51.7	-2.21	0.0315
season	11	-0.2666	0.4426	46.7	-0.60	0.5499
season	12	0	.	.	.	.
date1		0.3457	0.1068	7.39	3.24	0.0133
temp_dev		0.2862	0.06504	234	4.40	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

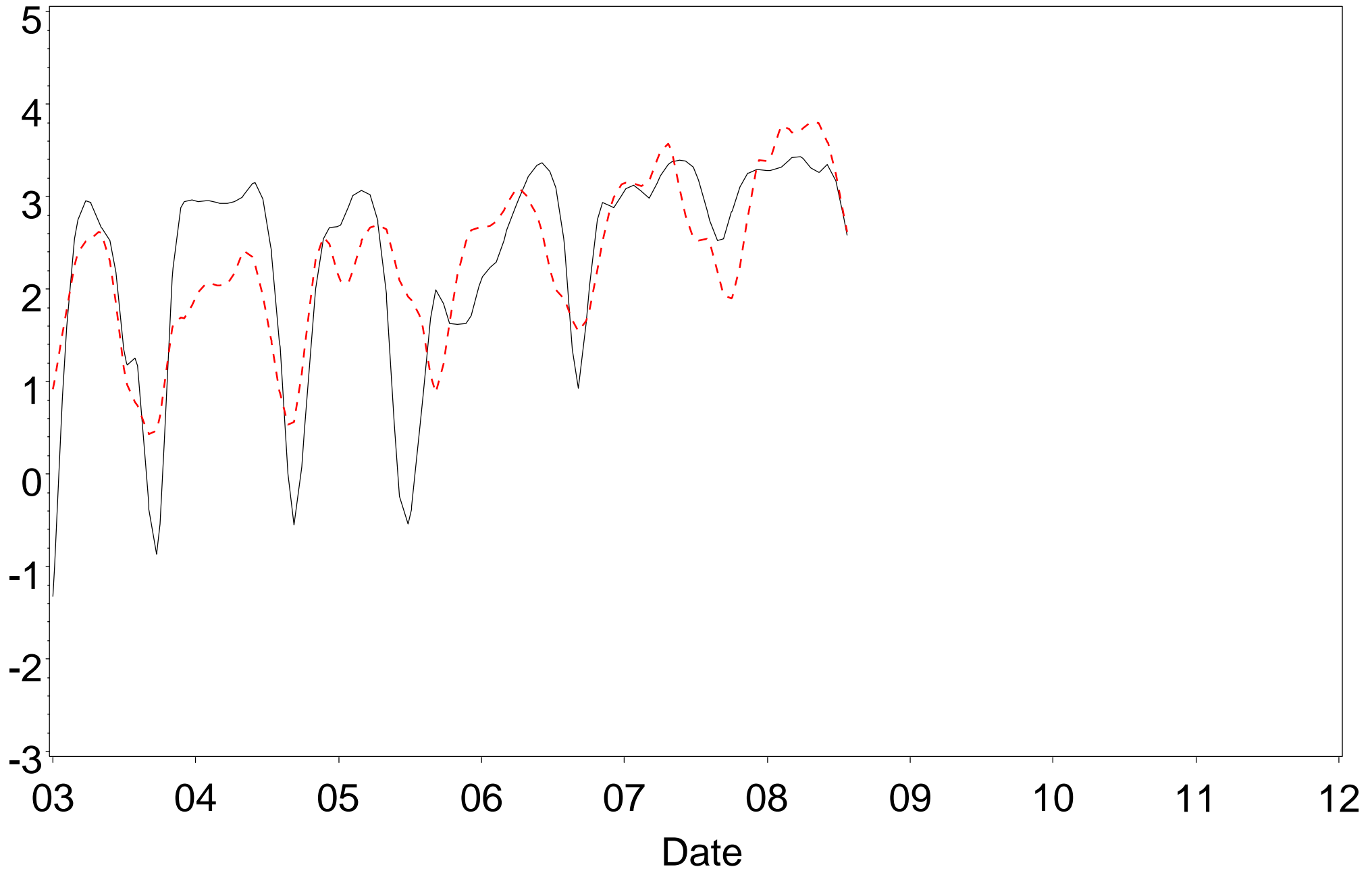
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.5	1.77	0.0886
date1	1	7.39	10.48	0.0133
temp_dev	1	234	19.37	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	335
Number of Observations Not Used	3

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1291.86028062	
1	3	-1545.82115953	.
2	2	-1558.42255641	0.01184029
3	2	-1566.02137234	0.00535779
4	2	-1572.80169427	0.00073035
5	1	-1573.70145865	0.00005314
6	1	-1573.76249072	0.00000054
7	1	-1573.76307705	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		3.028E-6	6.349E-6	0.48	0.3167
Variance	Intercept	0.001012	0.000220	4.60	<.0001
SP(POW)	Intercept	-0.2048	0.1597	-1.28	0.1998
Residual		0.000215	0.000020	10.87	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-1573.8
AIC (smaller is better)	-1565.8
AICC (smaller is better)	-1565.6
BIC (smaller is better)	-1560.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		2.0273	4.0666	19.7	0.50	0.6236
season	1	-0.06007	0.02134	28.9	-2.82	0.0087
season	2	-0.07537	0.01962	49.7	-3.84	0.0003
season	3	0.02604	0.01964	44.7	1.33	0.1917
season	4	0.1301	0.01975	47.2	6.59	<.0001
season	5	0.2178	0.01969	46.6	11.06	<.0001
season	6	0.3121	0.01971	46.9	15.83	<.0001
season	7	0.3580	0.01968	46.7	18.19	<.0001
season	8	0.3533	0.02066	47.7	17.10	<.0001
season	9	0.3112	0.02052	44.4	15.17	<.0001
season	10	0.2522	0.02045	49.5	12.33	<.0001
season	11	0.09815	0.02246	27.7	4.37	0.0002
season	12	0	.	.	.	.
date1		0.000517	0.002027	19.7	0.26	0.8013
temp_dev		0.05529	0.001652	255	33.47	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

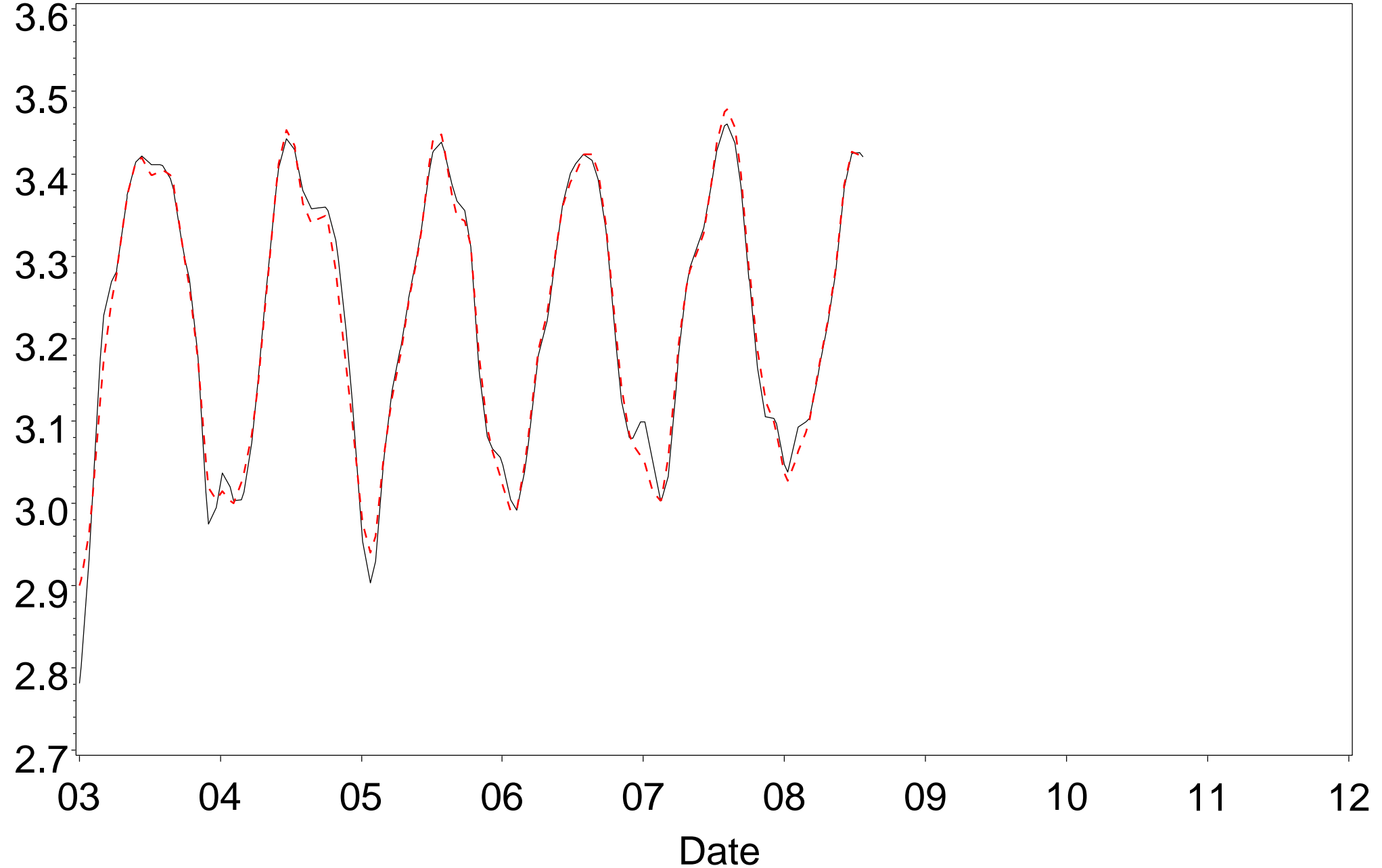
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	37.1	192.42	<.0001
date1	1	19.7	0.07	0.8013
temp_dev	1	255	1120.25	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
TEMP_C

Parameter = Temperature (Degree C) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	332
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	832.06060854	
1	2	526.93354194	0.15276052
2	1	521.70990682	0.02994847
3	2	520.49274154	0.01191108
4	2	520.06842328	0.00128347
5	1	520.02537765	0.00000692
6	1	520.02515376	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02600	0.01135	2.29	0.0110
Variance	Intercept	0.6500	0.2225	2.92	0.0017
SP(POW)	Intercept	0.6754	0.1140	5.93	<.0001
Residual		0.1537	0.01406	10.93	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	520.0
AIC (smaller is better)	528.0
AICC (smaller is better)	528.2
BIC (smaller is better)	533.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-15.8668	237.26	5.09	-0.07	0.9492
season	1	-0.08868	0.3208	48.9	-0.28	0.7834
season	2	-0.3150	0.3938	49.5	-0.80	0.4276
season	3	-0.1431	0.4351	48.8	-0.33	0.7436
season	4	-0.2428	0.4591	46.4	-0.53	0.5994
season	5	0.1998	0.4725	44.3	0.42	0.6744
season	6	-0.01912	0.4768	43	-0.04	0.9682
season	7	0.2593	0.4743	43.3	0.55	0.5873
season	8	-0.1473	0.4722	47.1	-0.31	0.7564
season	9	-0.1271	0.4499	48.8	-0.28	0.7788
season	10	-0.6925	0.4055	49.1	-1.71	0.0940
season	11	-0.9383	0.3236	48	-2.90	0.0056
season	12	0	.	.	.	.
date1		0.007890	0.1183	5.09	0.07	0.9494
temp_dev		0.03907	0.04310	264	0.91	0.3656

Mixed Model With Local Nugget

The Mixed Procedure

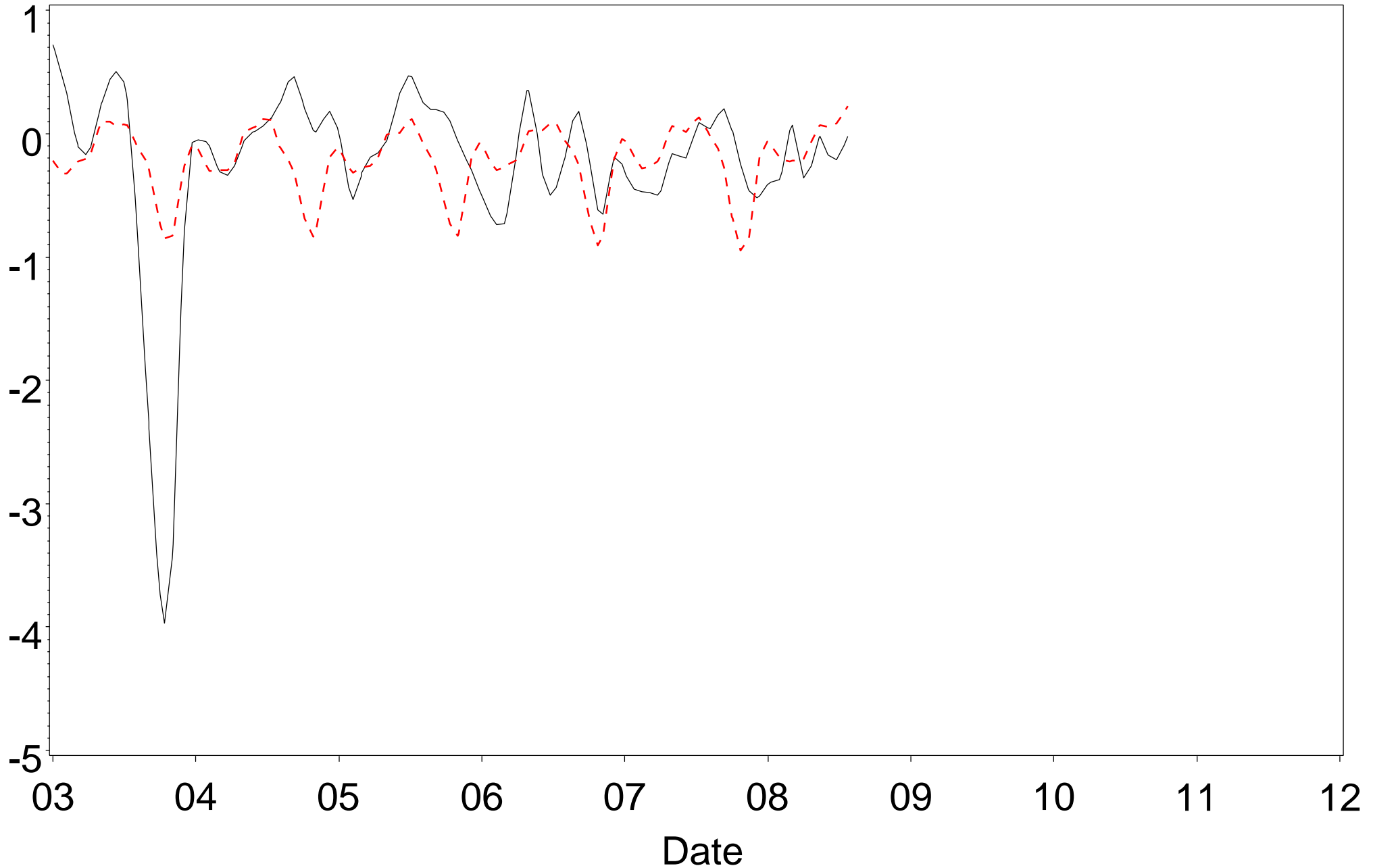
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	45.5	1.47	0.1766
date1	1	5.09	0.00	0.9494
temp_dev	1	264	0.82	0.3656

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	326
Number of Observations Not Used	12

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	555.55470768	
1	3	365.37646664	0.05075558
2	1	359.05341282	0.01445140
3	2	357.08647348	0.00622193
4	1	356.29617228	0.00062667
5	1	356.22437922	0.00000527
6	1	356.22380398	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03827	0.01314	2.91	0.0018
Variance	Intercept	0.2200	0.06531	3.37	0.0004
SP(POW)	Intercept	0.5534	0.1402	3.95	<.0001
Residual		0.09355	0.008630	10.84	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	356.2
AIC (smaller is better)	364.2
AICC (smaller is better)	364.4
BIC (smaller is better)	369.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		82.7357	119.80	6.29	0.69	0.5145
season	1	-0.06948	0.2196	45.3	-0.32	0.7532
season	2	-0.2857	0.2609	49	-1.09	0.2789
season	3	-0.1171	0.2804	47.6	-0.42	0.6780
season	4	-0.2218	0.2899	43.8	-0.76	0.4484
season	5	0.1837	0.2947	41	0.62	0.5365
season	6	0.006700	0.2957	39.5	0.02	0.9820
season	7	0.2869	0.2949	40.3	0.97	0.3364
season	8	-0.09160	0.2998	45.3	-0.31	0.7614
season	9	0.06285	0.2909	47.9	0.22	0.8298
season	10	-0.2699	0.2694	48.4	-1.00	0.3215
season	11	-0.2983	0.2407	44.2	-1.24	0.2219
season	12	0	.	.	.	.
date1		-0.04126	0.05973	6.29	-0.69	0.5144
temp_dev		0.03544	0.03443	228	1.03	0.3044

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	42.1	1.19	0.3201
date1	1	6.29	0.48	0.5144
temp_dev	1	228	1.06	0.3044

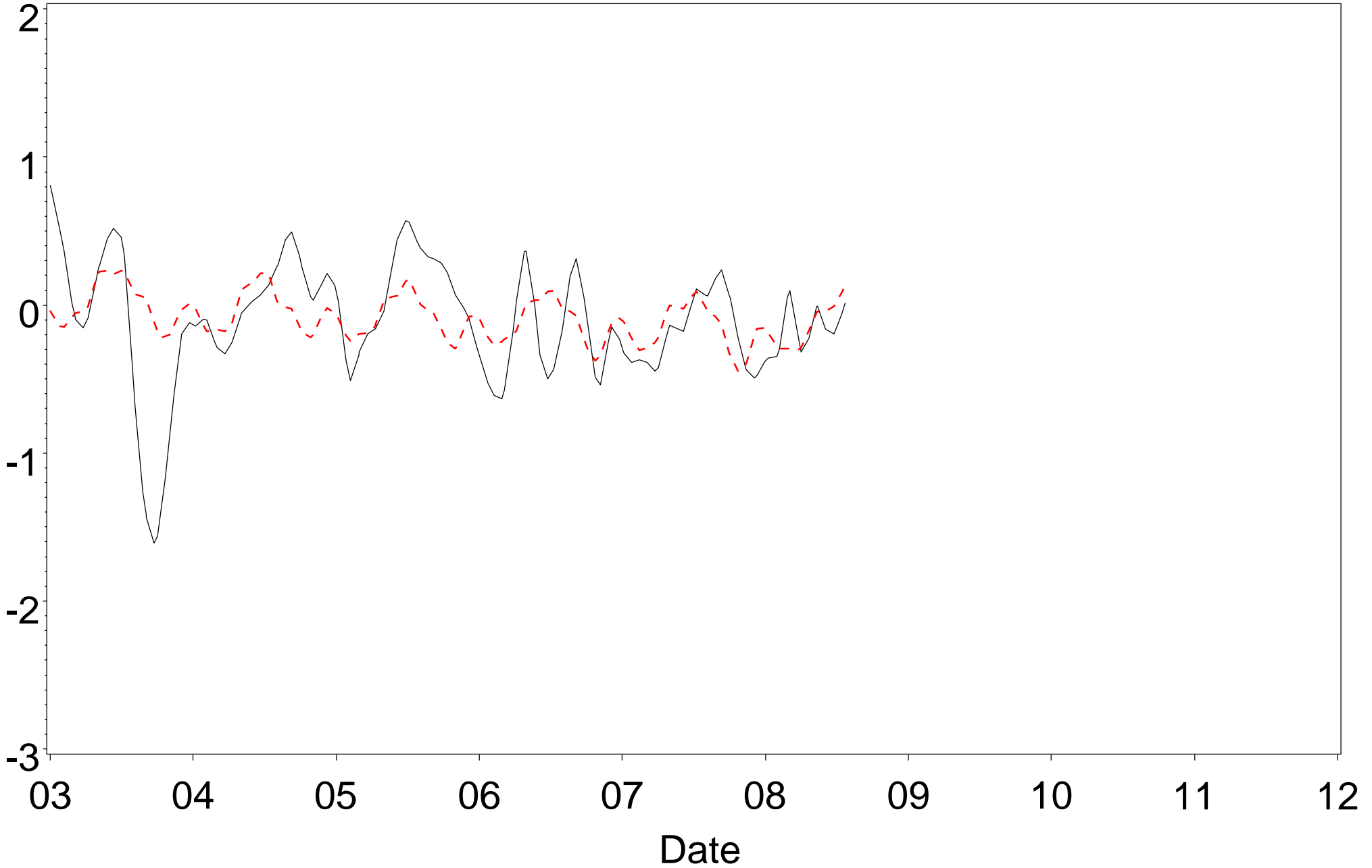
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	332
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	664.91715918	
1	3	516.54636347	0.19593984
2	1	508.64891033	0.09125293
3	2	506.66511344	0.06622978
4	1	503.70884438	0.00574562
5	1	503.46139624	0.00006972
6	1	503.45855058	0.00000001
7	1	503.45855017	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04051	0.01547	2.62	0.0044
Variance	Intercept	0.2427	0.06421	3.78	<.0001
SP(POW)	Intercept	0.4532	0.1447	3.13	0.0017
Residual		0.1565	0.01426	10.97	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	503.5
AIC (smaller is better)	511.5
AICC (smaller is better)	511.6
BIC (smaller is better)	516.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		285.08	115.45	8.67	2.47	0.0366
season	1	-0.01354	0.2560	45.2	-0.05	0.9580
season	2	-0.1140	0.2953	50.4	-0.39	0.7012
season	3	-0.3372	0.3102	49.3	-1.09	0.2823
season	4	-0.5949	0.3160	46	-1.88	0.0661
season	5	-0.2667	0.3188	44	-0.84	0.4074
season	6	-0.3290	0.3187	42.8	-1.03	0.3076
season	7	0.2137	0.3186	43.5	0.67	0.5058
season	8	0.4013	0.3285	47.5	1.22	0.2278
season	9	0.5382	0.3229	49.5	1.67	0.1019
season	10	0.5398	0.3055	49.5	1.77	0.0834
season	11	-0.07375	0.2618	43.5	-0.28	0.7795
season	12	0	.	.	.	.
date1		-0.1409	0.05756	8.66	-2.45	0.0379
temp_dev		-0.01027	0.04102	214	-0.25	0.8026

Mixed Model With Local Nugget

The Mixed Procedure

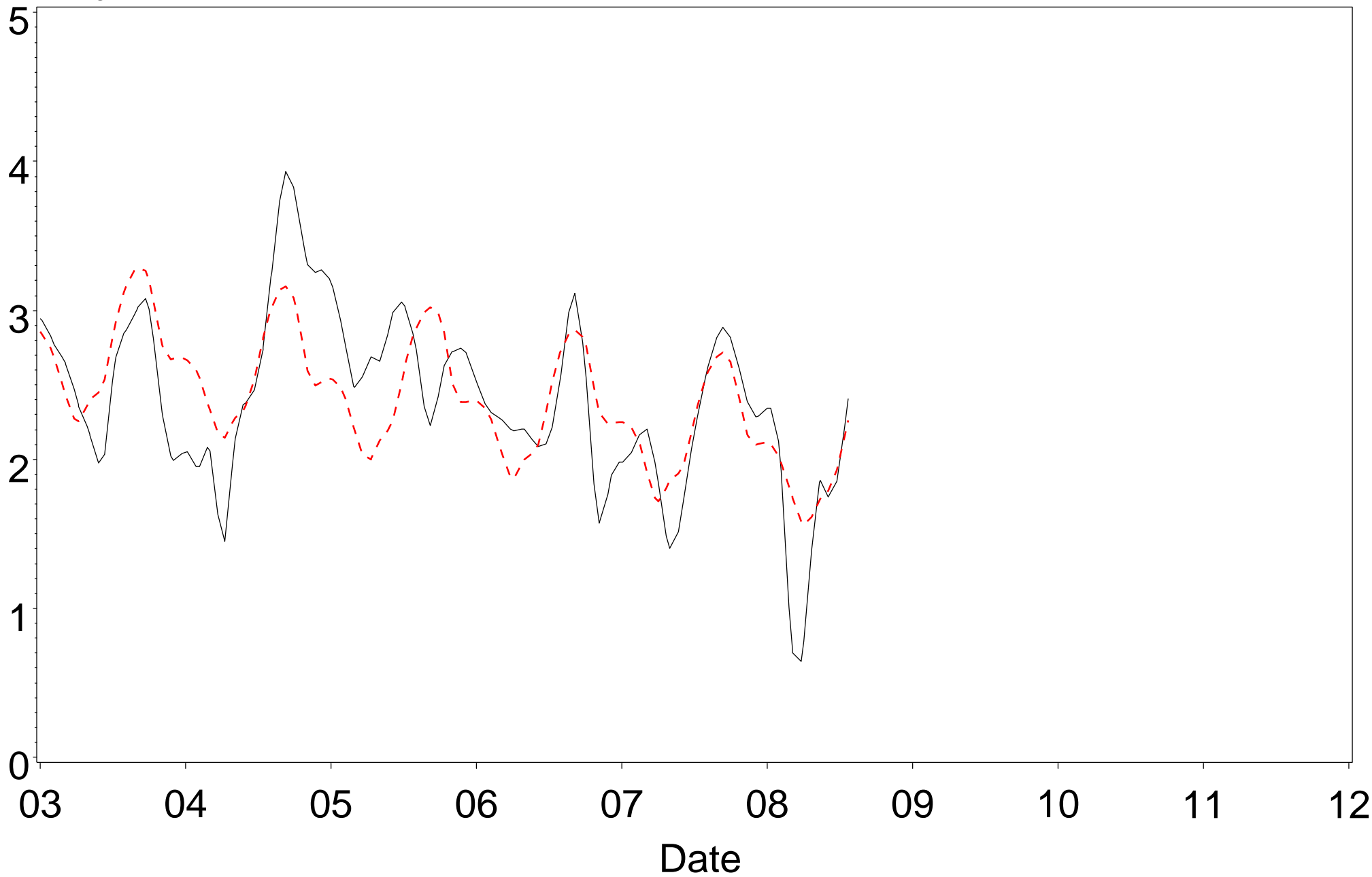
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	42.7	1.89	0.0685
date1	1	8.66	5.99	0.0379
temp_dev	1	214	0.06	0.8026

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface

Log Scale
TOC_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	332
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	823.49211567	
1	2	460.57353473	0.14567576
2	1	449.77793233	0.02313253
3	1	447.95528143	0.00344305
4	2	447.70513169	0.00012999
5	1	447.69610464	0.00000009
6	1	447.69609882	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1131	0.03427	3.30	0.0005
Variance	Intercept	0.6287	0.2018	3.12	0.0009
SP(POW)	Intercept	0.6509	0.1133	5.74	<.0001
Residual		0.1014	0.009342	10.85	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	447.7
AIC (smaller is better)	455.7
AICC (smaller is better)	455.8
BIC (smaller is better)	460.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-158.41	227.00	5.71	-0.70	0.5127
season	1	-0.1800	0.3178	47.3	-0.57	0.5739
season	2	-0.1392	0.3909	49.5	-0.36	0.7232
season	3	-0.1564	0.4308	48.7	-0.36	0.7182
season	4	-0.2845	0.4534	46	-0.63	0.5334
season	5	-0.4574	0.4655	43.5	-0.98	0.3313
season	6	-0.6440	0.4695	42.2	-1.37	0.1774
season	7	0.04325	0.4672	42.6	0.09	0.9267
season	8	-0.1353	0.4664	46.7	-0.29	0.7731
season	9	0.2128	0.4457	48.9	0.48	0.6352
season	10	-0.3909	0.4027	49.1	-0.97	0.3364
season	11	-0.6530	0.3207	46.3	-2.04	0.0475
season	12	0	.	.	.	.
date1		0.07851	0.1132	5.7	0.69	0.5151
temp_dev		0.01953	0.03784	281	0.52	0.6062

Mixed Model With Local Nugget

The Mixed Procedure

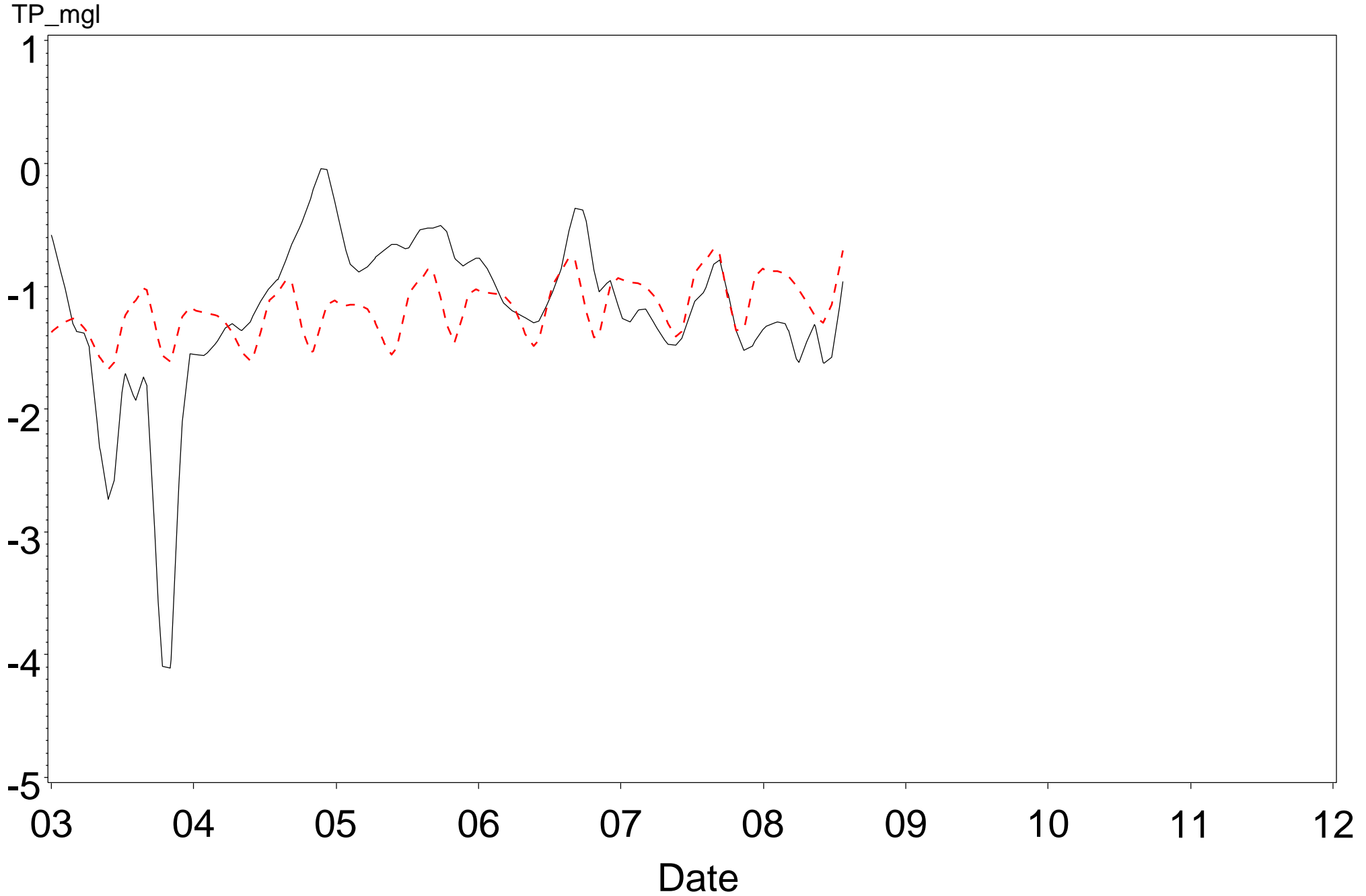
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	44.1	1.27	0.2705
date1	1	5.7	0.48	0.5151
temp_dev	1	281	0.27	0.6062

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	332
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	800.48318807	
1	2	715.51738948	0.05370229
2	2	710.90579974	0.03485508
3	2	708.28481939	0.00418736
4	1	708.01081860	.
5	1	708.00731255	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000273	0.008597	0.03	0.4873
Variance	Intercept	0.3337	0.08809	3.79	<.0001
SP(POW)	Intercept	0.3621	0.1576	2.30	0.0216
Residual		0.3492	0.03193	10.94	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	708.0
AIC (smaller is better)	716.0
AICC (smaller is better)	716.1
BIC (smaller is better)	721.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-250.67	126.43	10.1	-1.98	0.0753
season	1	-0.1854	0.3316	45	-0.56	0.5790
season	2	0.2100	0.3714	50.9	0.57	0.5743
season	3	0.2291	0.3836	50	0.60	0.5531
season	4	-0.1427	0.3856	46.9	-0.37	0.7131
season	5	-0.3664	0.3880	46.2	-0.94	0.3498
season	6	-0.7299	0.3864	45	-1.89	0.0653
season	7	-0.6686	0.3866	45.3	-1.73	0.0905
season	8	-0.3971	0.4021	48.1	-0.99	0.3283
season	9	-0.8866	0.3996	49.9	-2.22	0.0311
season	10	-0.6348	0.3858	50.5	-1.65	0.1061
season	11	-0.1026	0.3401	42.4	-0.30	0.7644
season	12	0	.	.	.	.
date1		0.1262	0.06303	10.1	2.00	0.0730
temp_dev		0.1110	0.05447	180	2.04	0.0431

Mixed Model With Local Nugget

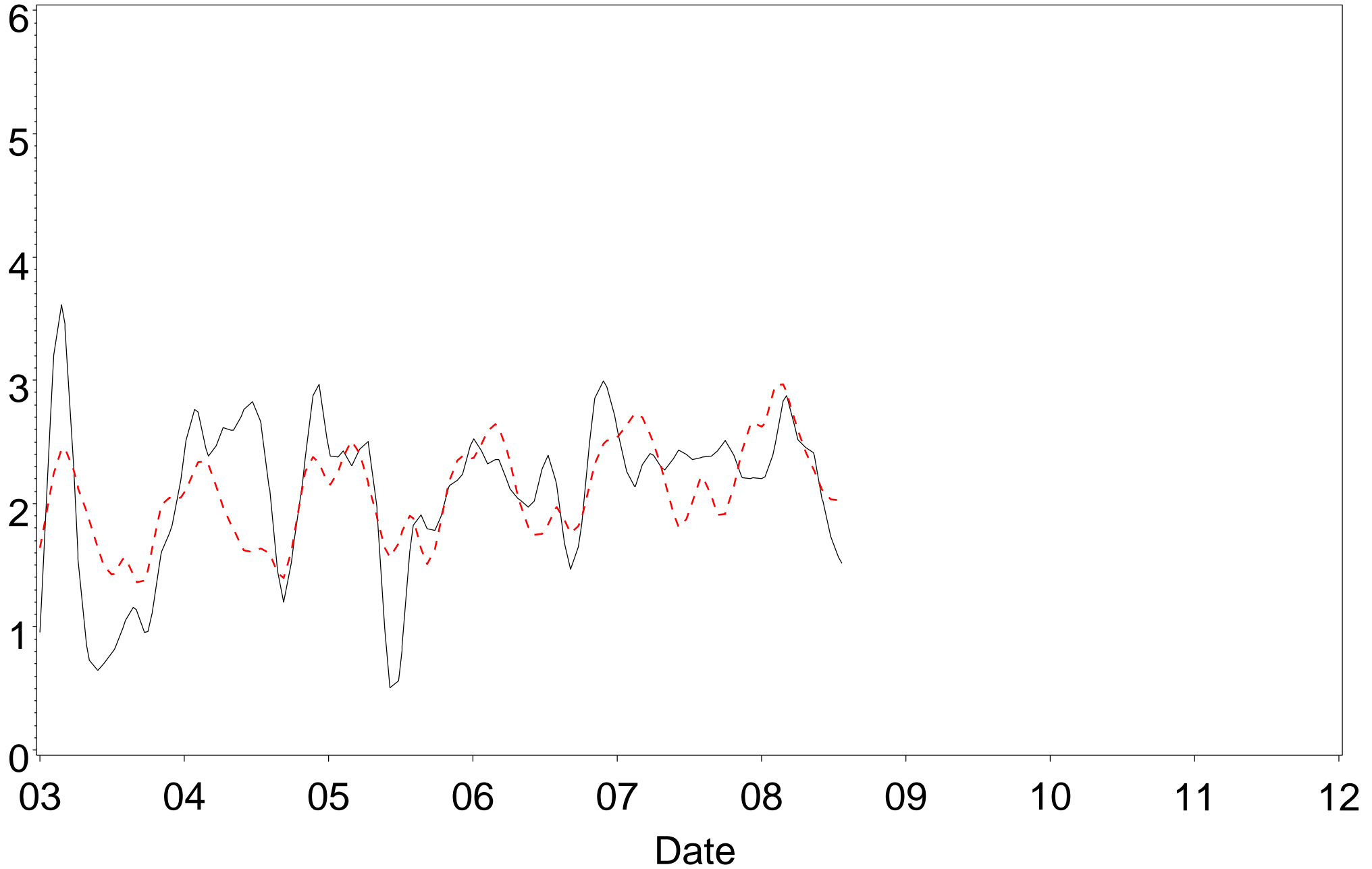
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	42.7	1.46	0.1834
date1	1	10.1	4.01	0.0730
temp_dev	1	180	4.15	0.0431

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale
TSS_mgl
Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	27	190 192 193 194 195 198 199 200 201 202 203 24 25 26 27 28 34 35 36 37 38 43 44 45 46 47 48

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	27
Subjects	1
Max Obs Per Subject	338

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	338
Number of Observations Used	322
Number of Observations Not Used	16

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	673.92144865	
1	2	546.46196619	0.35362914
2	2	541.88609846	0.18282812
3	2	539.23724000	0.02198657
4	1	538.92304176	0.00026730
5	1	538.91938311	0.00000005
6	1	538.91938249	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.09269	0.03161	2.93	0.0017
Variance	Intercept	0.2205	0.05730	3.85	<.0001
SP(POW)	Intercept	0.3618	0.1653	2.19	0.0286
Residual		0.1798	0.01681	10.70	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	538.9
AIC (smaller is better)	546.9
AICC (smaller is better)	547.1
BIC (smaller is better)	552.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-123.37	101.72	9.54	-1.21	0.2543
season	1	0.003872	0.2640	39.5	0.01	0.9884
season	2	-0.07570	0.2974	47.8	-0.25	0.8002
season	3	0.1680	0.3067	47.6	0.55	0.5865
season	4	-0.06951	0.3090	45.4	-0.22	0.8230
season	5	-0.3226	0.3228	46.2	-1.00	0.3228
season	6	-0.5053	0.3095	43.6	-1.63	0.1097
season	7	-0.3728	0.3098	44.1	-1.20	0.2353
season	8	0.1685	0.3226	46.7	0.52	0.6038
season	9	-0.2083	0.3199	47.7	-0.65	0.5182
season	10	-0.3355	0.3083	46.8	-1.09	0.2821
season	11	0.03946	0.2920	38.4	0.14	0.8932
season	12	0	.	.	.	.
date1		0.06220	0.05071	9.54	1.23	0.2494
temp_dev		0.05158	0.04427	189	1.16	0.2455

Mixed Model With Local Nugget

The Mixed Procedure

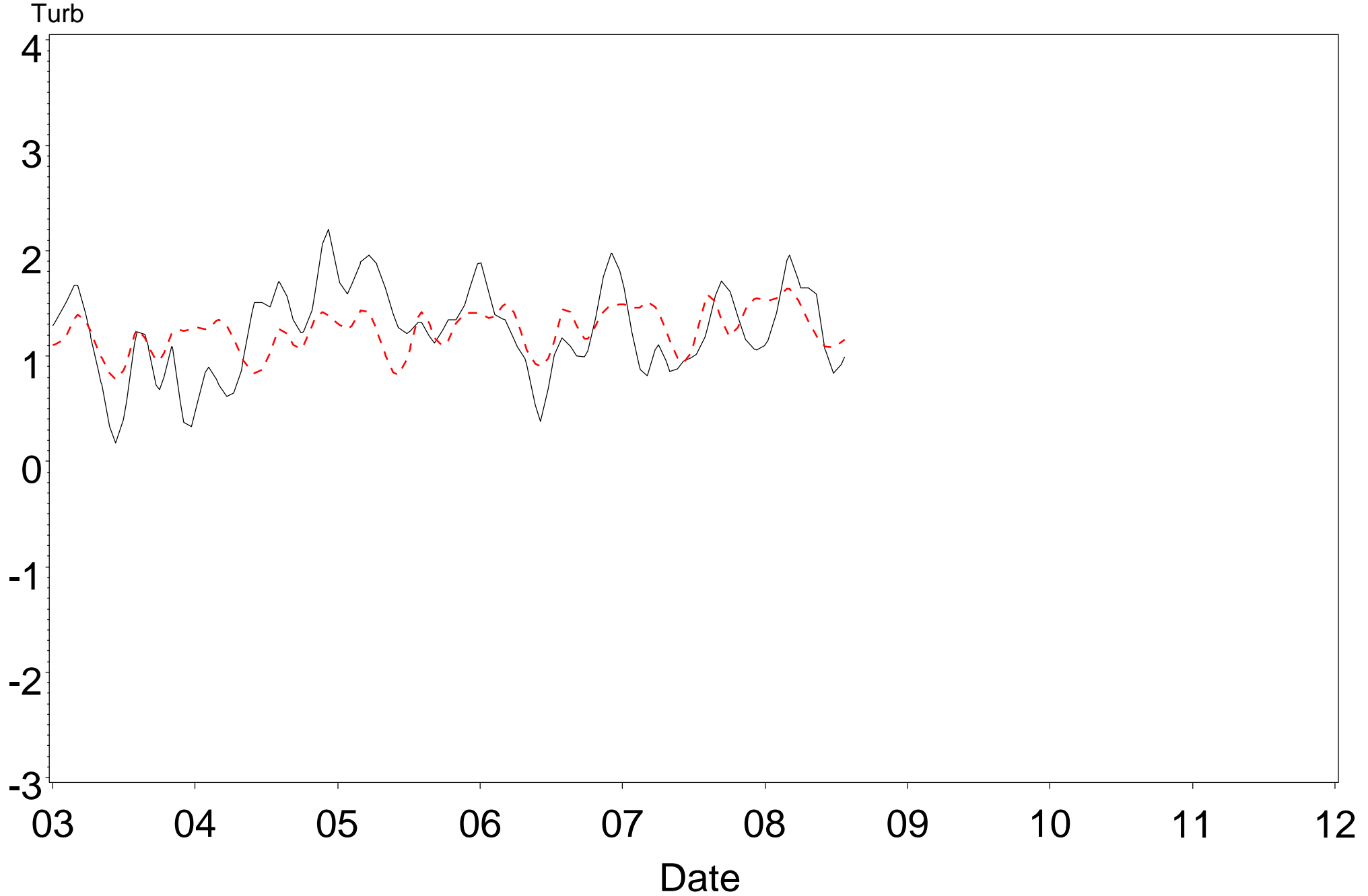
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	39	1.03	0.4420
date1	1	9.54	1.50	0.2494
temp_dev	1	189	1.36	0.2455

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Tidal Peace

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	409
Number of Observations Not Used	151

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	586.25094690	
1	3	464.60942401	0.03281115
2	2	460.42749466	0.02330080
3	1	456.92628441	0.00158784
4	1	456.70126969	0.00001183
5	1	456.69966933	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02670	0.01999	1.34	0.0908
Variance	Intercept	0.09614	0.02384	4.03	<.0001
SP(POW)	Intercept	0.4075	0.1451	2.81	0.0050
Residual		0.1213	0.009565	12.69	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	456.7
AIC (smaller is better)	464.7
AICC (smaller is better)	464.8
BIC (smaller is better)	463.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		73.4908	37.9026	12.3	1.94	0.0758
season	1	0.06139	0.1583	58	0.39	0.6996
season	2	0.1882	0.1772	62.8	1.06	0.2924
season	3	0.1239	0.1838	61.4	0.67	0.5027
season	4	0.2115	0.1857	58.2	1.14	0.2594
season	5	0.4690	0.1861	56.2	2.52	0.0146
season	6	0.4924	0.1869	55.7	2.63	0.0109
season	7	0.9981	0.1864	56.3	5.35	<.0001
season	8	1.0398	0.1853	58.4	5.61	<.0001
season	9	0.9650	0.1907	62.6	5.06	<.0001
season	10	0.7509	0.1837	63.2	4.09	0.0001
season	11	0.3156	0.1534	53.3	2.06	0.0446
season	12	0	.	.	.	.
date1		-0.03670	0.01888	12.3	-1.94	0.0752
temp_dev		0.02890	0.03691	93.1	0.78	0.4356

Mixed Model With Local Nugget

The Mixed Procedure

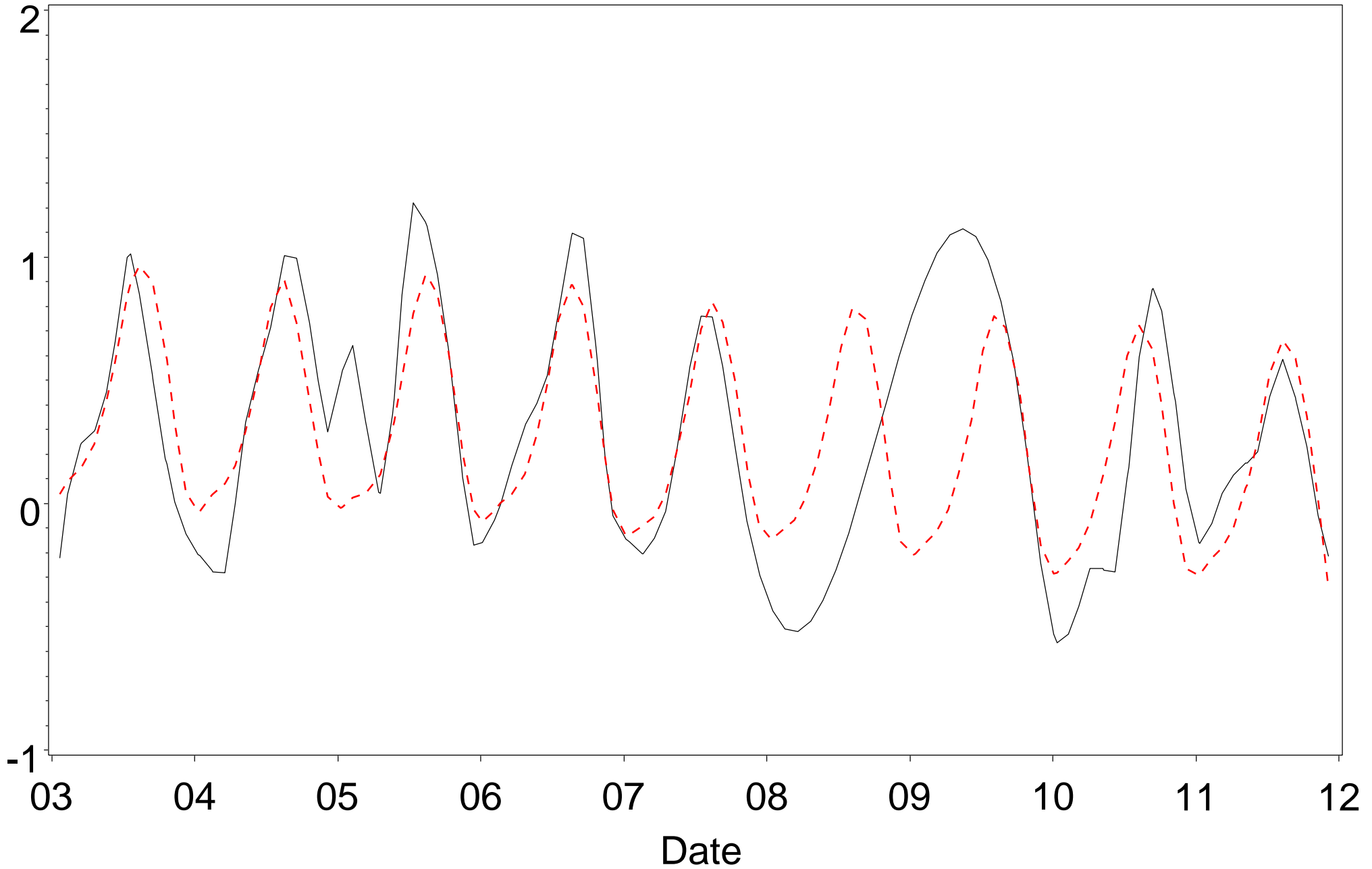
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	55.2	5.41	<.0001
date1	1	12.3	3.78	0.0752
temp_dev	1	93.1	0.61	0.4356

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = BOD 5-Day (mg/l) and Sample Level = Surface

Log Scale
BOD_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1077.80628307	
1	2	907.99382825	0.54525739
2	2	904.53963850	0.20453885
3	1	899.61934270	0.01705386
4	1	899.19934789	0.00016638
5	1	899.19538741	0.00000002
6	1	899.19538702	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02401	0.01847	1.30	0.0968
Variance	Intercept	0.2061	0.04286	4.81	<.0001
SP(POW)	Intercept	0.4412	0.1176	3.75	0.0002
Residual		0.2208	0.01528	14.45	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	899.2
AIC (smaller is better)	907.2
AICC (smaller is better)	907.3
BIC (smaller is better)	905.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-95.1643	54.9380	15.9	-1.73	0.1026
season	1	-0.1840	0.1942	76.7	-0.95	0.3463
season	2	-0.09776	0.2205	84.2	-0.44	0.6587
season	3	-0.1448	0.2304	83.7	-0.63	0.5314
season	4	0.08470	0.2341	79.6	0.36	0.7185
season	5	0.4335	0.2354	76.6	1.84	0.0695
season	6	0.7661	0.2357	75.6	3.25	0.0017
season	7	1.2936	0.2351	76.9	5.50	<.0001
season	8	1.2510	0.2335	80.2	5.36	<.0001
season	9	1.3337	0.2361	85.1	5.65	<.0001
season	10	1.0307	0.2249	82.9	4.58	<.0001
season	11	0.3682	0.1890	71.9	1.95	0.0553
season	12	0	.	.	.	.
date1		0.04799	0.02736	15.9	1.75	0.0987
temp_dev		0.1304	0.04525	129	2.88	0.0046

Mixed Model With Local Nugget

The Mixed Procedure

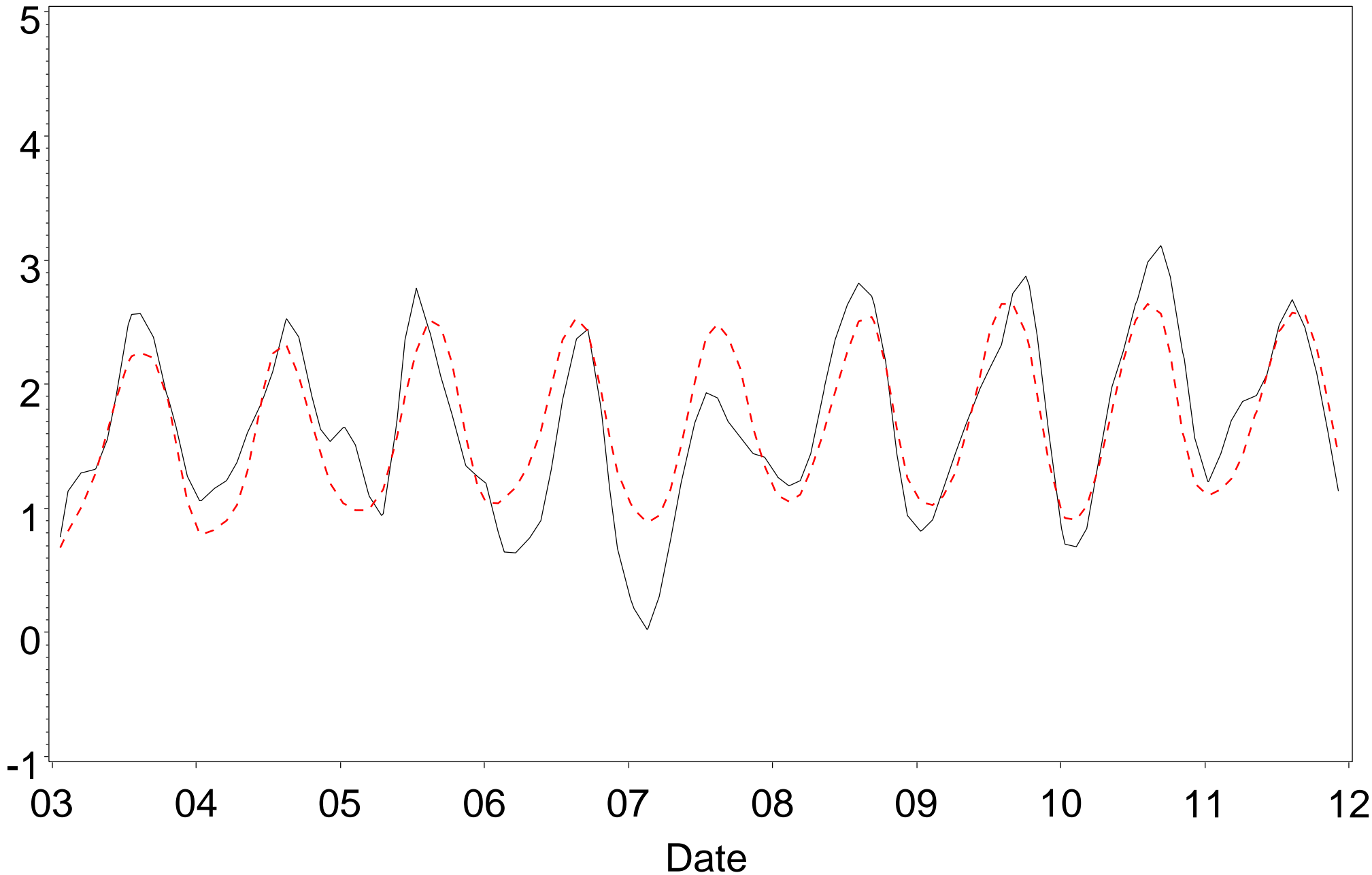
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.1	7.44	<.0001
date1	1	15.9	3.08	0.0987
temp_dev	1	129	8.30	0.0046

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	688.99258579	
1	3	244.62550772	0.03524245
2	1	229.56544143	0.01369672
3	2	223.60675205	0.00779275
4	1	220.27698991	0.00090878
5	1	219.92790256	0.00000965
6	1	219.92437246	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03911	0.02809	1.39	0.0819
Variance	Intercept	0.1332	0.02624	5.08	<.0001
SP(POW)	Intercept	0.4638	0.09748	4.76	<.0001
Residual		0.04981	0.003442	14.47	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	219.9
AIC (smaller is better)	227.9
AICC (smaller is better)	228.0
BIC (smaller is better)	226.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		36.4079	43.9621	15.8	0.83	0.4199
season	1	-0.1417	0.1396	84	-1.01	0.3133
season	2	-0.1030	0.1629	89	-0.63	0.5290
season	3	-0.1376	0.1721	82.4	-0.80	0.4263
season	4	0.06244	0.1758	75.1	0.36	0.7234
season	5	-0.07059	0.1772	70.8	-0.40	0.6915
season	6	0.2516	0.1775	69.5	1.42	0.1607
season	7	0.5639	0.1769	71.2	3.19	0.0021
season	8	0.7266	0.1752	76	4.15	<.0001
season	9	0.7910	0.1758	84.7	4.50	<.0001
season	10	0.5265	0.1658	89	3.18	0.0021
season	11	0.1858	0.1353	80	1.37	0.1736
season	12	0	.	.	.	.
date1		-0.01666	0.02190	15.8	-0.76	0.4580
temp_dev		0.08990	0.02925	192	3.07	0.0024

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	79.7	4.42	<.0001
date1	1	15.8	0.58	0.4580
temp_dev	1	192	9.45	0.0024

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Color (PCU) and Sample Level = Surface

Log Scale

COLOR

6

5

4

3

2

1

03

04

05

06

07

08

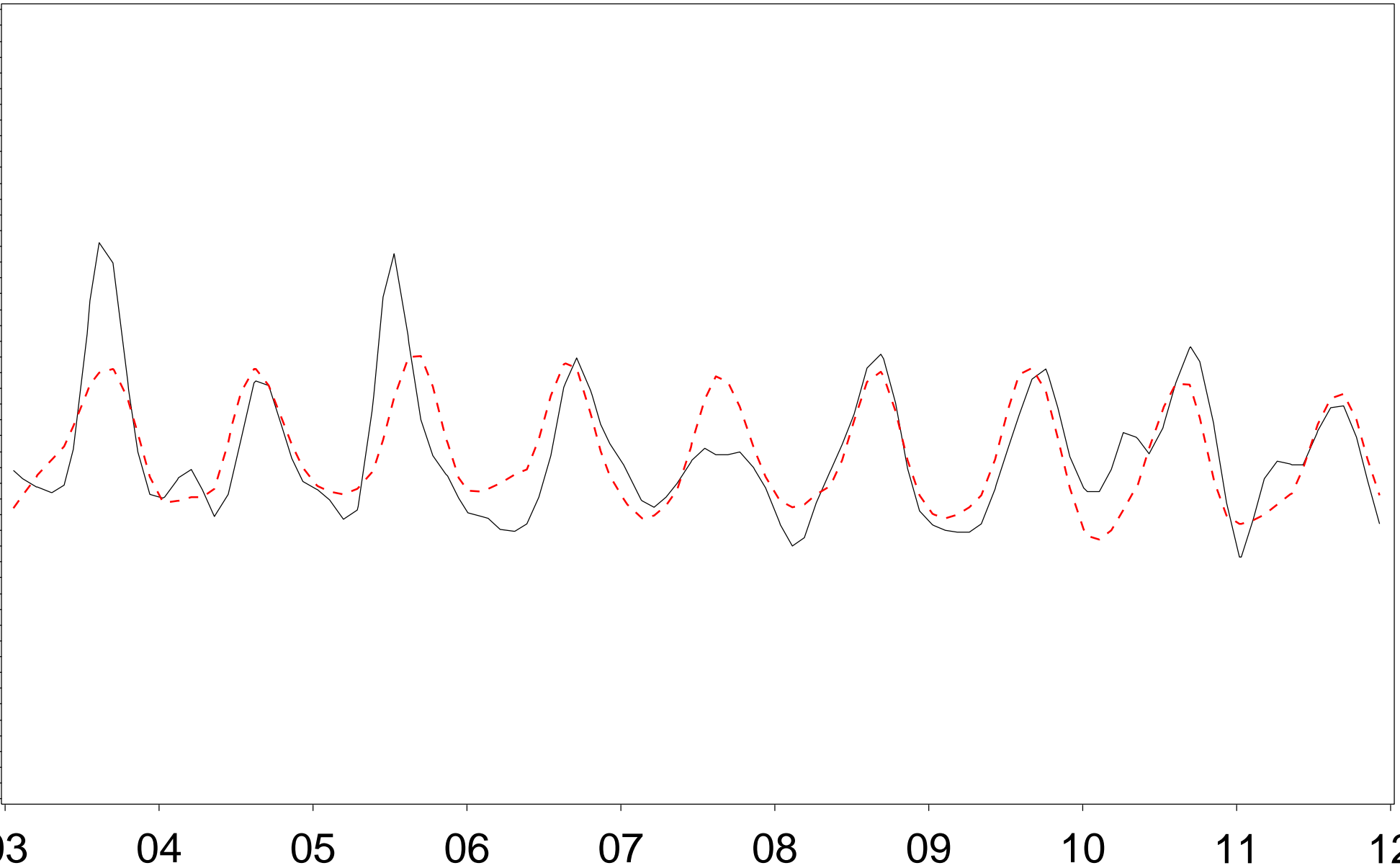
09

10

11

12

Date



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	559
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-125.32381018	
1	3	-736.72806585	0.06656426
2	1	-808.15055553	0.01763591
3	1	-827.73184553	0.00633538
4	2	-835.61031779	0.00433627
5	2	-840.21796512	0.00083526
6	1	-841.05666324	0.00001933
7	1	-841.07475524	0.00000001
8	1	-841.07476582	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002064	0.001518	1.36	0.0870
Variance	Intercept	0.03865	0.006862	5.63	<.0001
SP(POW)	Intercept	0.4271	0.09347	4.57	<.0001
Residual		0.006006	0.000404	14.85	<.0001

Fit Statistics	
-2 Res Log Likelihood	-841.1
AIC (smaller is better)	-833.1
AICC (smaller is better)	-833.0
BIC (smaller is better)	-834.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-26.4843	20.7090	18	-1.28	0.2171
season	1	-0.01075	0.07155	82.7	-0.15	0.8809
season	2	-0.00929	0.08406	94.9	-0.11	0.9123
season	3	0.04187	0.08872	89.2	0.47	0.6381
season	4	0.009704	0.09049	81.4	0.11	0.9149
season	5	0.08080	0.09112	76.7	0.89	0.3780
season	6	-0.04390	0.09129	75.2	-0.48	0.6320
season	7	-0.1070	0.09312	78.4	-1.15	0.2541

Mixed Model With Local Nugget

The Mixed Procedure

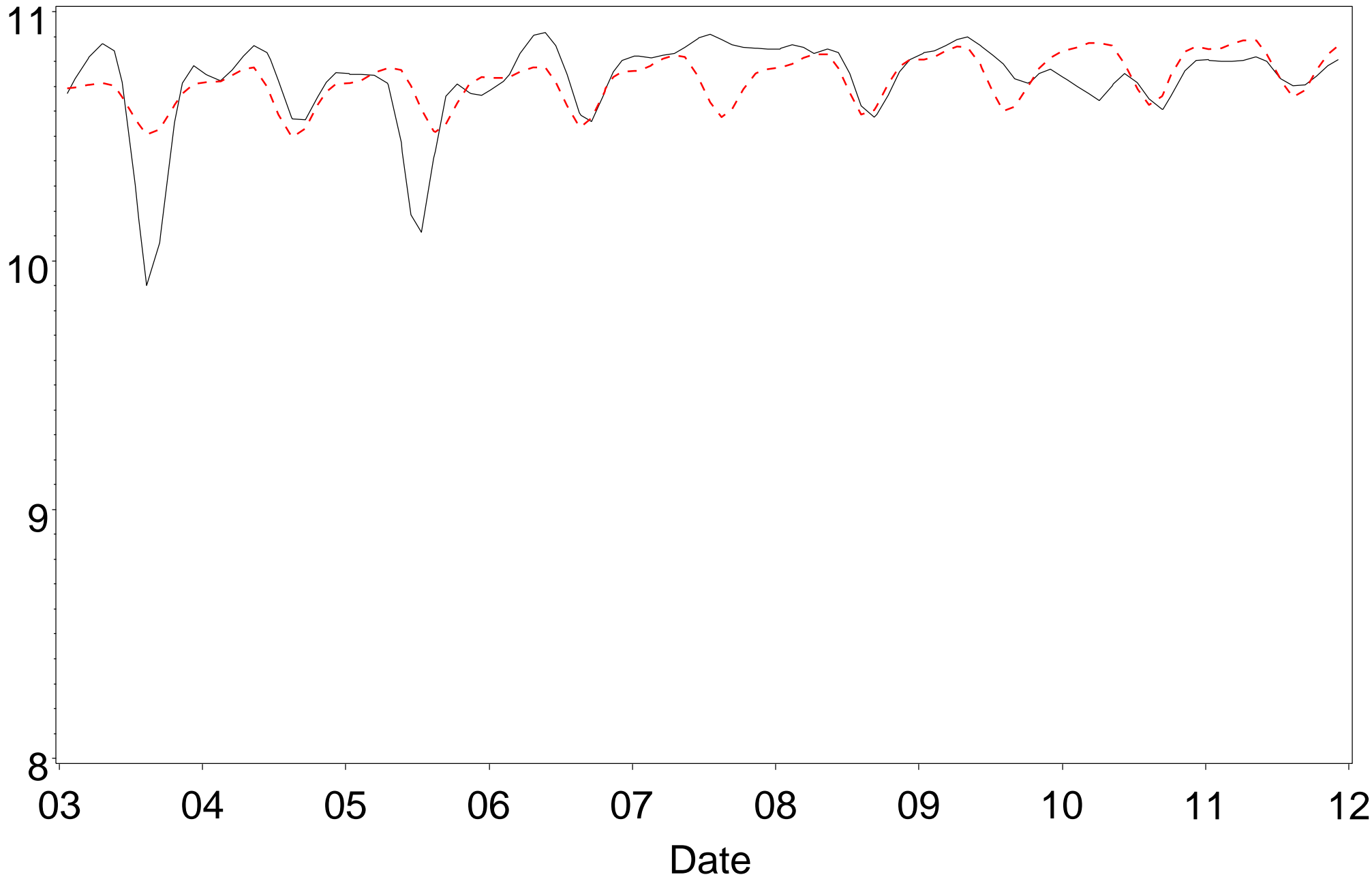
Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.2769	0.09276	82.2	-2.99	0.0037
season	9	-0.1870	0.09345	90.5	-2.00	0.0483
season	10	-0.06462	0.08857	94.9	-0.73	0.4674
season	11	-0.01311	0.07237	80.3	-0.18	0.8567
season	12	0	.	.	.	.
date1		0.01856	0.01031	18	1.80	0.0887
temp_dev		-0.01605	0.01256	338	-1.28	0.2022

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82	1.80	0.0675
date1	1	18	3.24	0.0887
temp_dev	1	338	1.63	0.2022

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale
COND
Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	559
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1555.92710189	
1	2	1336.39276021	0.05560441
2	2	1323.46046906	0.04938019
3	2	1315.98096950	0.01396844
4	1	1313.50914562	0.00085505
5	1	1313.36805666	0.00000816
6	1	1313.36677481	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.08228	0.06125	1.34	0.0896
Variance	Intercept	0.5501	0.1000	5.50	<.0001
SP(POW)	Intercept	0.2501	0.1132	2.21	0.0271
Residual		0.3962	0.02704	14.65	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1313.4
AIC (smaller is better)	1321.4
AICC (smaller is better)	1321.4
BIC (smaller is better)	1319.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		122.61	68.1899	23.5	1.80	0.0850
season	1	0.2459	0.3253	70.1	0.76	0.4522
season	2	0.3023	0.3571	86.2	0.85	0.3996
season	3	0.05774	0.3635	84.4	0.16	0.8742
season	4	-0.6789	0.3644	82	-1.86	0.0661
season	5	-1.2219	0.3644	81	-3.35	0.0012
season	6	-1.5580	0.3644	80.8	-4.28	<.0001
season	7	-0.8854	0.3737	81.7	-2.37	0.0202
season	8	-1.6750	0.3740	82.1	-4.48	<.0001
season	9	-1.6476	0.3846	85.1	-4.28	<.0001
season	10	-0.9644	0.3774	86.2	-2.56	0.0124
season	11	-0.4767	0.3312	67.7	-1.44	0.1548
season	12	0	.	.	.	.
date1		-0.05763	0.03396	23.5	-1.70	0.1029
temp_dev		-0.02734	0.07049	159	-0.39	0.6987

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.7	6.14	<.0001
date1	1	23.5	2.88	0.1029
temp_dev	1	159	0.15	0.6987

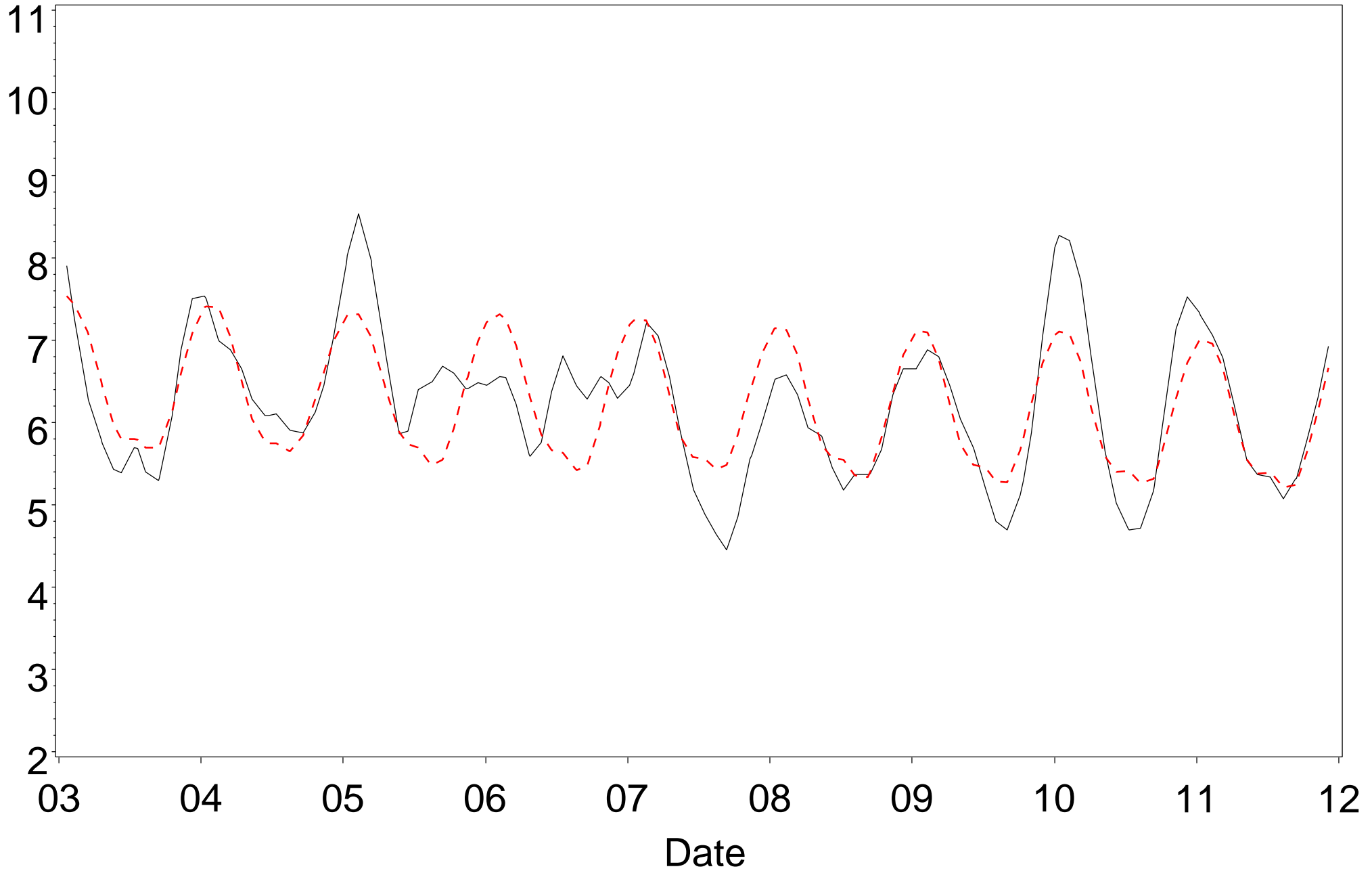
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface

Log Scale

DO_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	551
Number of Observations Not Used	9

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	682.25275038	
1	3	438.19644035	0.03343287
2	1	426.17946351	0.03441506
3	2	420.62191607	0.01774612
4	1	414.84805804	0.00136014
5	1	414.43646669	0.00001205
6	1	414.43299597	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01493	0.01116	1.34	0.0905
Variance	Intercept	0.1085	0.01967	5.51	<.0001
SP(POW)	Intercept	0.3270	0.1056	3.10	0.0020
Residual		0.07712	0.005229	14.75	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	414.4
AIC (smaller is better)	422.4
AICC (smaller is better)	422.5
BIC (smaller is better)	420.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		6.4674	32.4228	21.7	0.20	0.8438
season	1	-0.2200	0.1388	83.2	-1.59	0.1168
season	2	-0.1948	0.1557	95.4	-1.25	0.2138
season	3	-0.07678	0.1604	91.1	-0.48	0.6333
season	4	-0.1051	0.1623	87.3	-0.65	0.5189
season	5	-0.1505	0.1619	83.7	-0.93	0.3552
season	6	0.08910	0.1620	82.9	0.55	0.5838
season	7	0.2512	0.1659	84.8	1.51	0.1336
season	8	0.4639	0.1658	86.5	2.80	0.0064
season	9	0.3873	0.1704	93.9	2.27	0.0253
season	10	0.2822	0.1643	95.3	1.72	0.0892
season	11	0.05816	0.1410	80.6	0.41	0.6811
season	12	0	.	.	.	.
date1		-0.00272	0.01615	21.7	-0.17	0.8676
temp_dev		0.03943	0.03075	171	1.28	0.2015

Mixed Model With Local Nugget

The Mixed Procedure

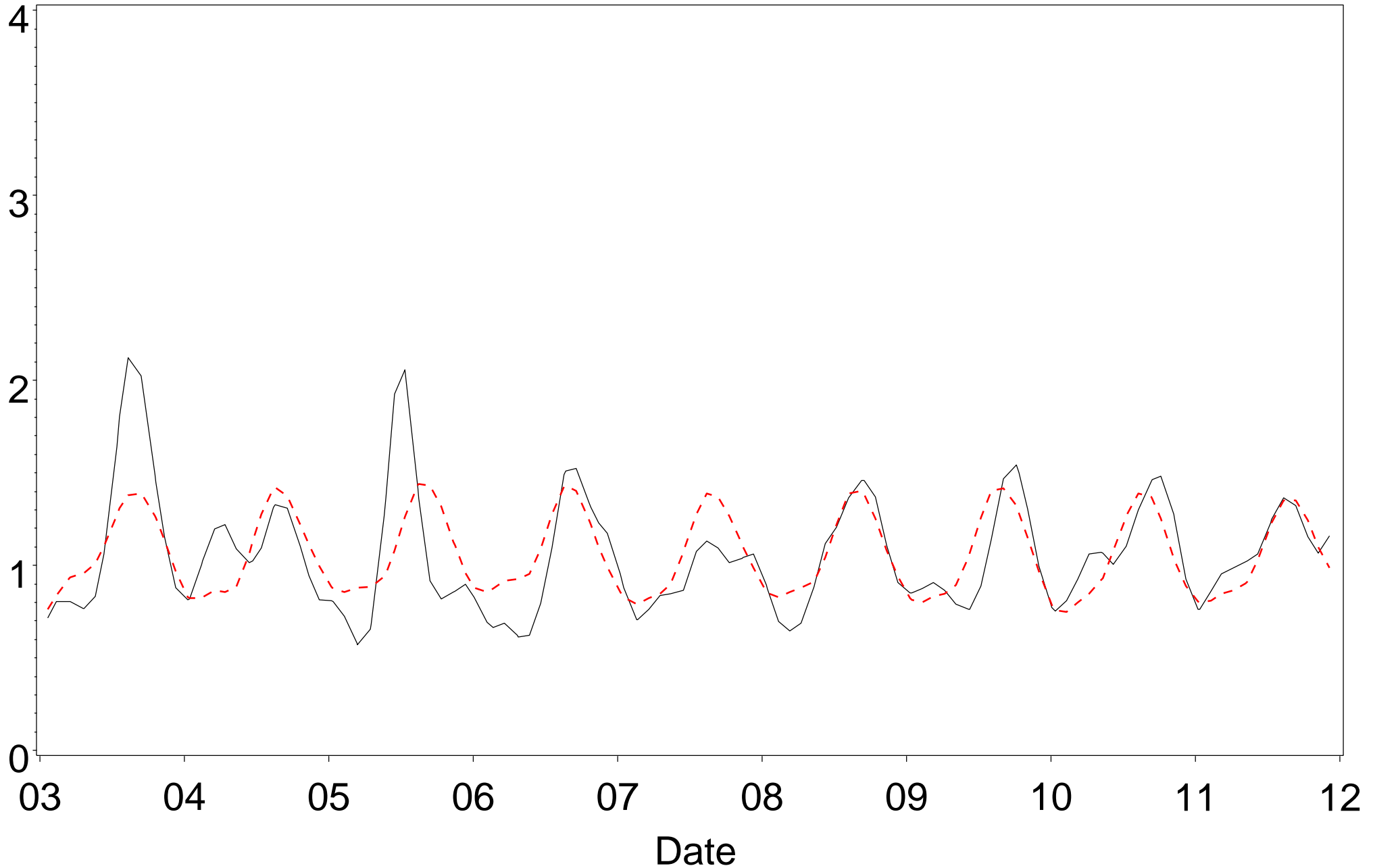
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	83.8	2.75	0.0043
date1	1	21.7	0.03	0.8676
temp_dev	1	171	1.64	0.2015

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	430
Number of Observations Not Used	130

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1112.79801547	
1	2	928.96329950	0.14481570
2	2	923.90891810	0.08918959
3	2	915.04703096	0.02171852
4	2	913.30179311	0.00060975
5	1	913.25516185	0.00000125
6	1	913.25506841	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1285	0.09421	1.36	0.0863
Variance	Intercept	0.3644	0.07511	4.85	<.0001
SP(POW)	Intercept	0.2020	0.1347	1.50	0.1337
Residual		0.3214	0.02469	13.02	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	913.3
AIC (smaller is better)	921.3
AICC (smaller is better)	921.4
BIC (smaller is better)	919.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-6.2633	83.0554	20.6	-0.08	0.9406
season	1	-0.5018	0.3118	56.8	-1.61	0.1130
season	2	-0.9093	0.3375	70.3	-2.69	0.0088
season	3	-1.0996	0.3407	67.9	-3.23	0.0019
season	4	-1.0137	0.3397	66.2	-2.98	0.0040
season	5	-1.2358	0.3395	65.8	-3.64	0.0005
season	6	-0.8785	0.3392	65.6	-2.59	0.0118
season	7	-1.0990	0.3403	66	-3.23	0.0019
season	8	-0.6863	0.3395	66.2	-2.02	0.0473
season	9	-0.5312	0.3395	67.7	-1.56	0.1223
season	10	-1.0994	0.3363	70.1	-3.27	0.0017
season	11	-0.5168	0.2997	54.9	-1.72	0.0902
season	12	0	.	.	.	.
date1		0.001449	0.04135	20.6	0.04	0.9724
temp_dev		-0.04771	0.07309	126	-0.65	0.5150

Mixed Model With Local Nugget

The Mixed Procedure

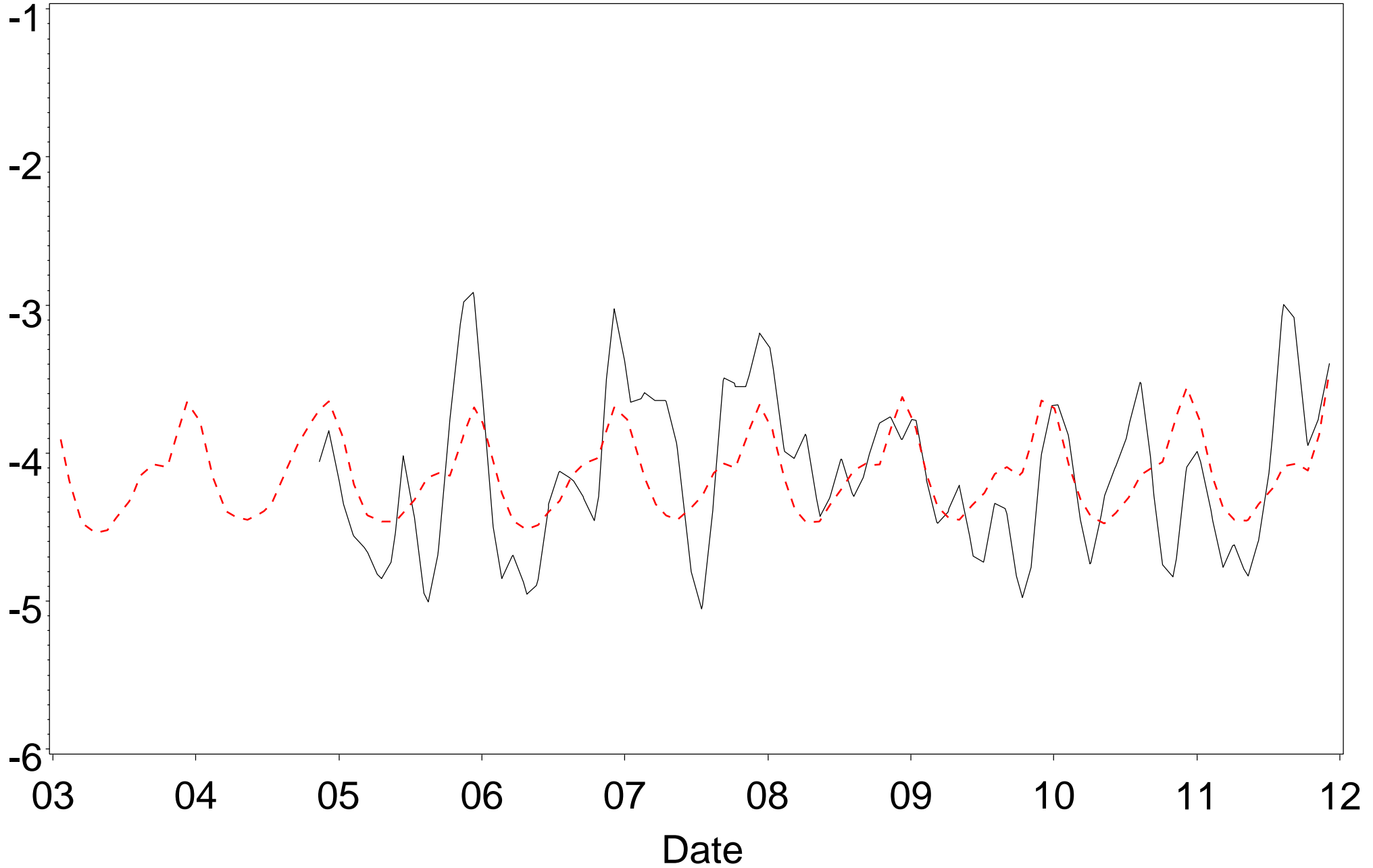
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	58.6	2.04	0.0400
date1	1	20.6	0.00	0.9724
temp_dev	1	126	0.43	0.5150

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1060.27734371	
1	2	837.13836811	0.98927584
2	2	831.57985301	0.10052498
3	2	824.86785607	0.00888124
4	1	824.30855863	0.00005869
5	1	824.30495249	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1456	0.1045	1.39	0.0817
Variance	Intercept	0.1010	0.02197	4.60	<.0001
SP(POW)	Intercept	0.2413	0.1486	1.62	0.1045
Residual		0.2008	0.01389	14.46	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	824.3
AIC (smaller is better)	832.3
AICC (smaller is better)	832.4
BIC (smaller is better)	830.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-9.4872	34.1176	21.7	-0.28	0.7836
season	1	-0.09709	0.1638	72.8	-0.59	0.5553
season	2	-0.1625	0.1759	88.6	-0.92	0.3580
season	3	-0.4825	0.1776	87.6	-2.72	0.0080
season	4	-0.2369	0.1777	85.7	-1.33	0.1859
season	5	-0.4720	0.1775	85	-2.66	0.0094
season	6	-0.1905	0.1774	84.8	-1.07	0.2859
season	7	-0.4788	0.1774	85	-2.70	0.0084
season	8	-0.1172	0.1774	85.9	-0.66	0.5106
season	9	-0.03430	0.1831	88.9	-0.19	0.8519
season	10	-0.2831	0.1805	88.1	-1.57	0.1204
season	11	-0.04041	0.1615	67.4	-0.25	0.8031
season	12	0	.	.	.	.
date1		0.002359	0.01699	21.7	0.14	0.8909
temp_dev		-0.02950	0.03788	124	-0.78	0.4376

Mixed Model With Local Nugget

The Mixed Procedure

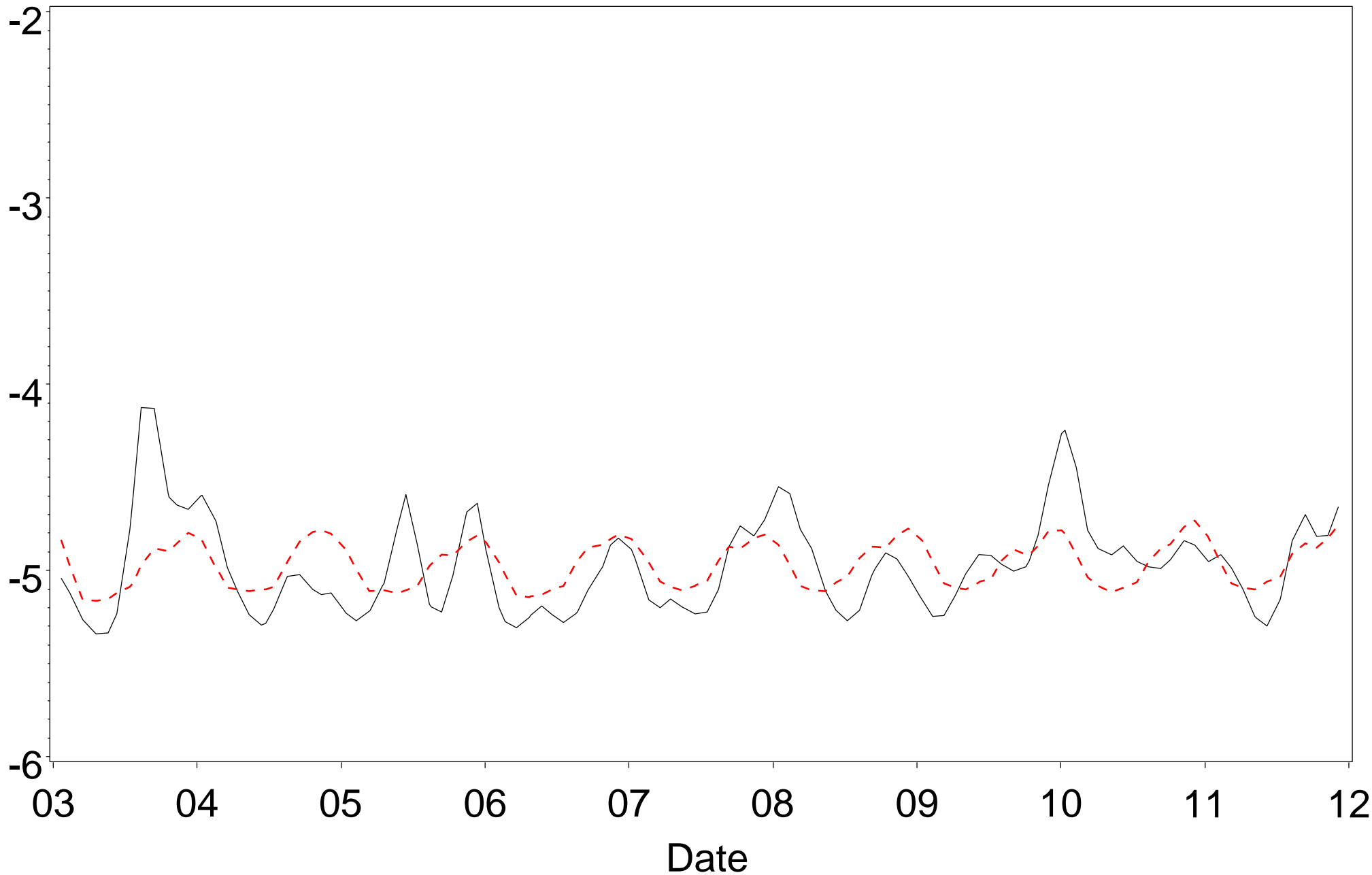
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.3	2.04	0.0361
date1	1	21.7	0.02	0.8909
temp_dev	1	124	0.61	0.4376

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	559
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-157.13052974	
1	2	-734.80961614	0.00970883
2	1	-745.47059297	0.00859284
3	2	-749.44718604	0.00572995
4	1	-755.26058524	0.00054656
5	1	-755.77614885	0.00000800
6	1	-755.78324511	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01695	0.01205	1.41	0.0799
Variance	Intercept	0.01960	0.003508	5.59	<.0001
SP(POW)	Intercept	0.3914	0.1058	3.70	0.0002
Residual		0.008133	0.000547	14.87	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-755.8
AIC (smaller is better)	-747.8
AICC (smaller is better)	-747.7
BIC (smaller is better)	-749.3

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-23.1472	14.3743	17.8	-1.61	0.1249
season	1	0.06483	0.05441	79.7	1.19	0.2370
season	2	-0.02207	0.06268	95.4	-0.35	0.7256
season	3	0.07104	0.06550	91.5	1.08	0.2810
season	4	-0.01484	0.06645	84.6	-0.22	0.8238
season	5	0.07406	0.06675	80.4	1.11	0.2705
season	6	-0.03043	0.06682	79.1	-0.46	0.6500
season	7	0.1604	0.06829	82.1	2.35	0.0213
season	8	0.02124	0.06815	85.2	0.31	0.7561
season	9	0.007006	0.06912	92.8	0.10	0.9195
season	10	-0.03365	0.06612	95.2	-0.51	0.6119
season	11	-0.05368	0.05513	76.9	-0.97	0.3333
season	12	0	.	.	.	.
date1		0.01545	0.007159	17.8	2.16	0.0448
temp_dev		0.01156	0.01151	197	1.00	0.3162

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	81.2	2.50	0.0093
date1	1	17.8	4.66	0.0448
temp_dev	1	197	1.01	0.3162

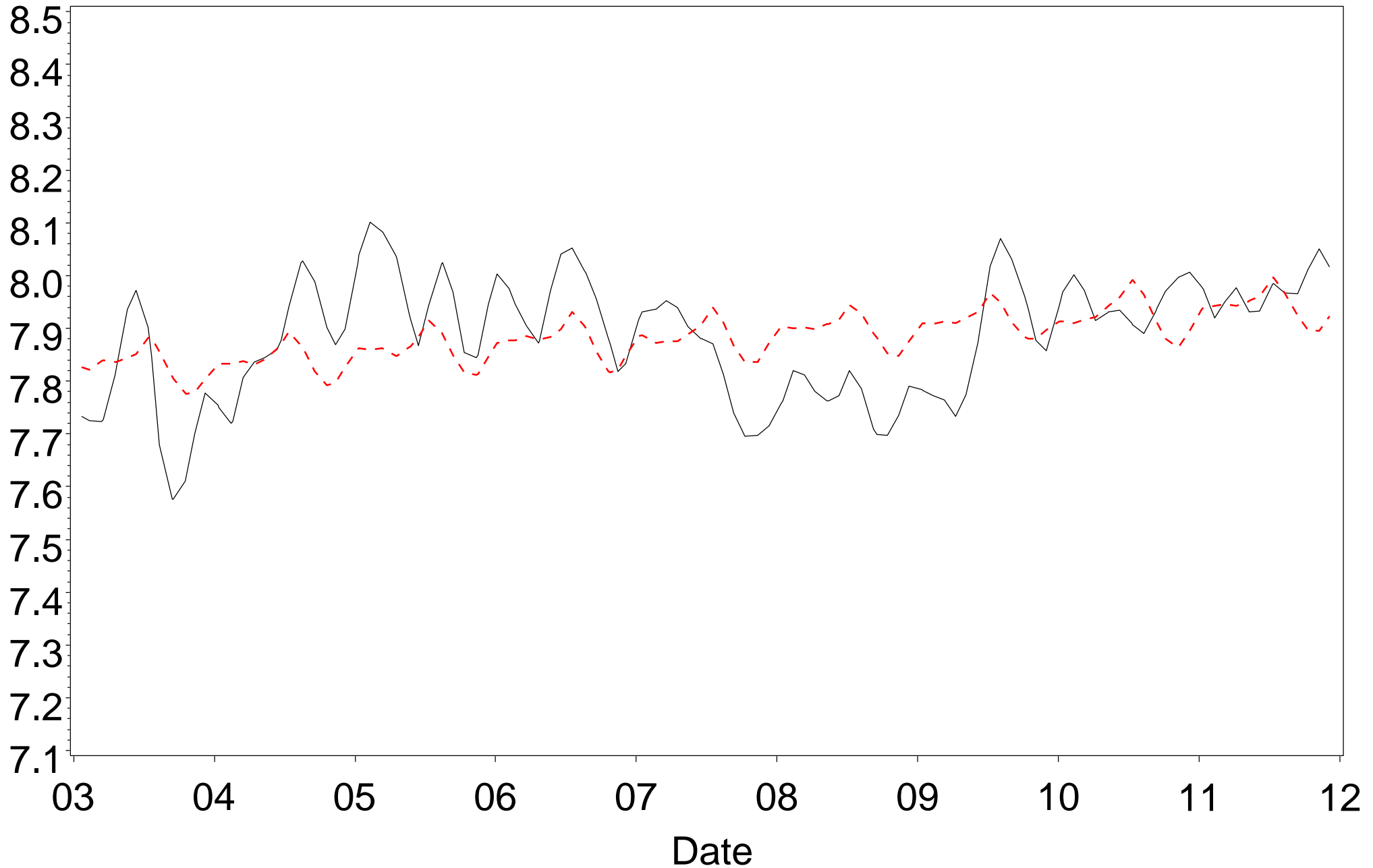
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = pH (SU) and Sample Level = Surface

Log Scale

PH



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	310
Number of Observations Not Used	250

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	473.50230859	
1	2	240.91274820	0.01548942
2	1	237.91510750	0.01034386
3	2	237.28354222	0.00689884
4	1	236.09461770	0.00041957
5	1	236.02535882	0.00000712
6	1	236.02424620	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.1198	0.08572	1.40	0.0811
Variance	Intercept	0.08156	0.02595	3.14	0.0008
SP(POW)	Intercept	0.5564	0.1415	3.93	<.0001
Residual		0.07973	0.007174	11.11	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	236.0
AIC (smaller is better)	244.0
AICC (smaller is better)	244.2
BIC (smaller is better)	242.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		11.8152	53.1140	6.83	0.22	0.8305
season	1	-0.2539	0.1444	48.1	-1.76	0.0850
season	2	-0.3932	0.1695	46.4	-2.32	0.0248
season	3	-0.3186	0.1814	44.1	-1.76	0.0859
season	4	-0.3231	0.1866	40.6	-1.73	0.0909
season	5	-0.2187	0.1892	38.2	-1.16	0.2548
season	6	0.1259	0.1900	37.2	0.66	0.5118
season	7	-0.02288	0.1894	37.7	-0.12	0.9045
season	8	0.2425	0.1874	39.8	1.29	0.2032
season	9	0.2832	0.1827	43.4	1.55	0.1283
season	10	0.2074	0.1711	47.4	1.21	0.2314
season	11	0.06287	0.1341	46.8	0.47	0.6413
season	12	0	.	.	.	.
date1		-0.00729	0.02645	6.83	-0.28	0.7909
temp_dev		0.08293	0.03622	69.4	2.29	0.0251

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	43.7	1.94	0.0594
date1	1	6.83	0.08	0.7909
temp_dev	1	69.4	5.24	0.0251

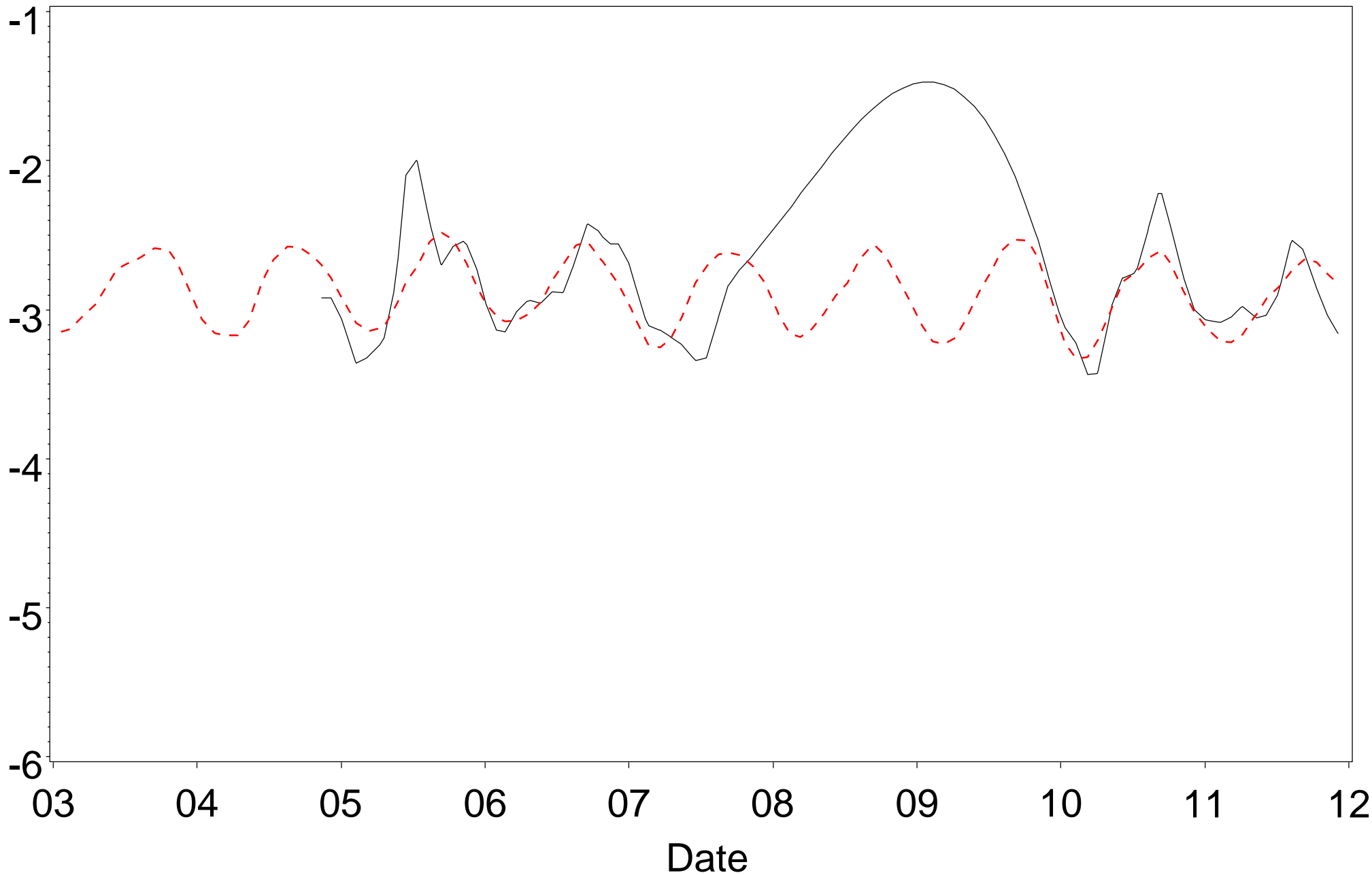
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale

Parameter = Orthophosphate (as P) (mg/l) and Sample Level = Surface

PO4_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	559
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-23.02461210	
1	3	-646.68247978	0.07098126
2	1	-718.94947868	0.01888484
3	1	-738.87781509	0.00657474
4	2	-746.67570592	0.00458005
5	2	-751.18044067	0.00096667
6	1	-752.10586066	0.00002373
7	1	-752.12702634	0.00000002
8	1	-752.12704108	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002519	0.001850	1.36	0.0867
Variance	Intercept	0.04691	0.008371	5.60	<.0001
SP(POW)	Intercept	0.4336	0.09306	4.66	<.0001
Residual		0.007033	0.000474	14.85	<.0001

Fit Statistics	
-2 Res Log Likelihood	-752.1
AIC (smaller is better)	-744.1
AICC (smaller is better)	-744.1
BIC (smaller is better)	-745.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-37.6751	22.9647	17.8	-1.64	0.1184
season	1	-0.01272	0.07835	82.8	-0.16	0.8715
season	2	-0.00939	0.09225	94.9	-0.10	0.9191
season	3	0.04653	0.09751	89.1	0.48	0.6344
season	4	0.009404	0.09954	81.2	0.09	0.9250
season	5	0.08791	0.1003	76.4	0.88	0.3835
season	6	-0.05430	0.1005	74.8	-0.54	0.5905
season	7	-0.1216	0.1025	78.2	-1.19	0.2391

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.3066	0.1020	82	-3.00	0.0035
season	9	-0.2136	0.1027	90.5	-2.08	0.0404
season	10	-0.07623	0.09720	94.8	-0.78	0.4348
season	11	-0.01541	0.07923	80.5	-0.19	0.8463
season	12	0	.	.	.	.
date1		0.02048	0.01144	17.8	1.79	0.0904
temp_dev		-0.01964	0.01366	342	-1.44	0.1515

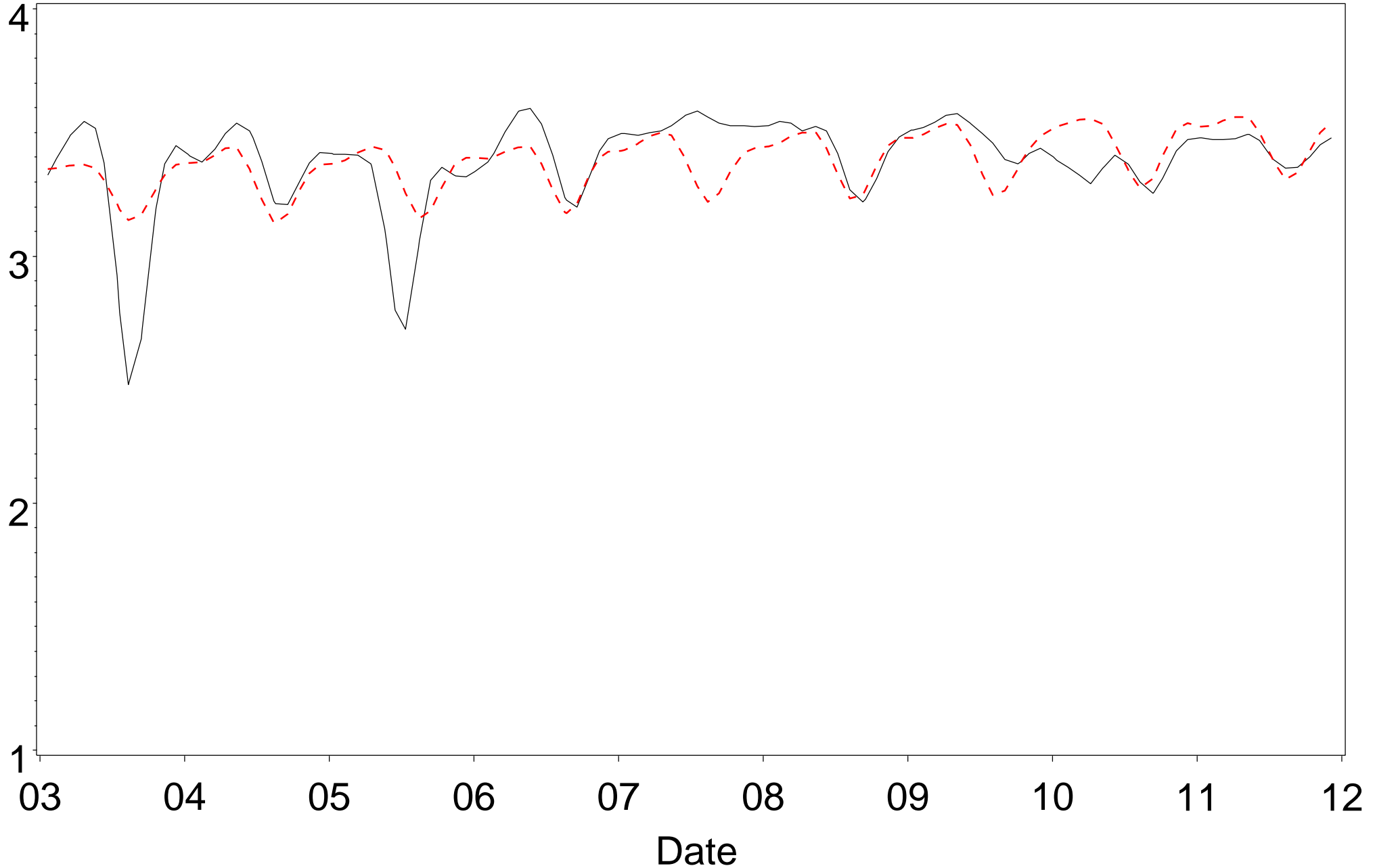
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82	1.83	0.0617
date1	1	17.8	3.21	0.0904
temp_dev	1	342	2.07	0.1515

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Salinity (ppt) and Sample Level = Surface

Log Scale
Salinity



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	559
Number of Observations Not Used	1

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1400.72651047	
1	4	-2357.10683624	0.07062112
2	1	-2506.39142294	.
3	2	-2578.95201985	0.01093685
4	2	-2603.13338262	0.00317297
5	1	-2610.20059384	0.00104232
6	1	-2612.58962612	0.00044887
7	1	-2613.62770897	0.00018134
8	1	-2614.03543678	0.00004889
9	1	-2614.13936603	0.00000553
10	1	-2614.15016747	0.00000010
11	1	-2614.15034451	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000042	0.000032	1.32	0.0934
Variance	Intercept	0.007295	0.001128	6.47	<.0001
SP(POW)	Intercept	0.1896	0.1007	1.88	0.0597
Residual		0.000159	0.000011	14.68	<.0001

Fit Statistics	
-2 Res Log Likelihood	-2614.2
AIC (smaller is better)	-2606.2
AICC (smaller is better)	-2606.1
BIC (smaller is better)	-2607.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		10.8812	7.0431	25.4	1.54	0.1347
season	1	-0.1023	0.03573	72.4	-2.86	0.0055
season	2	-0.03130	0.03887	91.3	-0.81	0.4228
season	3	0.1077	0.03931	87.7	2.74	0.0074
season	4	0.1994	0.03933	85.7	5.07	<.0001
season	5	0.3741	0.03932	85.2	9.51	<.0001
season	6	0.4680	0.03932	85	11.90	<.0001
season	7	0.4873	0.04034	85.8	12.08	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	0.4760	0.04037	85.8	11.79	<.0001
season	9	0.4578	0.04156	88.2	11.02	<.0001
season	10	0.3609	0.04109	91.3	8.78	<.0001
season	11	0.1481	0.03642	69.8	4.07	0.0001
season	12	0	.	.	.	.
date1		-0.00395	0.003508	25.4	-1.13	0.2708
temp_dev		0.04942	0.002624	481	18.83	<.0001

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.6	45.62	<.0001
date1	1	25.4	1.27	0.2708
temp_dev	1	481	354.59	<.0001

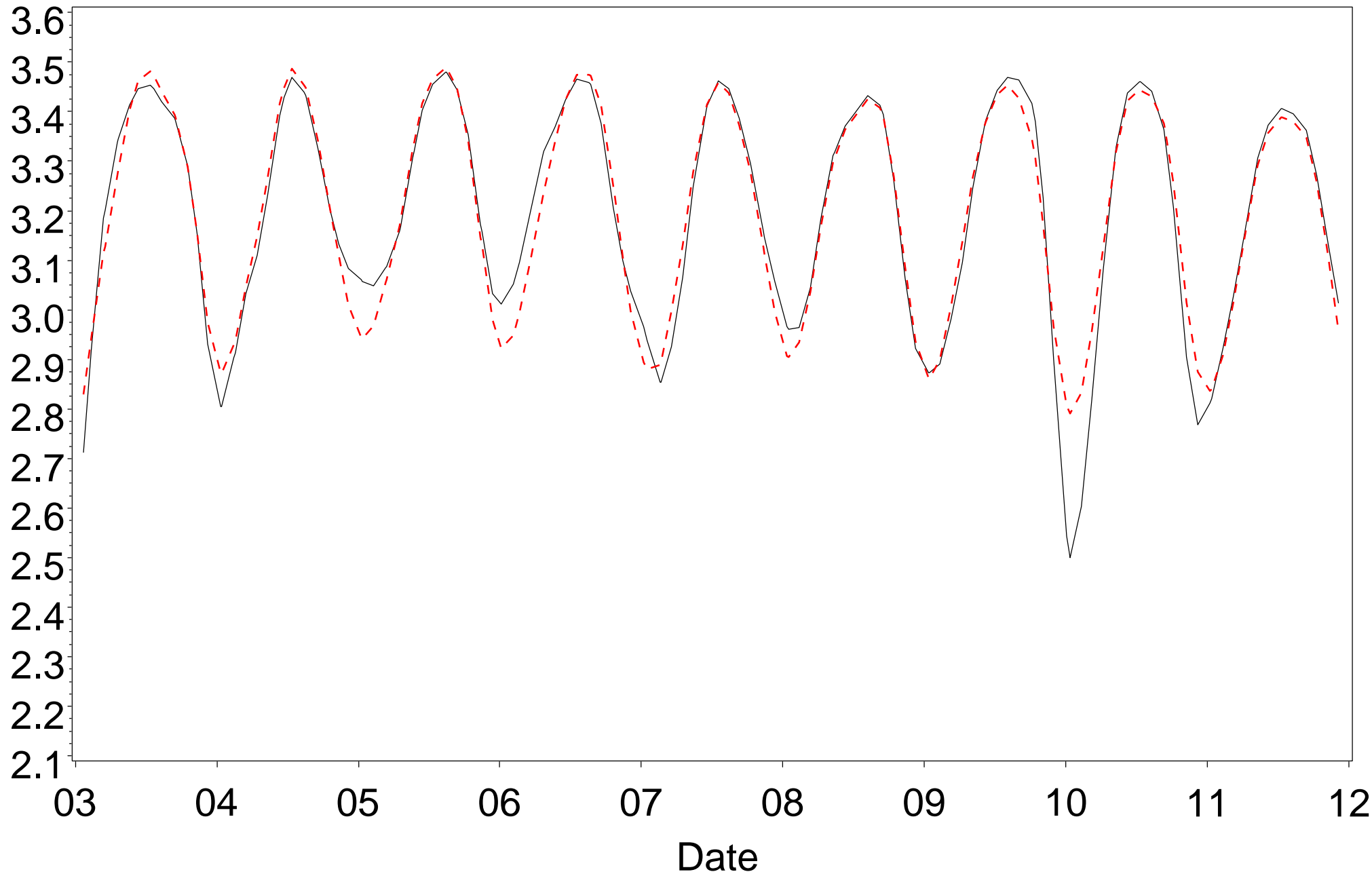
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale

TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	171.36139410	
1	3	-71.10776220	0.01885146
2	2	-84.37286174	0.02565951
3	2	-92.39724334	0.01333228
4	2	-100.52110586	0.00142790
5	1	-101.32456904	0.00002412
6	1	-101.33739228	0.00000001
7	1	-101.33739883	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr > Z
Station		0.005121	0.003815	1.34	0.0898
Variance	Intercept	0.04490	0.007611	5.90	<.0001
SP(POW)	Intercept	0.1563	0.1156	1.35	0.1766
Residual		0.02842	0.001964	14.47	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-101.3
AIC (smaller is better)	-93.3
AICC (smaller is better)	-93.3
BIC (smaller is better)	-94.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-23.7493	19.7161	28.2	-1.20	0.2384
season	1	-0.05665	0.09978	72.7	-0.57	0.5719
season	2	-0.1187	0.1060	92.2	-1.12	0.2659
season	3	0.006646	0.1064	90.2	0.06	0.9503
season	4	0.05156	0.1063	89.2	0.49	0.6287
season	5	0.01296	0.1062	89	0.12	0.9032
season	6	0.2088	0.1061	88.9	1.97	0.0523
season	7	0.4649	0.1061	89	4.38	<.0001
season	8	0.4215	0.1061	89.3	3.97	0.0001
season	9	0.3919	0.1095	90.9	3.58	0.0006
season	10	0.2702	0.1089	92	2.48	0.0149
season	11	0.1401	0.09856	67.4	1.42	0.1598
season	12	0	.	.	.	.
date1		0.01141	0.009819	28.2	1.16	0.2548
temp_dev		0.03279	0.02057	184	1.59	0.1126

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.8	5.59	<.0001
date1	1	28.2	1.35	0.2548
temp_dev	1	184	2.54	0.1126

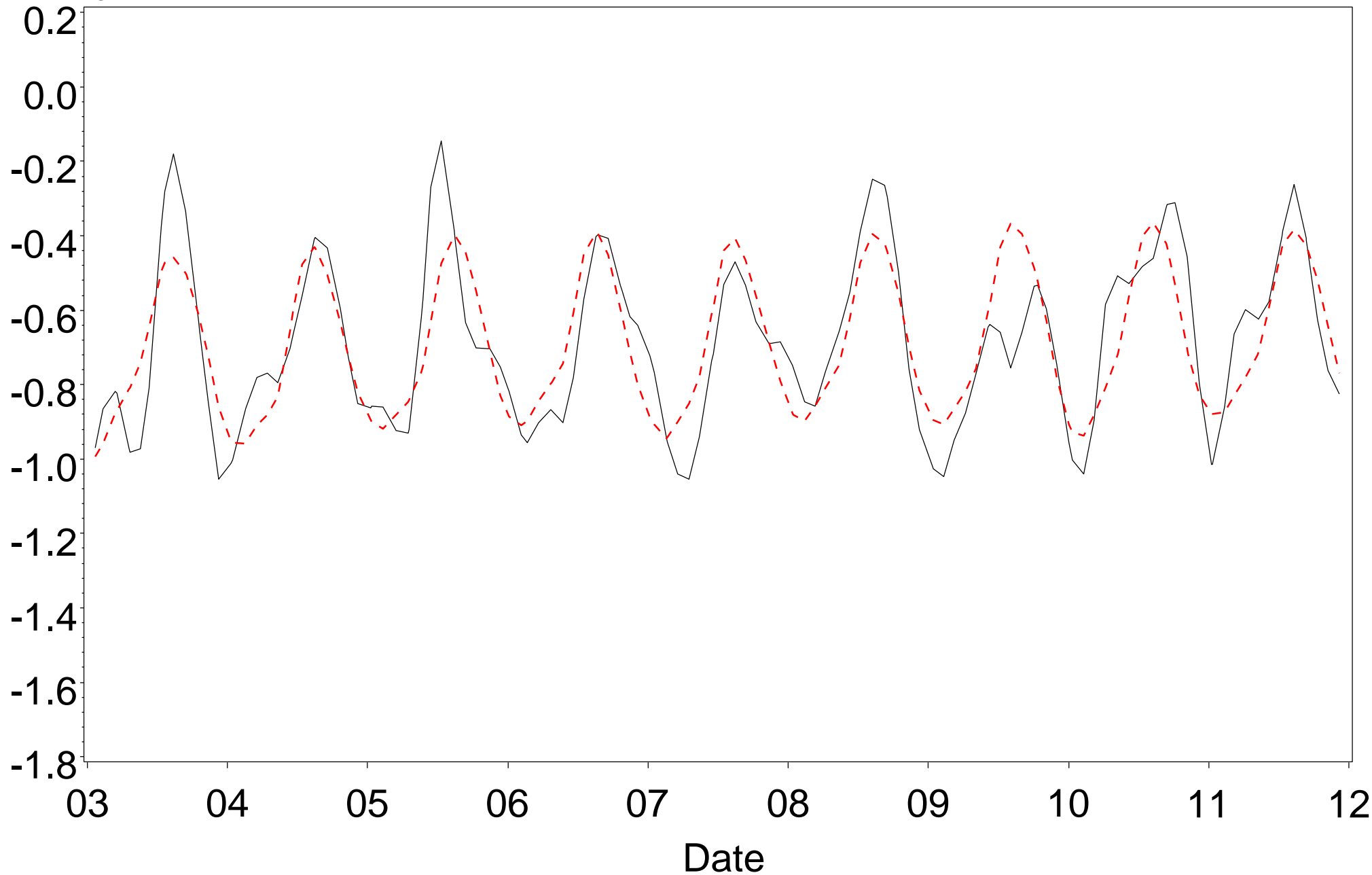
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TKN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	165.58493558	
1	3	-79.68206155	0.01925203
2	2	-93.19706547	0.02631875
3	2	-101.12036737	0.01375543
4	2	-109.61847069	0.00159246
5	1	-110.52349810	0.00002852
6	1	-110.53880676	0.00000002
7	1	-110.53881586	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004825	0.003607	1.34	0.0906
Variance	Intercept	0.04493	0.007599	5.91	<.0001
SP(POW)	Intercept	0.1570	0.1158	1.36	0.1749
Residual		0.02783	0.001923	14.47	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-110.5
AIC (smaller is better)	-102.5
AICC (smaller is better)	-102.5
BIC (smaller is better)	-104.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-23.7218	19.7116	28	-1.20	0.2389
season	1	-0.05688	0.09964	72.6	-0.57	0.5698
season	2	-0.1169	0.1059	92.2	-1.10	0.2724
season	3	-0.00654	0.1063	90.2	-0.06	0.9510
season	4	0.04272	0.1062	89.2	0.40	0.6884
season	5	0.000867	0.1061	89	0.01	0.9935
season	6	0.1992	0.1061	88.9	1.88	0.0635
season	7	0.4476	0.1060	89	4.22	<.0001
season	8	0.4133	0.1060	89.2	3.90	0.0002
season	9	0.3863	0.1094	90.9	3.53	0.0007
season	10	0.2639	0.1088	92.1	2.43	0.0172
season	11	0.1352	0.09842	67.3	1.37	0.1741
season	12	0	.	.	.	.
date1		0.01141	0.009817	28	1.16	0.2548
temp_dev		0.03162	0.02049	186	1.54	0.1244

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.7	5.42	<.0001
date1	1	28	1.35	0.2548
temp_dev	1	186	2.38	0.1244

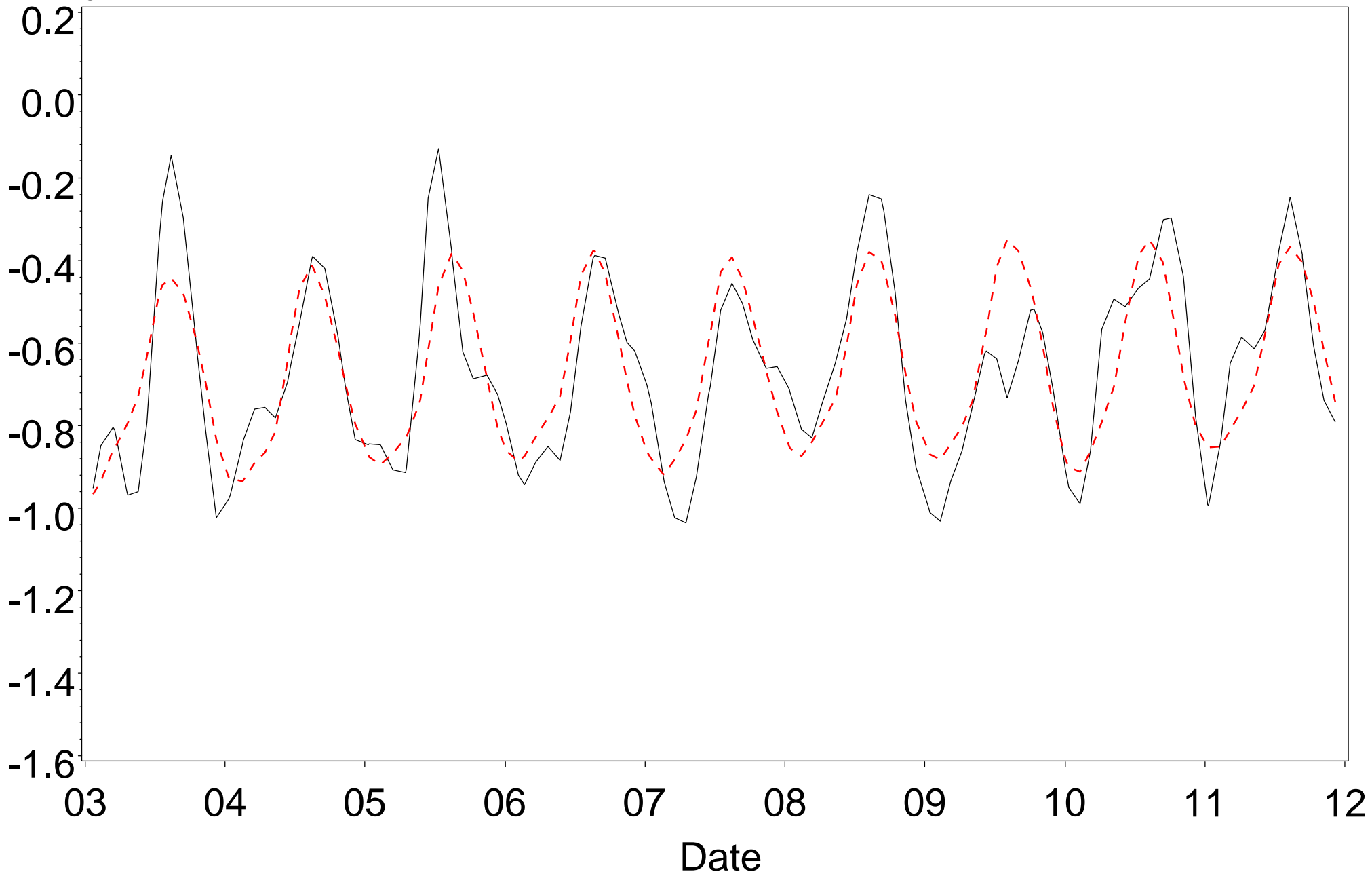
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale

TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	497.76632300	
1	2	145.90968428	0.01369713
2	1	138.99746157	0.00982003
3	2	137.67117980	0.00709679
4	1	134.43725458	0.00042129
5	1	134.25531923	0.00000574
6	1	134.25295290	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03223	0.02314	1.39	0.0818
Variance	Intercept	0.07312	0.01559	4.69	<.0001
SP(POW)	Intercept	0.5274	0.1027	5.13	<.0001
Residual		0.04637	0.003210	14.45	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	134.3
AIC (smaller is better)	142.3
AICC (smaller is better)	142.3
BIC (smaller is better)	140.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		170.46	35.1045	13.3	4.86	0.0003
season	1	-0.2382	0.1028	80	-2.32	0.0231
season	2	-0.1348	0.1205	84.3	-1.12	0.2666
season	3	-0.05849	0.1284	82.3	-0.46	0.6499
season	4	-0.00803	0.1320	77	-0.06	0.9517
season	5	0.03914	0.1336	73	0.29	0.7704
season	6	0.07173	0.1340	71.7	0.54	0.5941
season	7	0.1043	0.1333	73.4	0.78	0.4365
season	8	0.2317	0.1315	77.8	1.76	0.0819
season	9	0.1964	0.1309	83.8	1.50	0.1374
season	10	0.1493	0.1223	83.2	1.22	0.2255
season	11	0.1054	0.09943	75.8	1.06	0.2925
season	12	0	.	.	.	.
date1		-0.08581	0.01748	13.3	-4.91	0.0003
temp_dev		0.08601	0.02331	138	3.69	0.0003

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.3	1.36	0.2096
date1	1	13.3	24.09	0.0003
temp_dev	1	138	13.62	0.0003

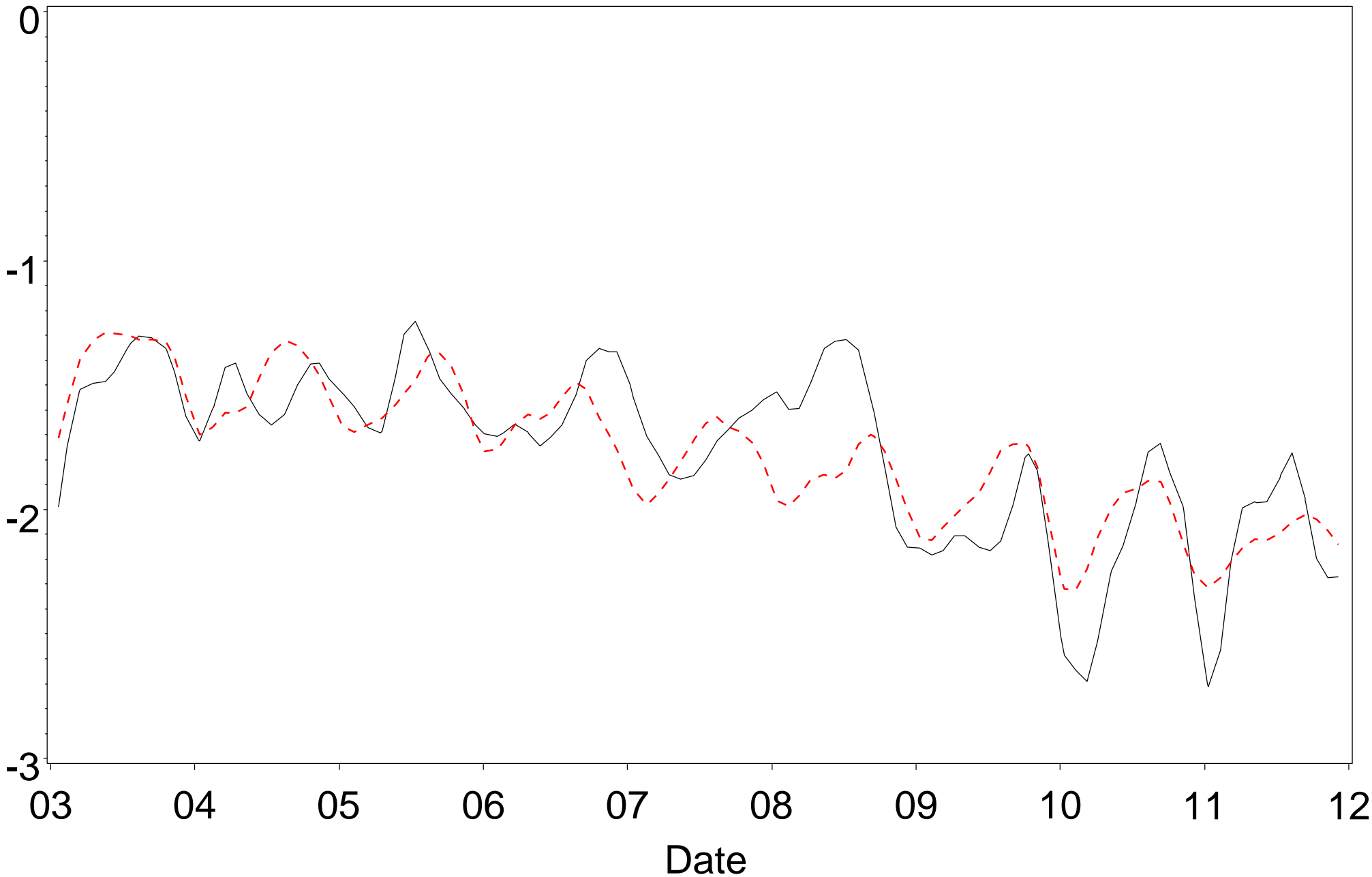
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface

TP_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	278
Number of Observations Not Used	282

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	437.24392073	
1	2	384.25966144	4.57644863
2	2	381.10278725	1.22065654
3	2	378.30083064	0.01903464
4	2	377.18653528	0.00051372
5	1	377.15818699	0.00000061
6	1	377.15815402	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01608	0.01353	1.19	0.1175
Variance	Intercept	0.1074	0.03138	3.42	0.0003
SP(POW)	Intercept	0.2088	0.2059	1.01	0.3105
Residual		0.1562	0.01497	10.44	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	377.2
AIC (smaller is better)	385.2
AICC (smaller is better)	385.3
BIC (smaller is better)	383.6

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		19.0840	80.9777	10.2	0.24	0.8184
season	1	0.1299	0.2333	32.7	0.56	0.5813
season	2	0.1817	0.2508	41.3	0.72	0.4730
season	3	0.3359	0.2537	41.1	1.32	0.1928
season	4	0.2784	0.2511	40.2	1.11	0.2741
season	5	0.1802	0.2511	40.2	0.72	0.4771
season	6	0.05486	0.2517	40	0.22	0.8286
season	7	0.3164	0.2526	40.4	1.25	0.2175
season	8	0.03126	0.2513	40.1	0.12	0.9016
season	9	0.06849	0.2677	41.6	0.26	0.7994
season	10	0.3063	0.2659	41.5	1.15	0.2560
season	11	0.1638	0.2428	29.9	0.67	0.5051
season	12	0	.	.	.	.
date1		-0.00858	0.04038	10.1	-0.21	0.8359
temp_dev		0.03388	0.05272	69.1	0.64	0.5226

Mixed Model With Local Nugget

The Mixed Procedure

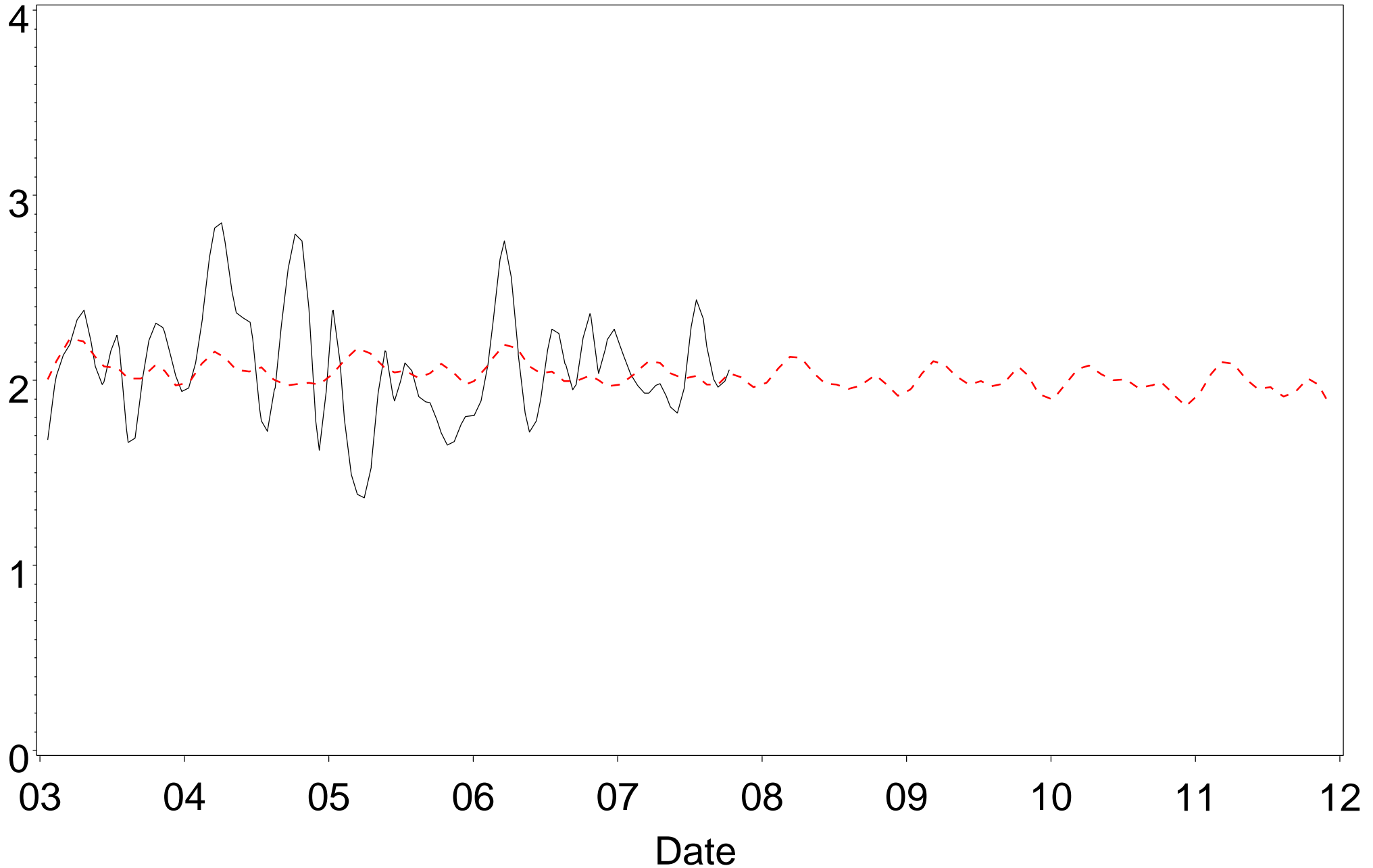
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	32.6	0.47	0.9057
date1	1	10.1	0.05	0.8359
temp_dev	1	69.1	0.41	0.5226

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface

TSS_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	5	LB-1 LB-2 LB-3 LB-4 LB-5

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	5
Subjects	1
Max Obs Per Subject	560

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	560
Number of Observations Used	529
Number of Observations Not Used	31

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	699.88297013	
1	3	590.13499755	0.63474620
2	2	580.43437431	0.00907081
3	2	579.14434891	0.00106515
4	1	578.93273750	0.00002022
5	1	578.92896986	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02220	0.01663	1.33	0.0910
Variance	Intercept	0.06702	0.01452	4.62	<.0001
SP(POW)	Intercept	0.3209	0.1342	2.39	0.0168
Residual		0.1257	0.008680	14.48	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	578.9
AIC (smaller is better)	586.9
AICC (smaller is better)	587.0
BIC (smaller is better)	585.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-13.4828	29.3672	20.9	-0.46	0.6509
season	1	-0.3249	0.1279	77.6	-2.54	0.0131
season	2	-0.2348	0.1398	88.1	-1.68	0.0964
season	3	-0.02533	0.1427	87.8	-0.18	0.8595
season	4	0.1443	0.1433	85.3	1.01	0.3170
season	5	0.02936	0.1434	83.9	0.20	0.8383
season	6	-0.08345	0.1433	83.5	-0.58	0.5620
season	7	0.2580	0.1433	84	1.80	0.0753
season	8	0.1973	0.1431	85.5	1.38	0.1716
season	9	0.01932	0.1469	89.1	0.13	0.8957
season	10	0.3030	0.1431	87.3	2.12	0.0371
season	11	0.03319	0.1256	72.6	0.26	0.7923
season	12	0	.	.	.	.
date1		0.007207	0.01463	20.8	0.49	0.6274
temp_dev		0.01947	0.02998	126	0.65	0.5173

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	78	3.09	0.0017
date1	1	20.8	0.24	0.6274
temp_dev	1	126	0.42	0.5173

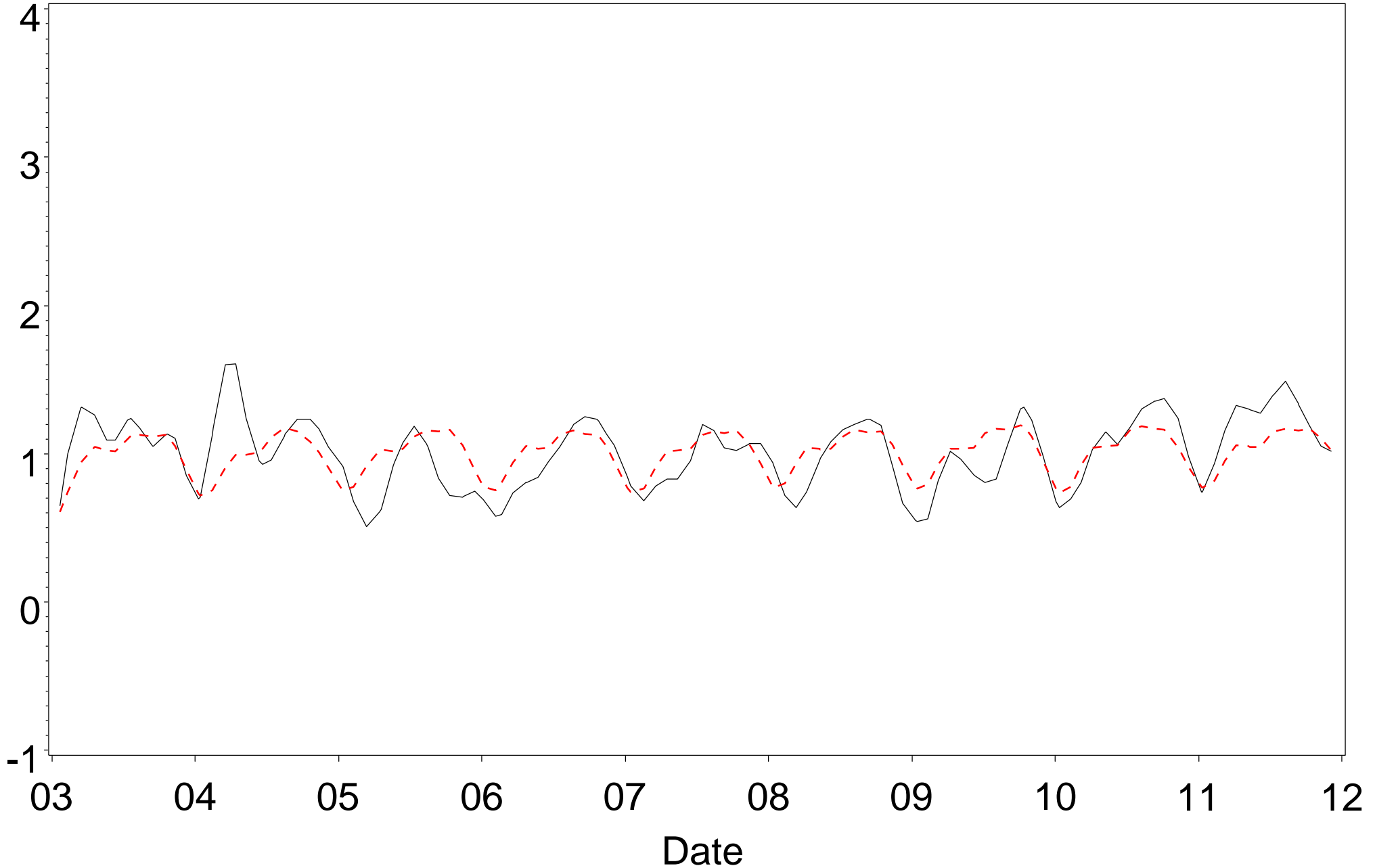
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum Upper Lemon Bay

Parameter = Turbidity (NTU) and Sample Level = Surface

Log Scale

Turb



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	586
Number of Observations Not Used	14

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1437.82239628	
1	4	1244.56263115	.
2	2	1237.74921375	0.12229162
3	2	1223.68027937	0.03071629
4	1	1220.67604027	0.00279680
5	1	1220.41655598	0.00008075
6	1	1220.40957319	0.00000010
7	1	1220.40956500	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02463	0.01161	2.12	0.0170
Variance	Intercept	0.3695	0.06821	5.42	<.0001
SP(POW)	Intercept	0.2901	0.1183	2.45	0.0142
Residual		0.3082	0.02099	14.68	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1220.4
AIC (smaller is better)	1228.4
AICC (smaller is better)	1228.5
BIC (smaller is better)	1236.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-88.1685	63.9749	22.3	-1.38	0.1818
season	1	-0.2647	0.2754	75.2	-0.96	0.3396
season	2	-0.6160	0.3018	88.4	-2.04	0.0442
season	3	-0.6732	0.3102	88	-2.17	0.0327
season	4	-0.6861	0.3095	83.1	-2.22	0.0294
season	5	-0.6484	0.3086	80.7	-2.10	0.0388
season	6	-0.7680	0.3082	80.1	-2.49	0.0148
season	7	0.2054	0.3097	82.2	0.66	0.5090
season	8	0.6857	0.3101	84.6	2.21	0.0297
season	9	0.8487	0.3110	90.5	2.73	0.0076
season	10	0.4388	0.3013	89.6	1.46	0.1488
season	11	0.008978	0.2694	69.4	0.03	0.9735
season	12	0	.	.	.	.
date1		0.04479	0.03186	22.3	1.41	0.1736
temp_dev		0.06559	0.04717	374	1.39	0.1652

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	75.2	4.93	<.0001
date1	1	22.3	1.98	0.1736
temp_dev	1	374	1.93	0.1652

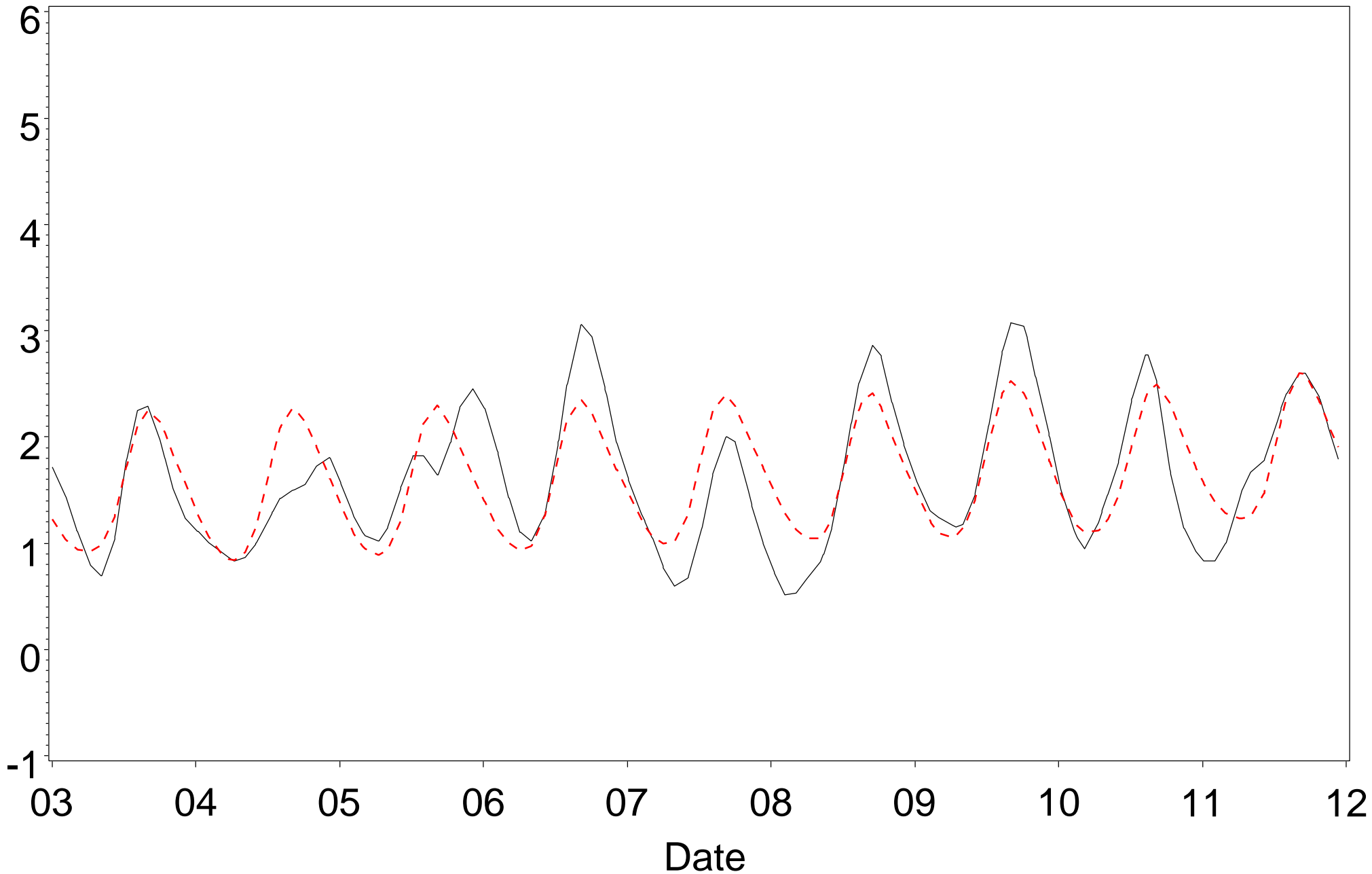
Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale

Parameter = Chlorophyll-a (Corrected) (ug/l) and Sample Level = Surface

CHLAC_ugl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	591
Number of Observations Not Used	9

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1064.04785946	
1	2	501.22710183	0.01821075
2	1	495.30816625	0.00276316
3	2	494.33575342	0.00066729
4	1	494.12731730	0.00002887
5	1	494.11896216	0.00000004
6	1	494.11895119	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02994	0.008981	3.33	0.0004
Variance	Intercept	0.3141	0.09424	3.33	0.0004
SP(POW)	Intercept	0.7344	0.08357	8.79	<.0001
Residual		0.07177	0.005033	14.26	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	494.1
AIC (smaller is better)	502.1
AICC (smaller is better)	502.2
BIC (smaller is better)	510.4

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		131.41	93.3770	6.39	1.41	0.2061
season	1	-0.2407	0.1596	86.2	-1.51	0.1352
season	2	-0.4630	0.1974	83.5	-2.34	0.0214
season	3	-0.4547	0.2206	83.9	-2.06	0.0424
season	4	-0.4682	0.2331	80.5	-2.01	0.0479
season	5	-0.5333	0.2397	78	-2.23	0.0290
season	6	-0.6665	0.2414	77.1	-2.76	0.0072
season	7	0.2247	0.2391	78.8	0.94	0.3502
season	8	0.5741	0.2313	81.2	2.48	0.0151
season	9	1.0469	0.2172	83.8	4.82	<.0001
season	10	0.8230	0.1931	83.4	4.26	<.0001
season	11	0.2385	0.1519	83.1	1.57	0.1202
season	12	0	.	.	.	.
date1		-0.06368	0.04651	6.39	-1.37	0.2171
temp_dev		-0.00533	0.02471	413	-0.22	0.8294

Mixed Model With Local Nugget

The Mixed Procedure

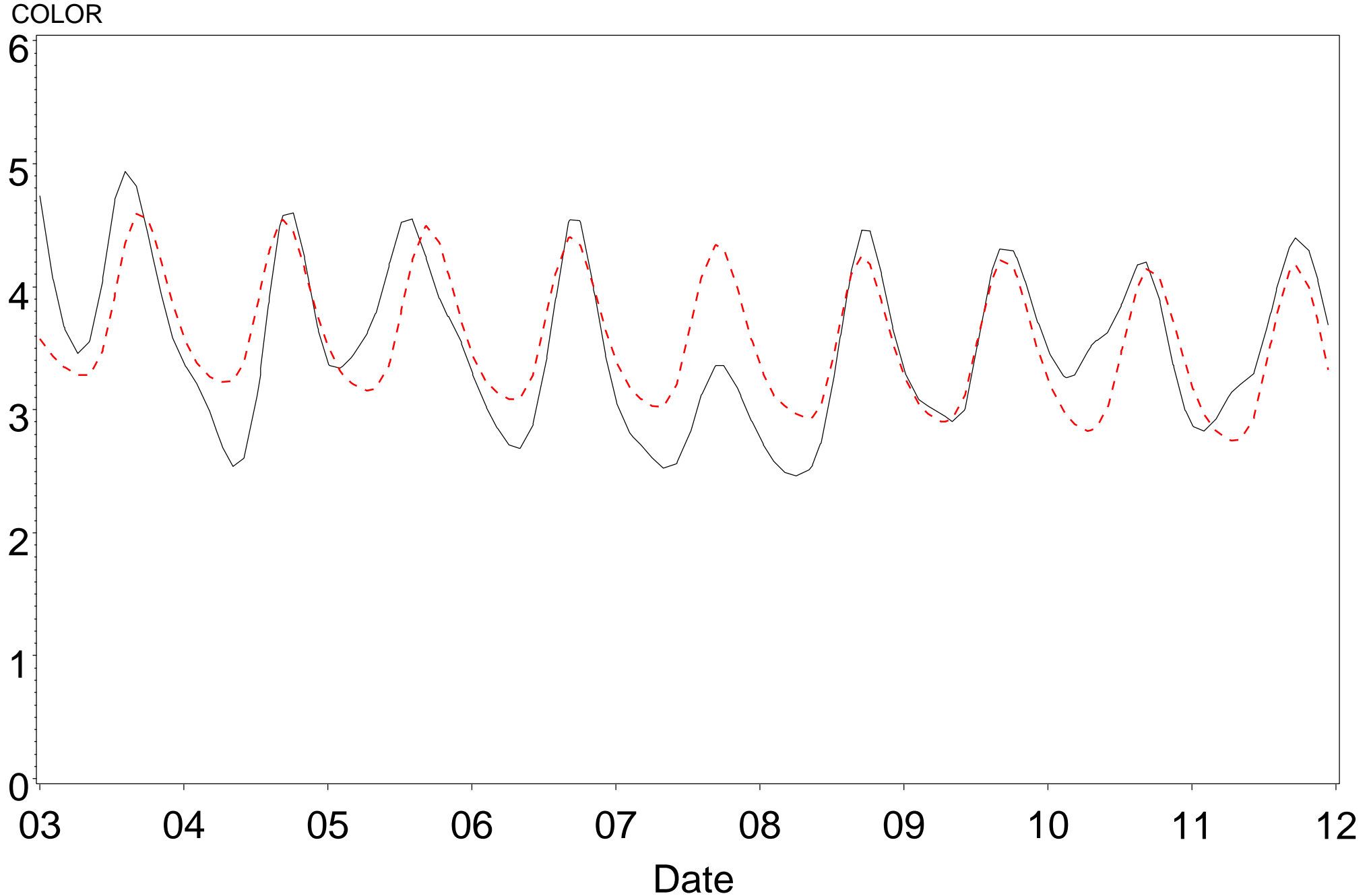
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.3	7.25	<.0001
date1	1	6.39	1.87	0.2171
temp_dev	1	413	0.05	0.8294

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale

Parameter = Color (PCU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	594
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	933.46050424	
1	2	856.25449948	0.01269599
2	2	854.73290373	0.00238796
3	1	854.46657871	0.00002614
4	1	854.46379244	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.01572	0.007252	2.17	0.0151
Variance	Intercept	0.07111	0.02164	3.29	0.0005
SP(POW)	Intercept	0.6821	0.1170	5.83	<.0001
Residual		0.1902	0.01271	14.96	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	854.5
AIC (smaller is better)	862.5
AICC (smaller is better)	862.5
BIC (smaller is better)	870.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-81.5293	44.0555	8.27	-1.85	0.1002
season	1	-0.02902	0.1215	110	-0.24	0.8117
season	2	0.05672	0.1332	75.7	0.43	0.6715
season	3	0.05200	0.1418	70.8	0.37	0.7149
season	4	-0.07855	0.1464	69.2	-0.54	0.5934
season	5	0.03291	0.1478	66.3	0.22	0.8245
season	6	0.07716	0.1481	65.5	0.52	0.6041
season	7	-0.3079	0.1489	69.2	-2.07	0.0425
season	8	-0.3250	0.1467	71.4	-2.22	0.0299
season	9	-0.7515	0.1425	75.1	-5.27	<.0001
season	10	-0.2797	0.1325	78.7	-2.11	0.0380
season	11	-0.1182	0.1175	112	-1.01	0.3168
season	12	0	.	.	.	.
date1		0.04589	0.02194	8.27	2.09	0.0688
temp_dev		-0.00846	0.02644	177	-0.32	0.7492

Mixed Model With Local Nugget

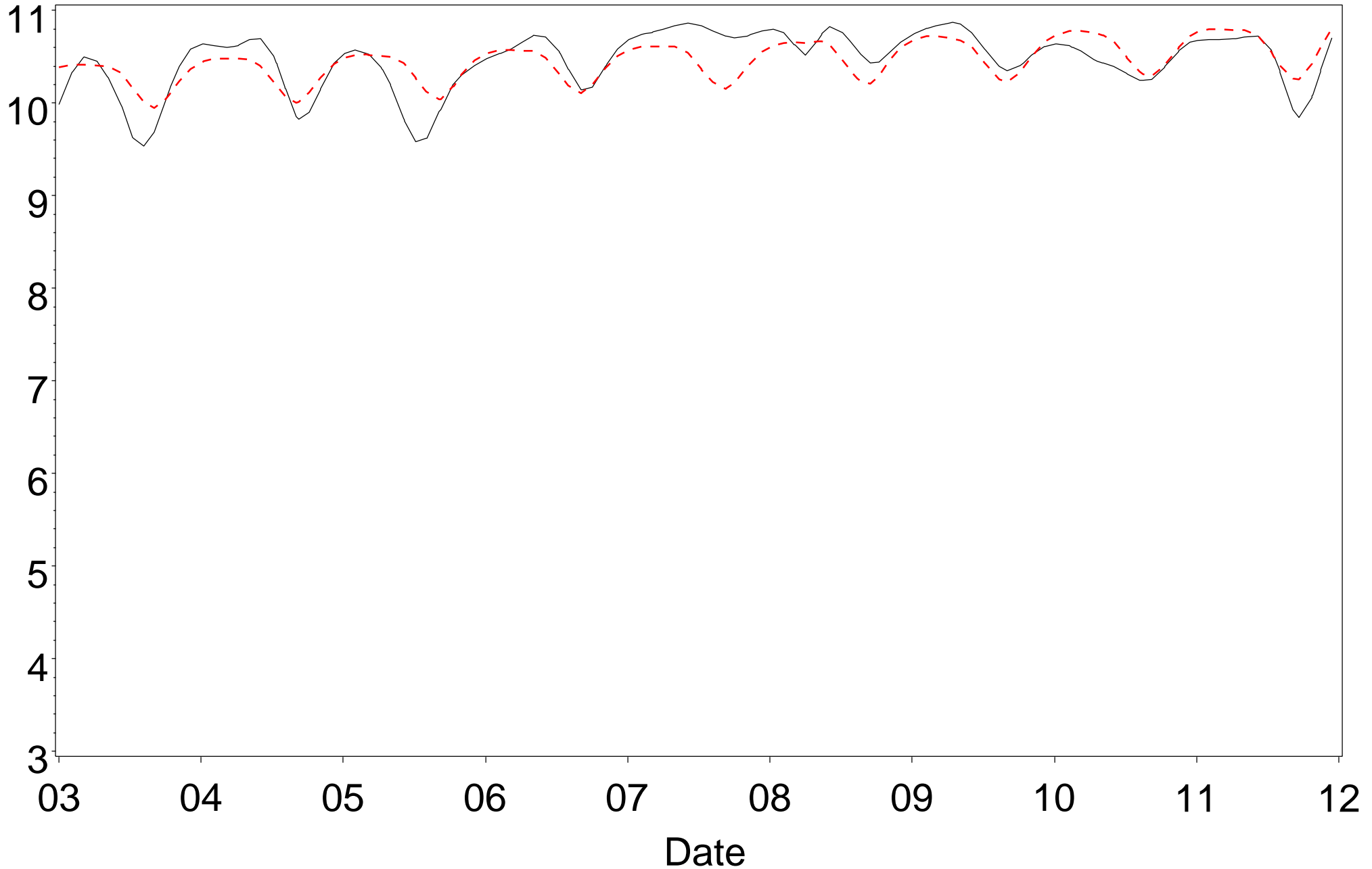
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82.9	4.62	<.0001
date1	1	8.27	4.37	0.0688
temp_dev	1	177	0.10	0.7492

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
COND Parameter = Specific Conductance (uS/cm) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	593
Number of Observations Not Used	7

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1856.37129901	
1	3	1650.36115301	0.03038060
2	2	1638.20100734	0.02178969
3	2	1631.40381628	0.00391942
4	1	1630.18953167	0.00010359
5	1	1630.15956085	0.00000013
6	1	1630.15952451	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.04586	0.02400	1.91	0.0280
Variance	Intercept	0.7985	0.1432	5.58	<.0001
SP(POW)	Intercept	0.2466	0.1148	2.15	0.0318
Residual		0.6014	0.04115	14.61	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1630.2
AIC (smaller is better)	1638.2
AICC (smaller is better)	1638.2
BIC (smaller is better)	1646.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-54.4345	90.0552	24.2	-0.60	0.5512
season	1	0.08372	0.4104	78	0.20	0.8389
season	2	-0.06424	0.4449	90.8	-0.14	0.8855
season	3	-0.3438	0.4521	87.7	-0.76	0.4490
season	4	-1.0377	0.4526	84.8	-2.29	0.0243
season	5	-1.3888	0.4512	82.9	-3.08	0.0028
season	6	-1.6025	0.4506	82.5	-3.56	0.0006
season	7	-1.6727	0.4526	84.2	-3.70	0.0004
season	8	-1.5242	0.4532	85.9	-3.36	0.0012
season	9	-1.2793	0.4531	89.8	-2.82	0.0059
season	10	-1.4420	0.4441	91.9	-3.25	0.0016
season	11	-0.9112	0.4025	72.1	-2.26	0.0266
season	12	0	.	.	.	.
date1		0.03112	0.04485	24.2	0.69	0.4944
temp_dev		0.05993	0.06593	420	0.91	0.3639

Mixed Model With Local Nugget

The Mixed Procedure

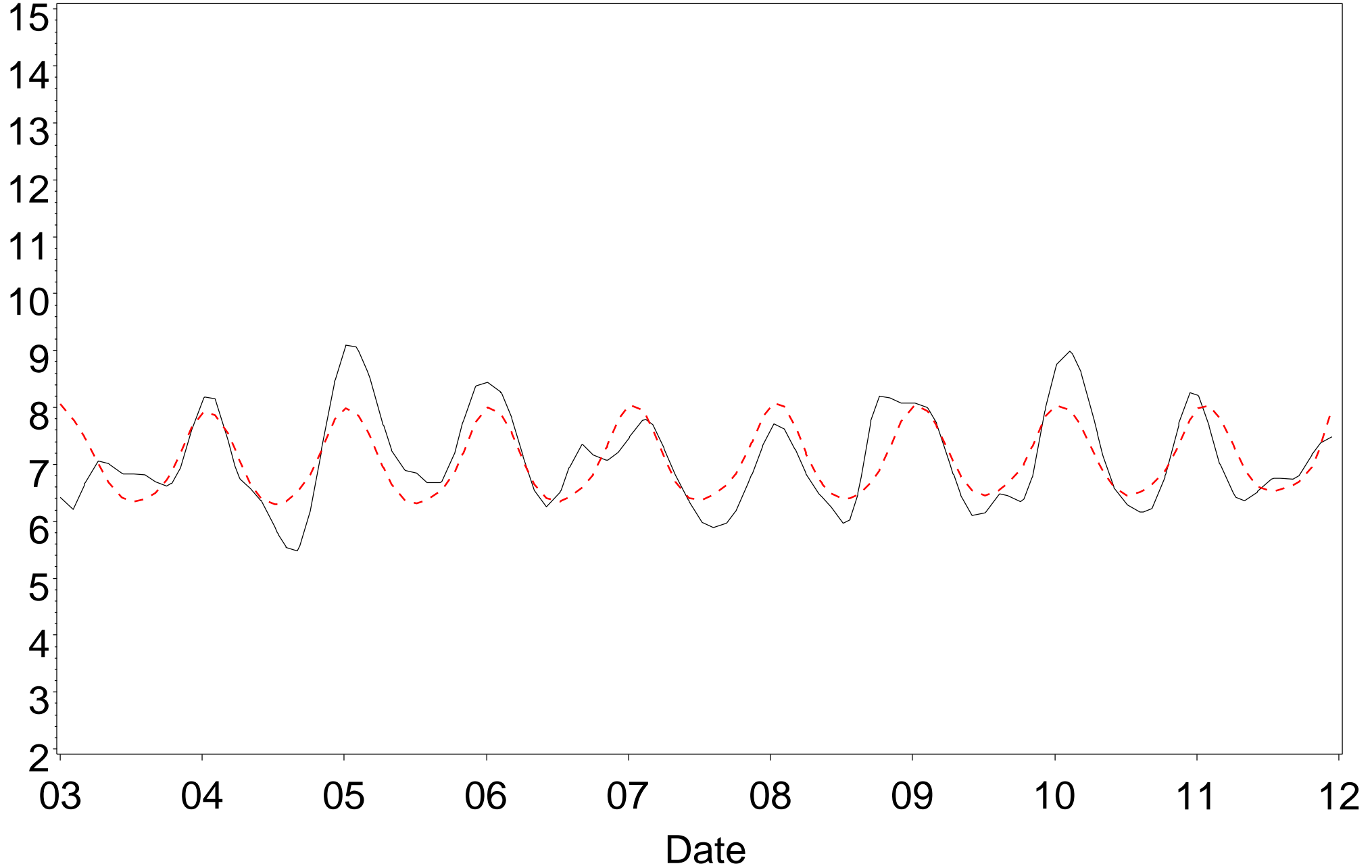
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.8	3.25	0.0011
date1	1	24.2	0.48	0.4944
temp_dev	1	420	0.83	0.3639

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
DO_mgl

Parameter = Dissolved Oxygen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	311
Number of Observations Not Used	289

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	695.27685666	
1	2	641.03068201	0.08775820
2	2	636.43755017	0.05263883
3	2	633.75420064	0.00284420
4	1	633.62429849	0.00001096
5	1	633.62381609	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.03667	0.01912	1.92	0.0276
Variance	Intercept	0.2313	0.06544	3.54	0.0002
SP(POW)	Intercept	0.3002	0.1765	1.70	0.0890
Residual		0.3036	0.02887	10.52	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	633.6
AIC (smaller is better)	641.6
AICC (smaller is better)	641.8
BIC (smaller is better)	649.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		462.80	104.63	11.2	4.42	0.0010
season	1	-0.1161	0.3119	39.1	-0.37	0.7118
season	2	-0.3183	0.3387	44	-0.94	0.3525
season	3	0.1227	0.3497	46.5	0.35	0.7273
season	4	-0.2424	0.3319	43.3	-0.73	0.4691
season	5	-0.2942	0.3315	42.5	-0.89	0.3798
season	6	-0.2696	0.3285	41.2	-0.82	0.4165
season	7	0.6960	0.3368	45.1	2.07	0.0445
season	8	0.1669	0.3496	45.7	0.48	0.6354
season	9	1.7127	0.3492	46.5	4.91	<.0001
season	10	0.1786	0.3376	44.5	0.53	0.5995
season	11	0.005980	0.3043	36.2	0.02	0.9844
season	12	0	.	.	.	.
date1		-0.2302	0.05216	11.2	-4.41	0.0010
temp_dev		0.01513	0.06231	218	0.24	0.8084

Mixed Model With Local Nugget

The Mixed Procedure

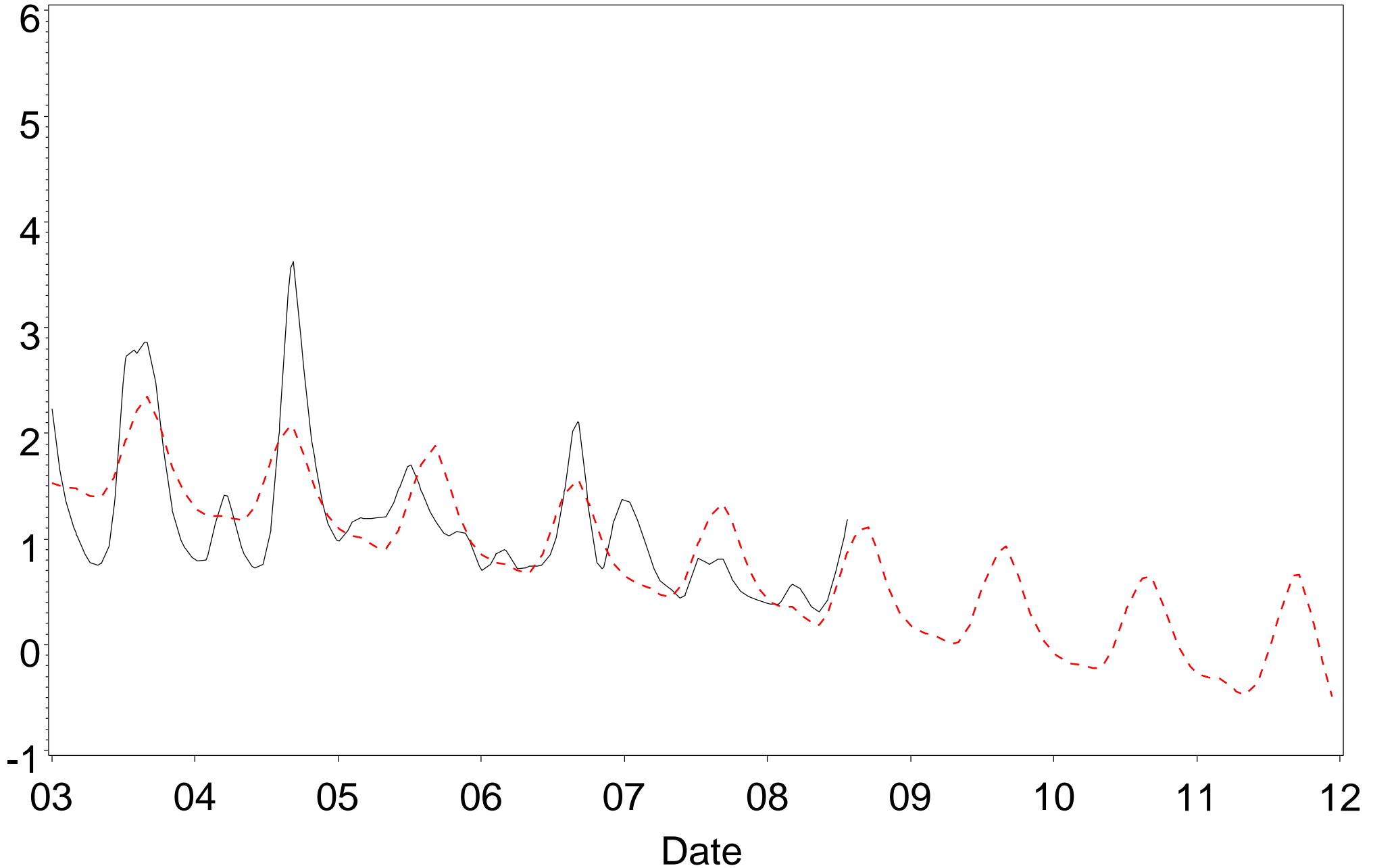
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	38.2	5.63	<.0001
date1	1	11.2	19.48	0.0010
temp_dev	1	218	0.06	0.8084

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale Parameter = Light Attenuation Coefficient (1/m) and Sample Level = Surface

Kd



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	575
Number of Observations Not Used	25

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1601.32907801	
1	2	1224.01039674	0.05455955
2	1	1217.80926914	0.01513045
3	2	1216.25647763	0.00400167
4	1	1215.85868461	0.00007657
5	1	1215.85150266	0.00000004
6	1	1215.85149857	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0	.	.	.
Variance	Intercept	0.7000	0.1778	3.94	<.0001
SP(POW)	Intercept	0.6712	0.08731	7.69	<.0001
Residual		0.3278	0.02145	15.28	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1215.9
AIC (smaller is better)	1221.9
AICC (smaller is better)	1221.9
BIC (smaller is better)	1228.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-83.4254	127.97	8.77	-0.65	0.5312
season	1	0.07507	0.2712	88	0.28	0.7826
season	2	0.1361	0.3269	83.8	0.42	0.6782
season	3	-0.02046	0.3599	83.5	-0.06	0.9548
season	4	0.09461	0.3761	79	0.25	0.8020
season	5	-0.05047	0.3850	76.2	-0.13	0.8960
season	6	-0.07775	0.3871	75.1	-0.20	0.8413
season	7	0.05233	0.3843	77.1	0.14	0.8921
season	8	-0.05398	0.3741	80.2	-0.14	0.8856
season	9	0.4974	0.3553	83.9	1.40	0.1653
season	10	0.5549	0.3207	83.8	1.73	0.0873
season	11	-0.2113	0.2606	86.2	-0.81	0.4197
season	12	0	.	.	.	.
date1		0.03983	0.06374	8.77	0.62	0.5480
temp_dev		-0.08993	0.04663	360	-1.93	0.0546

Mixed Model With Local Nugget

The Mixed Procedure

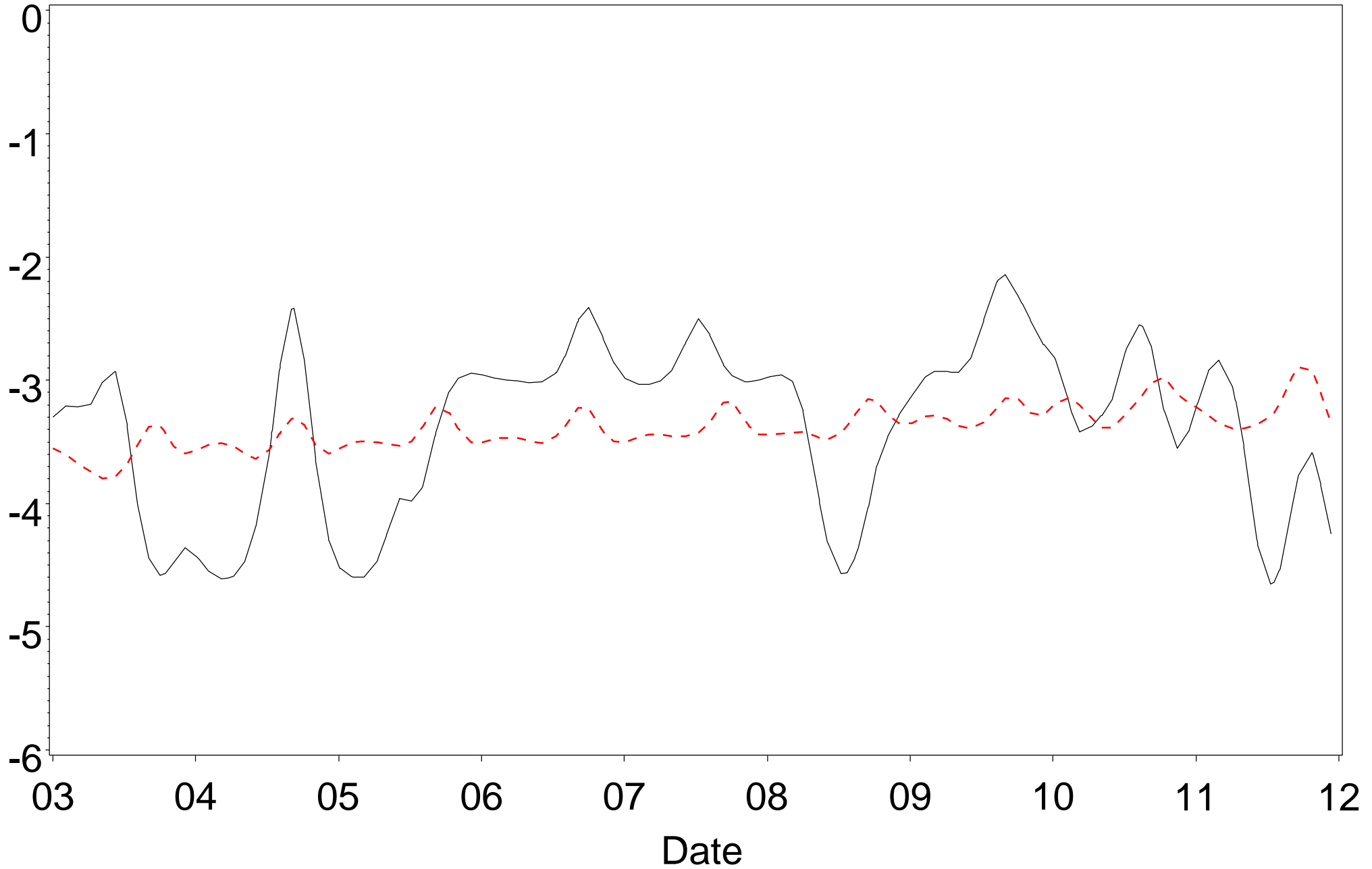
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82	1.19	0.3059
date1	1	8.77	0.39	0.5480
temp_dev	1	360	3.72	0.0546

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
NH3_mgl

Parameter = Ammonia as N Total (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	412
Number of Observations Not Used	188

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	846.39659936	
1	4	561.59279672	.
2	1	539.07599193	0.04228164
3	1	533.99126136	0.02667041
4	2	533.25206486	0.02243222
5	2	530.70757895	0.00176033
6	1	530.51763887	0.00003270
7	1	530.51429019	0.00000003
8	1	530.51428712	0.00000000

Convergence criteria met.

Mixed Model With Local Nugget

The Mixed Procedure

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002517	0.004226	0.60	0.2757
Variance	Intercept	0.3774	0.09230	4.09	<.0001
SP(POW)	Intercept	0.4774	0.1287	3.71	0.0002
Residual		0.1281	0.01056	12.13	<.0001

Fit Statistics	
-2 Res Log Likelihood	530.5
AIC (smaller is better)	538.5
AICC (smaller is better)	538.6
BIC (smaller is better)	546.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		377.87	124.34	9.27	3.04	0.0136
season	1	-0.00599	0.2728	51.7	-0.02	0.9826
season	2	-0.2443	0.3220	57.9	-0.76	0.4512
season	3	-0.1239	0.3433	55	-0.36	0.7196
season	4	-0.1204	0.3505	49.1	-0.34	0.7327
season	5	-0.2070	0.3526	45.3	-0.59	0.5602
season	6	-0.1637	0.3534	44.3	-0.46	0.6456
season	7	0.1080	0.3534	45.9	0.31	0.7612

Mixed Model With Local Nugget

The Mixed Procedure

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
season	8	-0.1291	0.3512	50.3	-0.37	0.7148
season	9	0.5763	0.3411	56.6	1.69	0.0966
season	10	0.3788	0.3075	58.2	1.23	0.2229
season	11	-0.1933	0.2571	49.9	-0.75	0.4556
season	12	0	.	.	.	.
date1		-0.1904	0.06189	9.27	-3.08	0.0128
temp_dev		-0.09715	0.04185	328	-2.32	0.0209

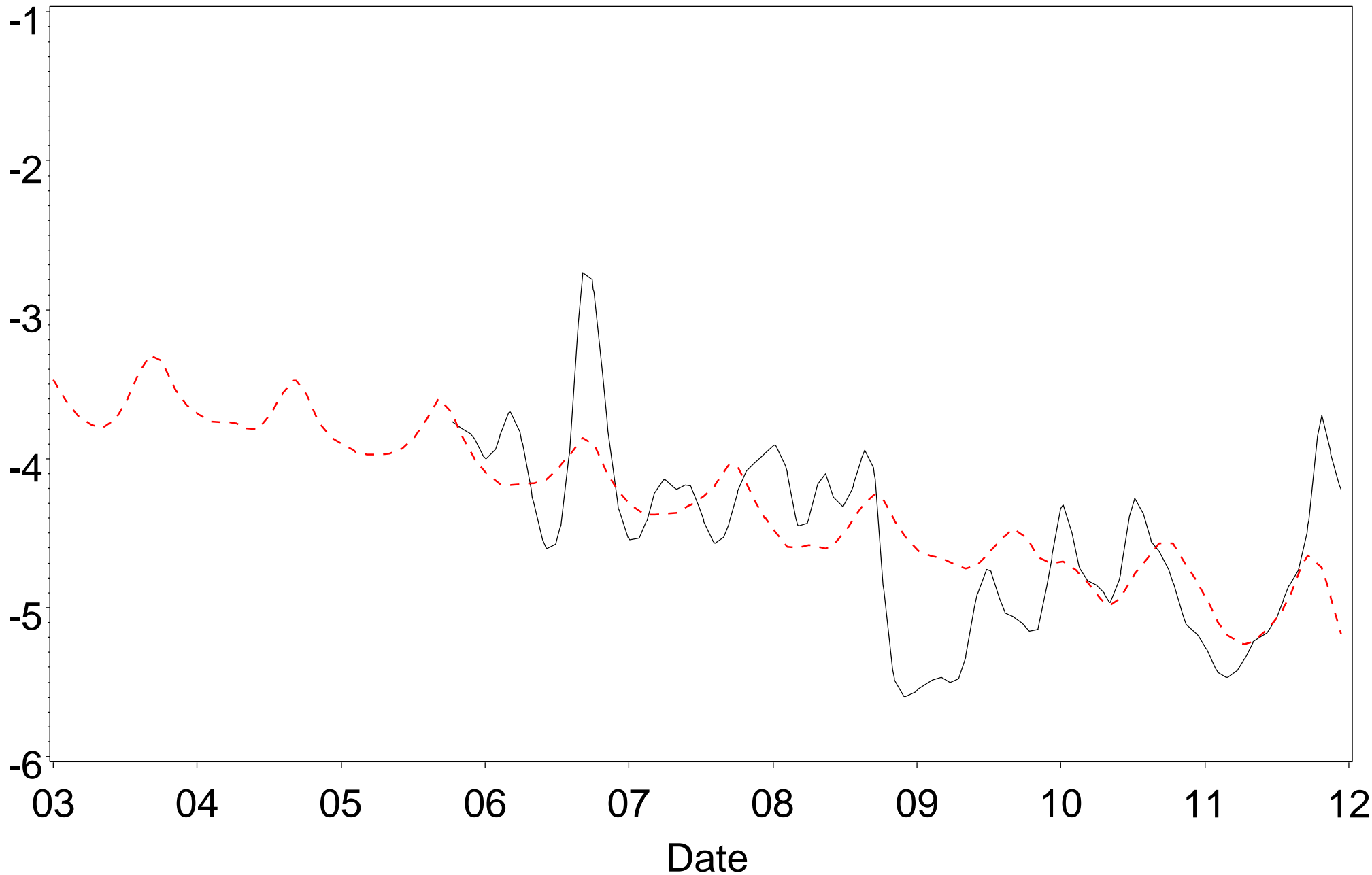
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	48.7	1.22	0.3026
date1	1	9.27	9.46	0.0128
temp_dev	1	328	5.39	0.0209

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale Parameter = Nitrate+Nitrite (TOTAL AS N) (mg/l) and Sample Level = Surface

NO23_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	586
Number of Observations Not Used	14

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-203.50364308	
1	4	-319.17848982	.
2	1	-322.71368703	5.29522046
3	2	-332.22488760	0.06379024
4	2	-337.61424385	0.00144685
5	1	-338.73631866	0.00006852
6	1	-338.78583446	0.00000028
7	1	-338.78602727	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.000849	0.000582	1.46	0.0721
Variance	Intercept	0.01637	0.003110	5.26	<.0001
SP(POW)	Intercept	0.1837	0.1351	1.36	0.1740
Residual		0.02185	0.001474	14.82	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-338.8
AIC (smaller is better)	-330.8
AICC (smaller is better)	-330.7
BIC (smaller is better)	-322.5

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-23.6878	12.7360	26.2	-1.86	0.0742
season	1	0.02570	0.06389	71.4	0.40	0.6887
season	2	0.07987	0.06950	90.5	1.15	0.2535
season	3	0.08048	0.06798	90.4	1.18	0.2396
season	4	0.03870	0.06787	89.1	0.57	0.5700
season	5	0.04642	0.06752	87.3	0.69	0.4935
season	6	0.05357	0.06741	86.9	0.79	0.4290
season	7	0.08590	0.06786	89.3	1.27	0.2088
season	8	0.1248	0.06807	90.7	1.83	0.0701
season	9	-0.00466	0.06847	93.9	-0.07	0.9459
season	10	-0.04171	0.06763	92.2	-0.62	0.5390
season	11	-0.01653	0.06318	66.4	-0.26	0.7944
season	12	0	.	.	.	.
date1		0.01573	0.006343	26.2	2.48	0.0199
temp_dev		0.02798	0.01134	313	2.47	0.0141

Mixed Model With Local Nugget

The Mixed Procedure

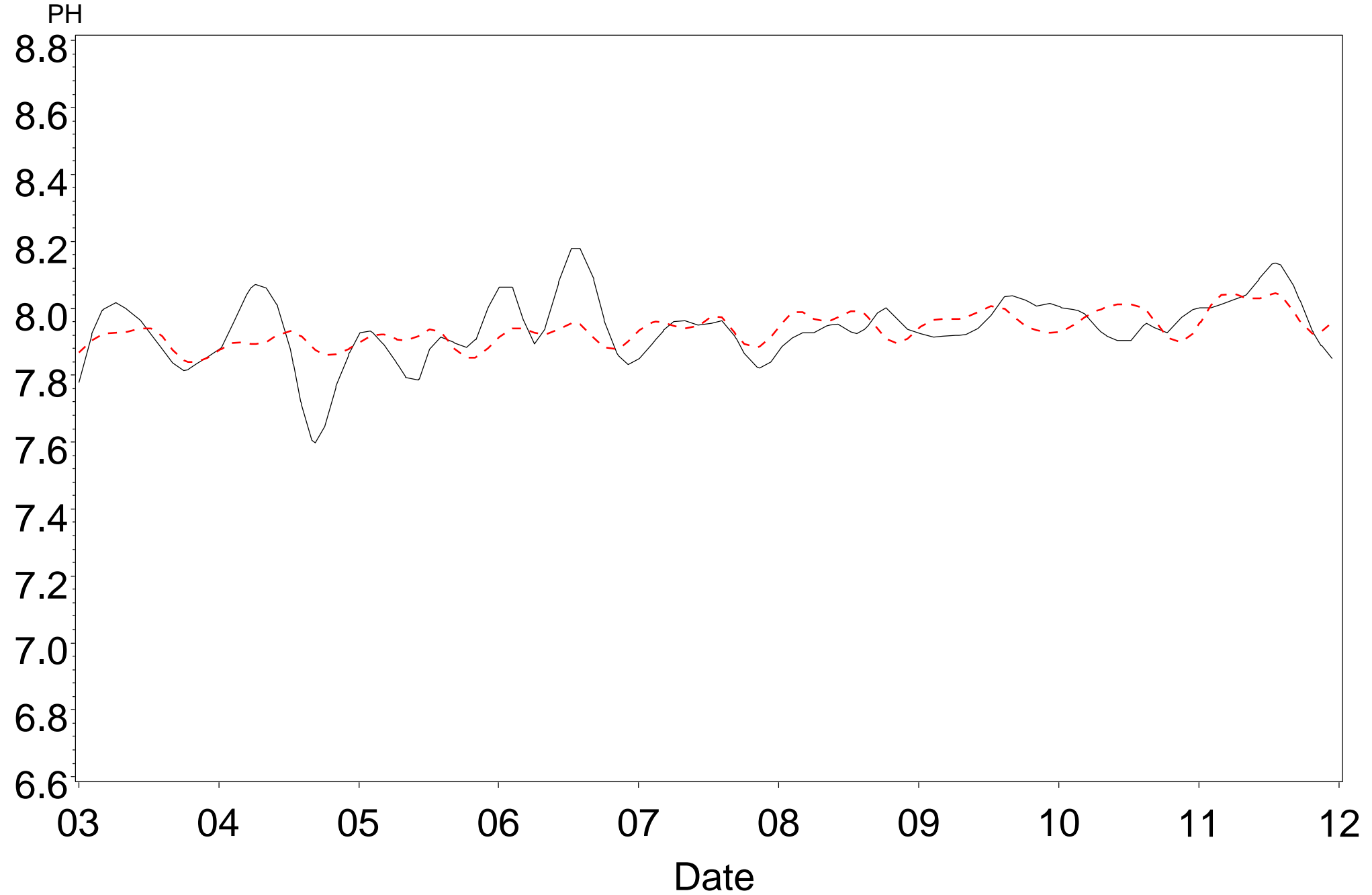
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	74.7	0.91	0.5384
date1	1	26.2	6.15	0.0199
temp_dev	1	313	6.09	0.0141

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale

Parameter = pH (SU) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	594
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	409.91719520	
1	3	-355.03023236	0.03139503
2	1	-382.19069598	0.00684611
3	1	-388.14248075	0.00192726
4	2	-389.73325679	0.00031617
5	1	-389.97875626	0.00000420
6	1	-389.98184334	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004330	0.001143	3.79	<.0001
Variance	Intercept	0.1071	0.02394	4.48	<.0001
SP(POW)	Intercept	0.6062	0.08763	6.92	<.0001
Residual		0.01396	0.000944	14.79	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-390.0
AIC (smaller is better)	-382.0
AICC (smaller is better)	-381.9
BIC (smaller is better)	-373.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-120.68	45.8339	11	-2.63	0.0233
season	1	-0.00535	0.1059	86.5	-0.05	0.9598
season	2	0.09268	0.1294	91.4	0.72	0.4756
season	3	0.08396	0.1413	86.9	0.59	0.5538
season	4	0.05008	0.1474	79.3	0.34	0.7349
season	5	0.1116	0.1502	73.9	0.74	0.4600
season	6	0.08414	0.1509	72.3	0.56	0.5789
season	7	-0.3203	0.1499	74.8	-2.14	0.0359
season	8	-0.3544	0.1466	80.6	-2.42	0.0179
season	9	-0.6535	0.1399	88.4	-4.67	<.0001
season	10	-0.3061	0.1269	91.4	-2.41	0.0179
season	11	-0.1209	0.1014	82.5	-1.19	0.2368
season	12	0	.	.	.	.
date1		0.06172	0.02283	11	2.70	0.0206
temp_dev		0.02118	0.01199	557	1.77	0.0777

Mixed Model With Local Nugget

The Mixed Procedure

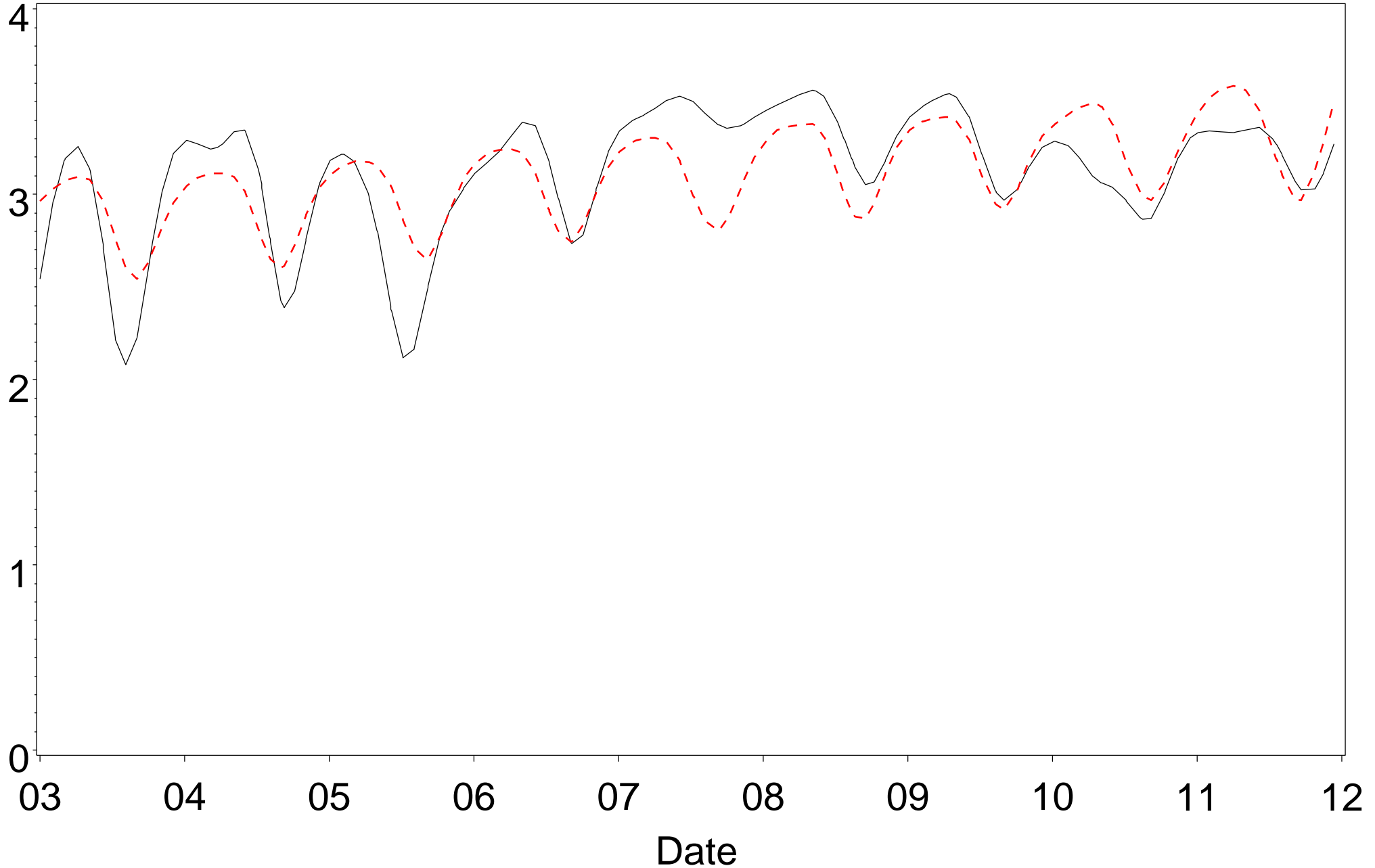
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.8	4.05	<.0001
date1	1	11	7.31	0.0206
temp_dev	1	557	3.12	0.0777

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
Salinity

Parameter = Salinity (ppt) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	594
Number of Observations Not Used	6

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	-1732.73241512	
1	4	-2256.56301825	0.20581102
2	1	-2657.10500341	0.03797086
3	1	-2745.52065415	.
4	1	-2774.64640462	0.00299266
5	1	-2781.39418667	0.00033988
6	1	-2782.10417783	0.00000731
7	1	-2782.11847587	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		5.984E-6	5.381E-6	1.11	0.1330
Variance	Intercept	0.004142	0.000649	6.38	<.0001
SP(POW)	Intercept	0.2176	0.1029	2.11	0.0345
Residual		0.000199	0.000013	14.75	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	-2782.1
AIC (smaller is better)	-2774.1
AICC (smaller is better)	-2774.0
BIC (smaller is better)	-2765.8

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		16.1947	5.8867	23.3	2.75	0.0113
season	1	-0.05195	0.02754	75.8	-1.89	0.0630
season	2	-0.06664	0.03007	92.1	-2.22	0.0292
season	3	0.03817	0.03049	87.6	1.25	0.2140
season	4	0.2197	0.03052	84.9	7.20	<.0001
season	5	0.3150	0.03050	84	10.33	<.0001
season	6	0.4168	0.03049	83.9	13.67	<.0001
season	7	0.4527	0.03049	84.2	14.85	<.0001
season	8	0.4575	0.03049	85.2	15.00	<.0001
season	9	0.4252	0.03043	88.1	13.97	<.0001
season	10	0.3446	0.02994	92.3	11.51	<.0001
season	11	0.1806	0.02706	70.3	6.67	<.0001
season	12	0	.	.	.	.
date1		-0.00660	0.002932	23.3	-2.25	0.0342
temp_dev		0.05173	0.001449	500	35.69	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

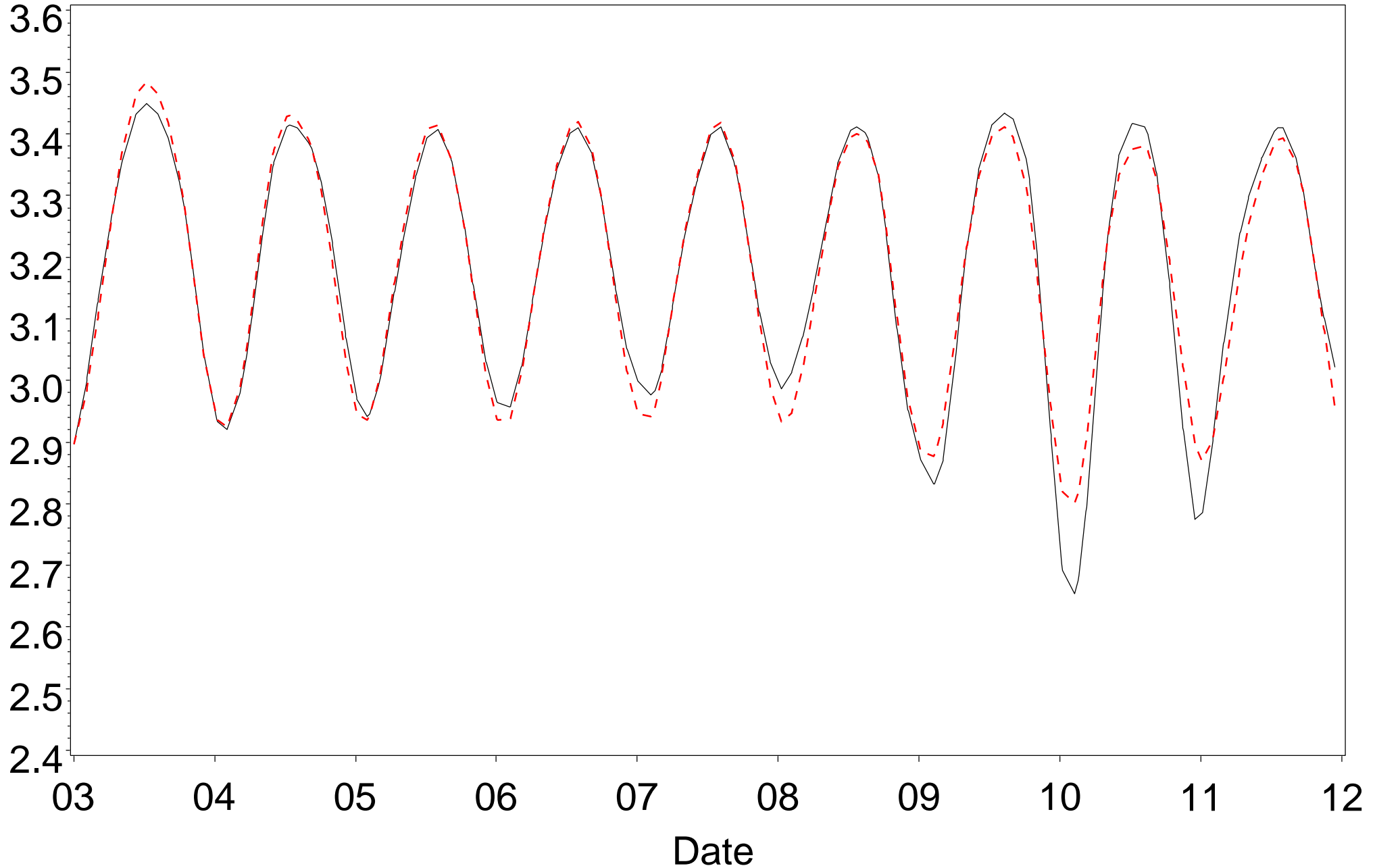
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	76.6	63.40	<.0001
date1	1	23.3	5.06	0.0342
temp_dev	1	500	1273.72	<.0001

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Parameter = Temperature (Degree C) and Sample Level = Surface

Log Scale
TEMP_C



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	587
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1163.83583489	
1	4	860.65039550	.
2	1	846.15005168	0.04499140
3	2	841.38257620	0.01961980
4	1	839.04699547	0.00102430
5	1	838.93284934	0.00000432
6	1	838.93238569	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.006426	0.004075	1.58	0.0574
Variance	Intercept	0.2865	0.05799	4.94	<.0001
SP(POW)	Intercept	0.4876	0.1012	4.82	<.0001
Residual		0.1551	0.01044	14.86	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	838.9
AIC (smaller is better)	846.9
AICC (smaller is better)	847.0
BIC (smaller is better)	855.2

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		36.8719	66.1531	14.4	0.56	0.5859
season	1	-0.06870	0.2072	88.5	-0.33	0.7410
season	2	-0.06463	0.2404	92.1	-0.27	0.7887
season	3	-0.1798	0.2558	87.7	-0.70	0.4840
season	4	0.01837	0.2609	78.9	0.07	0.9440
season	5	0.3164	0.2626	73.3	1.20	0.2322
season	6	0.2301	0.2630	71.8	0.88	0.3844
season	7	0.4233	0.2629	74.6	1.61	0.1116
season	8	0.4325	0.2605	80.6	1.66	0.1008
season	9	0.5590	0.2540	89.1	2.20	0.0304
season	10	-0.1015	0.2380	93	-0.43	0.6706
season	11	-0.2367	0.2003	83.5	-1.18	0.2407
season	12	0	.	.	.	.
date1		-0.01869	0.03295	14.3	-0.57	0.5794
temp_dev		-0.01784	0.03421	418	-0.52	0.6024

Mixed Model With Local Nugget

The Mixed Procedure

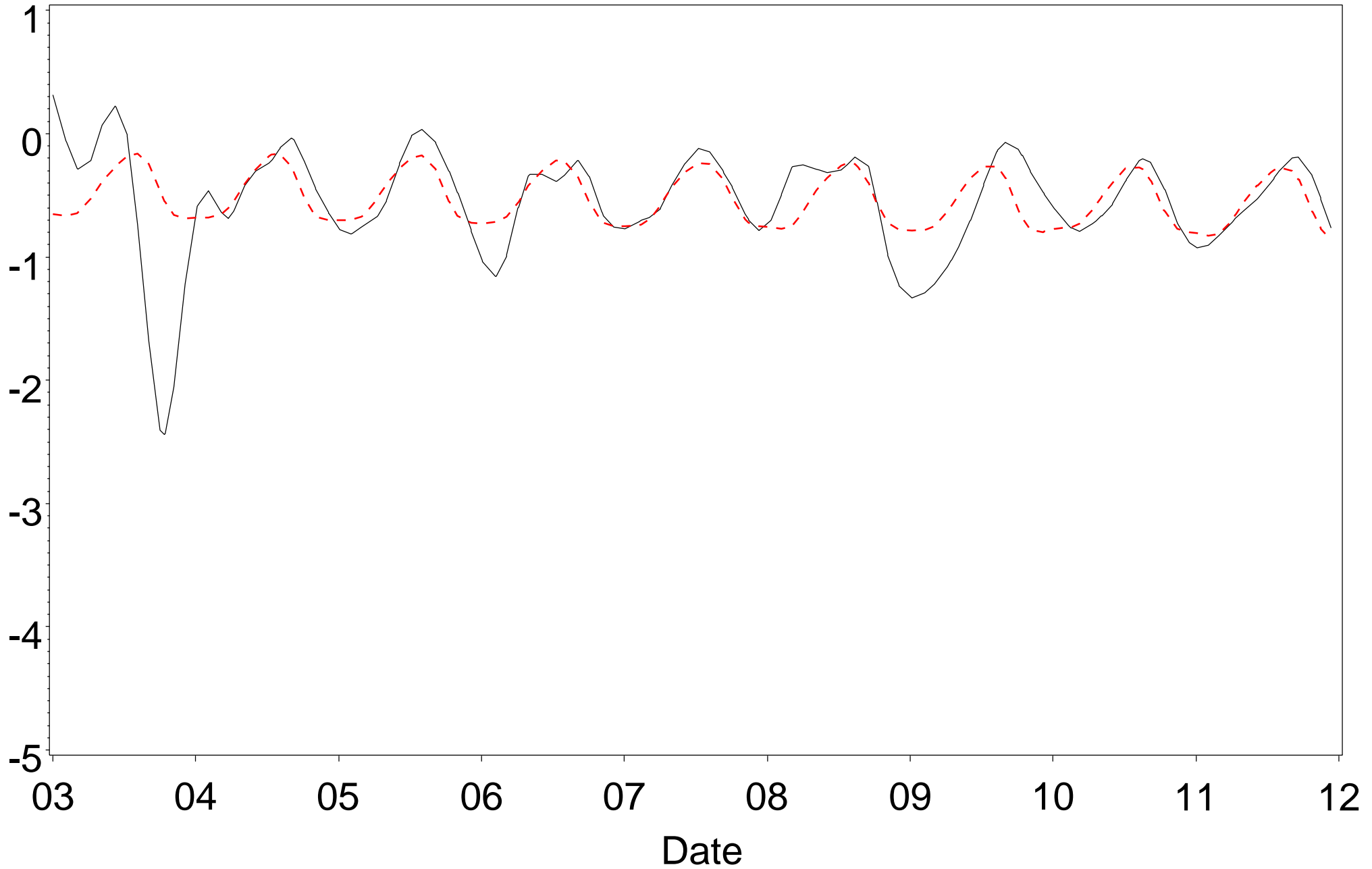
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82.7	1.77	0.0730
date1	1	14.3	0.32	0.5794
temp_dev	1	418	0.27	0.6024

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
TKN_mgl

Parameter = Total Kjeldahl Nitrogen (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	585
Number of Observations Not Used	15

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	918.51601821	
1	2	676.43902439	0.05714656
2	1	663.66132444	0.01493616
3	2	660.22102864	0.00279284
4	1	659.63114673	0.00005616
5	1	659.62006234	0.00000002
6	1	659.62005813	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.004763	0.003100	1.54	0.0622
Variance	Intercept	0.2025	0.04264	4.75	<.0001
SP(POW)	Intercept	0.4968	0.1021	4.86	<.0001
Residual		0.1148	0.007831	14.65	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	659.6
AIC (smaller is better)	667.6
AICC (smaller is better)	667.7
BIC (smaller is better)	675.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		58.2668	56.2662	13.7	1.04	0.3184
season	1	-0.07236	0.1739	83.4	-0.42	0.6784
season	2	-0.07470	0.2021	85.8	-0.37	0.7125
season	3	-0.1055	0.2154	82.4	-0.49	0.6256
season	4	0.01165	0.2198	74.4	0.05	0.9579
season	5	0.3018	0.2214	69.4	1.36	0.1773
season	6	0.2281	0.2218	68	1.03	0.3074
season	7	0.4309	0.2217	70.6	1.94	0.0560
season	8	0.4184	0.2195	76	1.91	0.0604
season	9	0.6282	0.2140	83.7	2.94	0.0043
season	10	0.06258	0.2009	88.1	0.31	0.7561
season	11	-0.2283	0.1684	79.8	-1.36	0.1790
season	12	0	.	.	.	.
date1		-0.02933	0.02802	13.7	-1.05	0.3134
temp_dev		-0.00563	0.02873	402	-0.20	0.8447

Mixed Model With Local Nugget

The Mixed Procedure

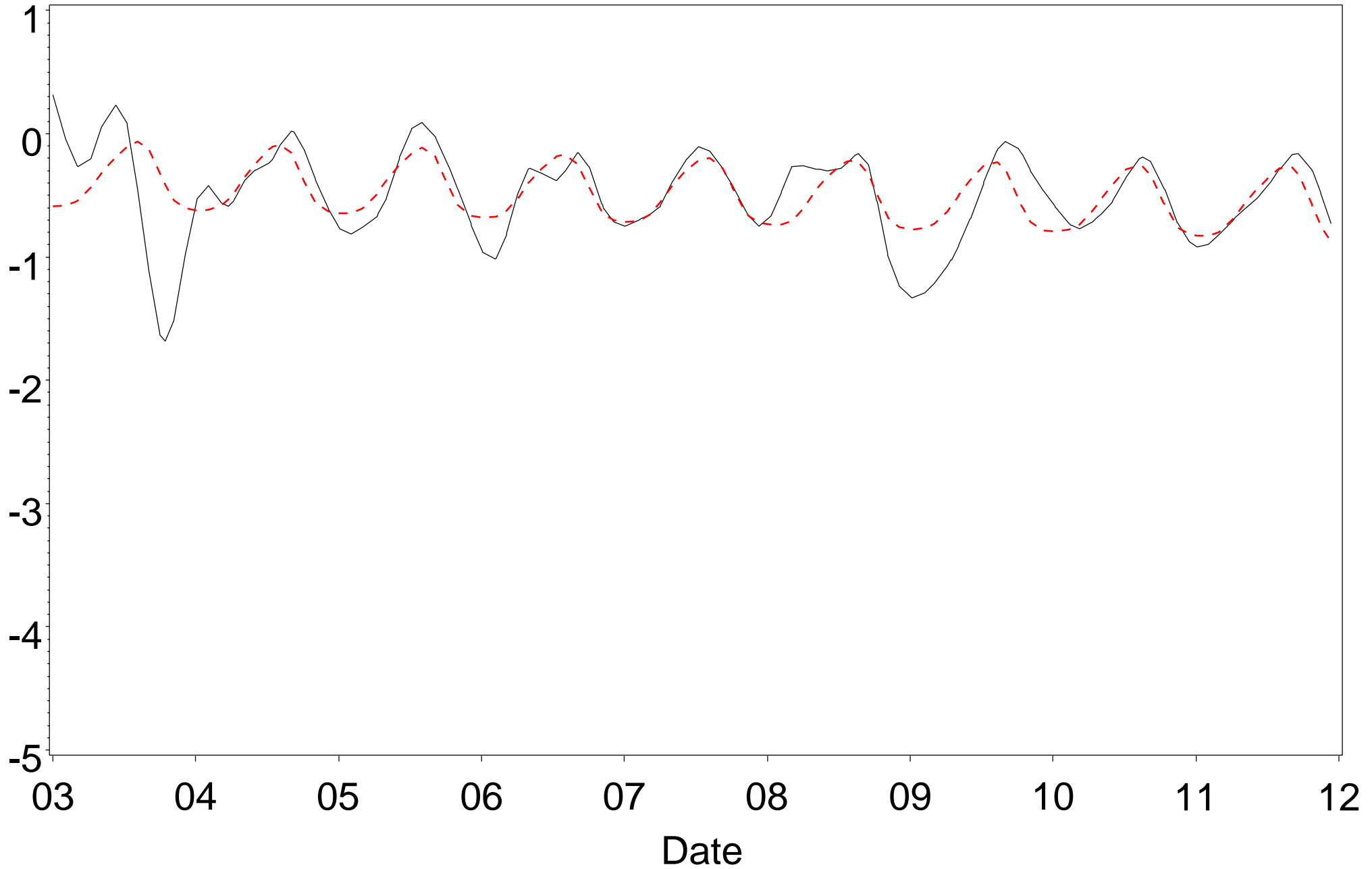
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	77.6	2.33	0.0156
date1	1	13.7	1.10	0.3134
temp_dev	1	402	0.04	0.8447

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Parameter = Total Nitrogen (mg/l) and Sample Level = Surface

Log Scale
TN_mgl



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	589
Number of Observations Not Used	11

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1083.49422302	
1	3	857.64735291	0.05898138
2	2	853.66123318	0.02234297
3	2	850.71314562	0.01449342
4	2	848.89311264	0.00250169
5	1	848.61314785	0.00005025
6	1	848.60786091	0.00000002
7	1	848.60785934	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.007082	0.004215	1.68	0.0465
Variance	Intercept	0.1630	0.04249	3.84	<.0001
SP(POW)	Intercept	0.6703	0.09574	7.00	<.0001
Residual		0.1786	0.01184	15.09	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	848.6
AIC (smaller is better)	856.6
AICC (smaller is better)	856.7
BIC (smaller is better)	864.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		103.45	62.9279	9.03	1.64	0.1345
season	1	-0.1281	0.1485	92	-0.86	0.3906
season	2	-0.1570	0.1719	77.2	-0.91	0.3639
season	3	-0.4088	0.1875	77.6	-2.18	0.0323
season	4	-0.2863	0.1941	74.7	-1.47	0.1444
season	5	-0.03387	0.1974	72.2	-0.17	0.8642
season	6	-0.1921	0.1982	71.5	-0.97	0.3357
season	7	0.3615	0.1978	73.9	1.83	0.0716
season	8	0.4830	0.1942	77	2.49	0.0151
season	9	0.7424	0.1855	78.3	4.00	0.0001
season	10	0.4084	0.1695	77.9	2.41	0.0183
season	11	0.2011	0.1427	89.6	1.41	0.1620
season	12	0	.	.	.	.
date1		-0.05056	0.03134	9.03	-1.61	0.1410
temp_dev		0.05106	0.02985	237	1.71	0.0885

Mixed Model With Local Nugget

The Mixed Procedure

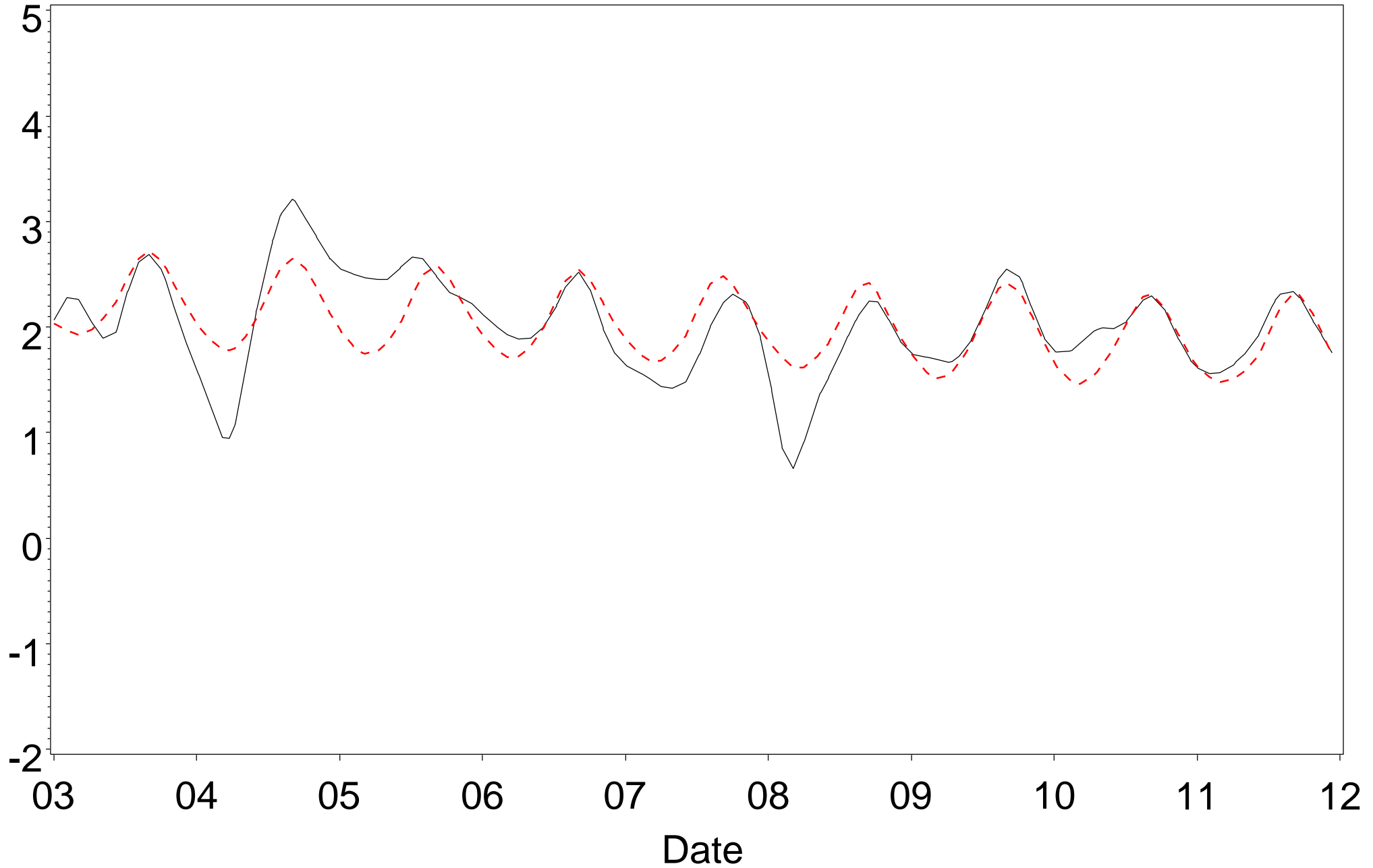
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	80.5	4.20	<.0001
date1	1	9.03	2.60	0.1410
temp_dev	1	237	2.92	0.0885

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
TOC_mgl

Parameter = Total Organic Carbon (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	590
Number of Observations Not Used	10

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1252.41361666	
1	2	814.67981328	0.01929579
2	1	811.82259613	0.00741266
3	2	811.05890365	0.00214724
4	1	810.78017977	0.00001614
5	1	810.77815497	0.00000001

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.002543	0.003735	0.68	0.2480
Variance	Intercept	0.3577	0.09767	3.66	0.0001
SP(POW)	Intercept	0.7163	0.08342	8.59	<.0001
Residual		0.1530	0.01044	14.66	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	810.8
AIC (smaller is better)	818.8
AICC (smaller is better)	818.8
BIC (smaller is better)	827.1

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		50.3831	97.6243	7.66	0.52	0.6204
season	1	-0.2147	0.1826	79.8	-1.18	0.2433
season	2	-0.3125	0.2214	74.2	-1.41	0.1624
season	3	-0.1618	0.2456	75.3	-0.66	0.5121
season	4	-0.3629	0.2580	73.4	-1.41	0.1638
season	5	-0.3198	0.2645	71.7	-1.21	0.2306
season	6	-0.1457	0.2663	71.2	-0.55	0.5859
season	7	0.3184	0.2641	72.5	1.21	0.2319
season	8	0.1398	0.2565	74.2	0.55	0.5874
season	9	0.6810	0.2422	75.2	2.81	0.0063
season	10	0.3001	0.2169	74	1.38	0.1707
season	11	-0.05944	0.1743	77.5	-0.34	0.7341
season	12	0	.	.	.	.
date1		-0.02603	0.04863	7.66	-0.54	0.6076
temp_dev		0.03942	0.03161	330	1.25	0.2132

Mixed Model With Local Nugget

The Mixed Procedure

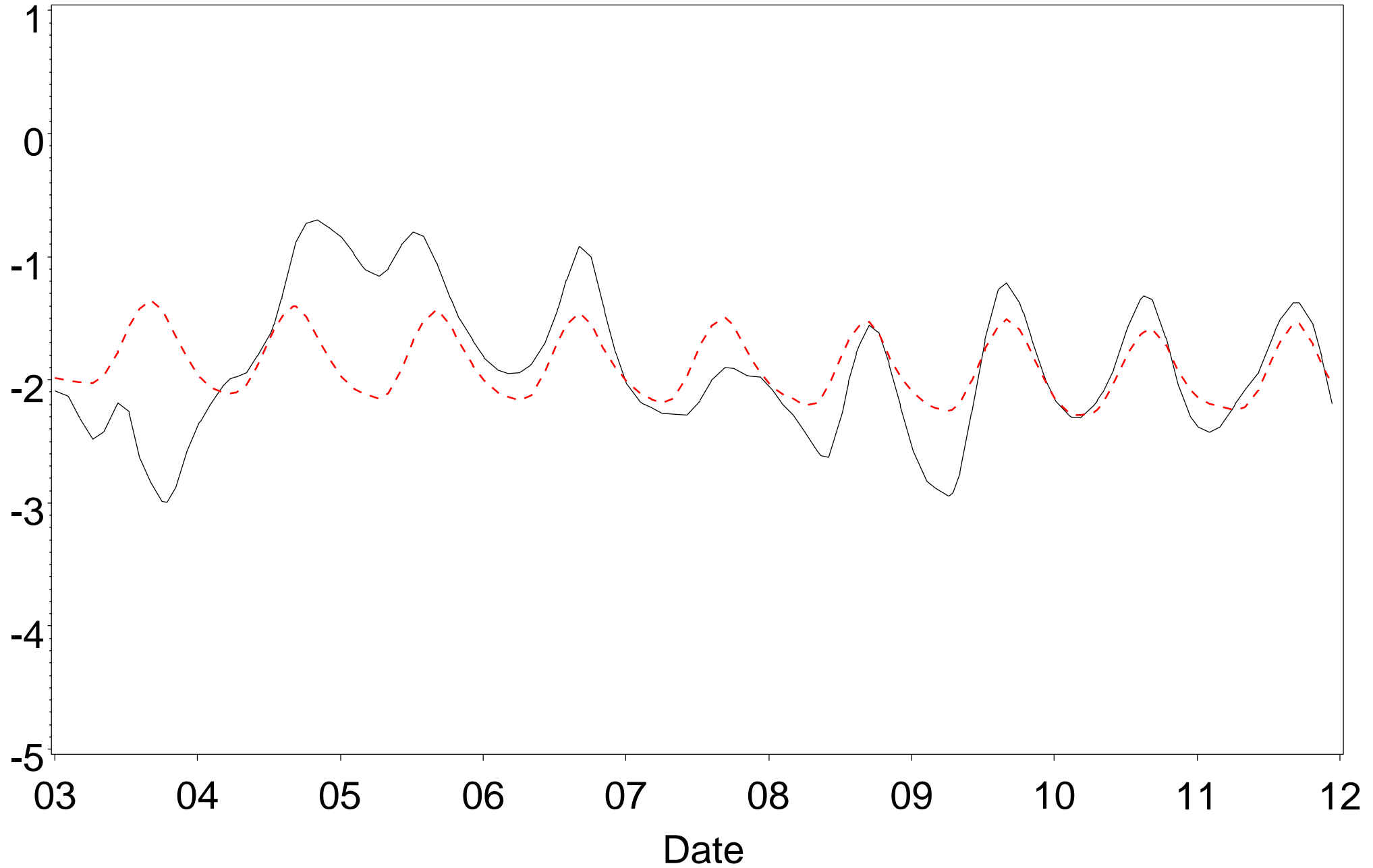
Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	73.7	2.71	0.0055
date1	1	7.66	0.29	0.6076
temp_dev	1	330	1.56	0.2132

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale
TP_mgl

Parameter = Total Phosphorous (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	586
Number of Observations Not Used	14

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1465.49640700	
1	2	1184.55657954	0.12163565
2	1	1174.83873801	0.04496280
3	2	1171.73823858	0.01881680
4	1	1170.47464863	0.00089078
5	1	1170.41989093	0.00000231
6	1	1170.41975326	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.003357	0.006595	0.51	0.3054
Variance	Intercept	0.4593	0.1024	4.49	<.0001
SP(POW)	Intercept	0.5608	0.1008	5.57	<.0001
Residual		0.2936	0.01996	14.71	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1170.4
AIC (smaller is better)	1178.4
AICC (smaller is better)	1178.5
BIC (smaller is better)	1186.7

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		48.0201	90.5708	11.4	0.53	0.6062
season	1	-0.01984	0.2520	89.1	-0.08	0.9374
season	2	0.2587	0.2956	89.2	0.88	0.3838
season	3	0.4337	0.3186	86.8	1.36	0.1769
season	4	-0.08848	0.3276	78.9	-0.27	0.7878
season	5	0.07441	0.3314	73.4	0.22	0.8230
season	6	-0.2789	0.3323	71.8	-0.84	0.4041
season	7	0.03481	0.3320	75.2	0.10	0.9168
season	8	-0.1171	0.3267	80.6	-0.36	0.7208
season	9	-0.2827	0.3157	88.1	-0.90	0.3730
season	10	-0.1199	0.2915	89.5	-0.41	0.6819
season	11	-0.3145	0.2428	84.7	-1.30	0.1987
season	12	0	.	.	.	.
date1		-0.02298	0.04511	11.4	-0.51	0.6202
temp_dev		-0.02333	0.04394	359	-0.53	0.5957

Mixed Model With Local Nugget

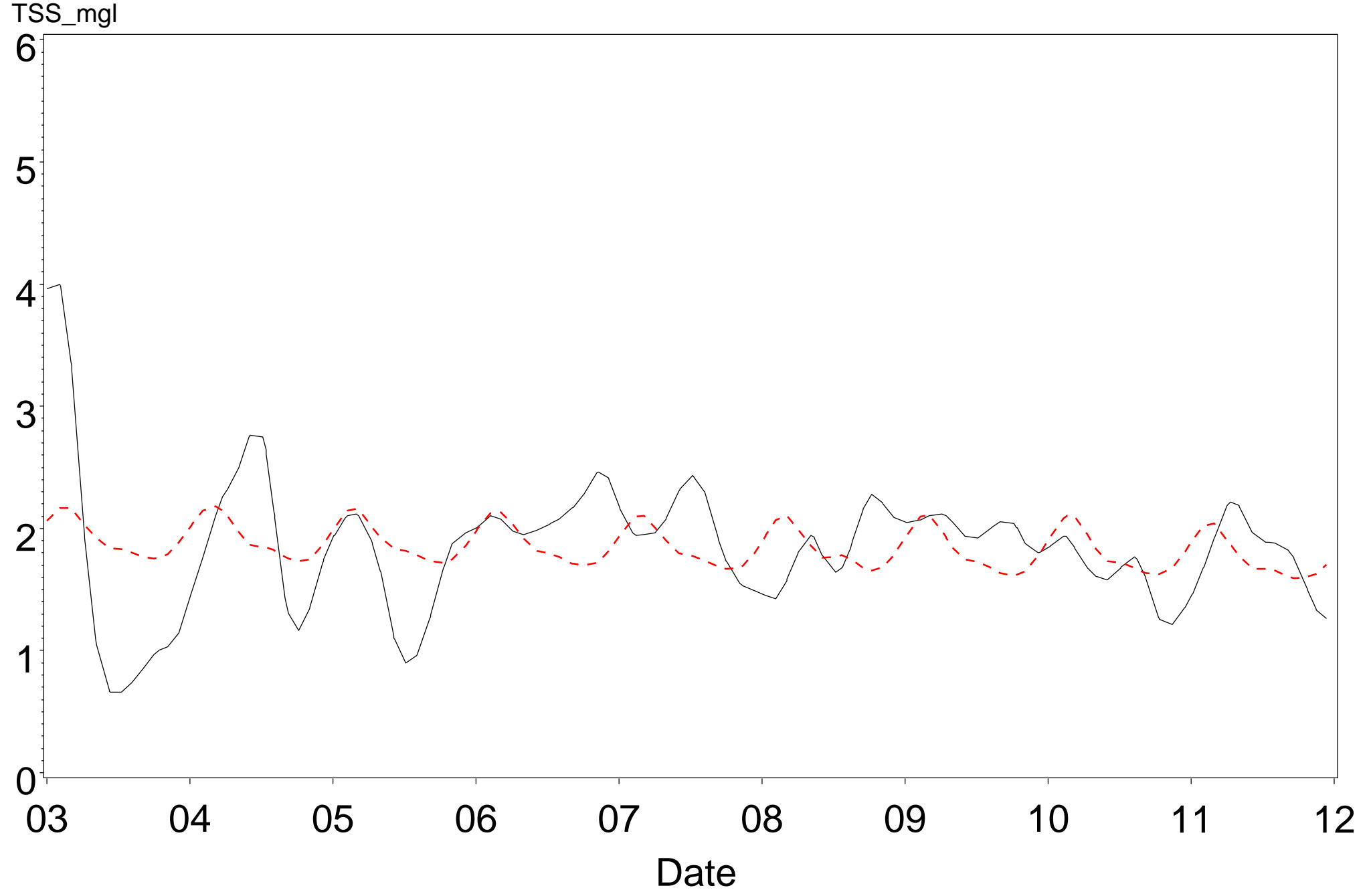
The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	82.4	1.12	0.3579
date1	1	11.4	0.26	0.6202
temp_dev	1	359	0.28	0.5957

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale Parameter = Total Suspended Solids (mg/l) and Sample Level = Surface



Mixed Model With Local Nugget

The Mixed Procedure

Model Information	
Data Set	WORK.TS2
Dependent Variable	y
Covariance Structures	Variance Components, Spatial Power
Subject Effect	Intercept
Estimation Method	REML
Residual Variance Method	Profile
Fixed Effects SE Method	Kenward-Roger
Degrees of Freedom Method	Kenward-Roger

Class Level Information		
Class	Levels	Values
season	12	1 2 3 4 5 6 7 8 9 10 11 12
Station	59	016 044 045 050 051 052 053 054 055 057 058 059 060 061 063 064 065 066 070 071 072 073 077 078 079 080 090 091 104 105 106 120 121 50 51 52 527 53 54 55 56 57 58 59 60 61 63 64 65 66 70 71 72 77 78 79 89 90 91

Dimensions	
Covariance Parameters	4
Columns in X	15
Columns in Z	59
Subjects	1
Max Obs Per Subject	600

Mixed Model With Local Nugget

The Mixed Procedure

Number of Observations	
Number of Observations Read	600
Number of Observations Used	587
Number of Observations Not Used	13

Iteration History			
Iteration	Evaluations	-2 Res Log Like	Criterion
0	1	1208.53395954	
1	2	1025.14976187	0.44484832
2	2	1016.80375580	0.28066918
3	2	1014.24850817	0.15190326
4	1	1010.89435003	0.01157343
5	1	1010.62857277	0.00027648
6	1	1010.62258762	0.00000025
7	1	1010.62258240	0.00000000

Convergence criteria met.

Covariance Parameter Estimates					
Cov Parm	Subject	Estimate	Standard Error	Z Value	Pr Z
Station		0.02277	0.009089	2.51	0.0061
Variance	Intercept	0.2272	0.04497	5.05	<.0001
SP(POW)	Intercept	0.3890	0.1228	3.17	0.0015
Residual		0.2163	0.01485	14.57	<.0001

Mixed Model With Local Nugget

The Mixed Procedure

Fit Statistics	
-2 Res Log Likelihood	1010.6
AIC (smaller is better)	1018.6
AICC (smaller is better)	1018.7
BIC (smaller is better)	1026.9

Solution for Fixed Effects						
Effect	season	Estimate	Standard Error	DF	t Value	Pr > |t|
Intercept		-20.1127	55.2709	17.7	-0.36	0.7203
season	1	-0.1758	0.2081	74	-0.84	0.4010
season	2	-0.2296	0.2329	84.7	-0.99	0.3272
season	3	0.09326	0.2433	86.3	0.38	0.7024
season	4	-0.1161	0.2443	80.4	-0.47	0.6361
season	5	-0.01551	0.2444	76.9	-0.06	0.9496
season	6	-0.3202	0.2440	75.6	-1.31	0.1935
season	7	0.01068	0.2452	78.4	0.04	0.9654
season	8	0.3461	0.2446	82	1.41	0.1609
season	9	0.2257	0.2425	87.7	0.93	0.3545
season	10	-0.1429	0.2318	84.9	-0.62	0.5390
season	11	-0.3196	0.2032	69.1	-1.57	0.1204
season	12	0	.	.	.	.
date1		0.01036	0.02753	17.7	0.38	0.7112
temp_dev		0.000136	0.03759	327	0.00	0.9971

Mixed Model With Local Nugget

The Mixed Procedure

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
season	11	72.5	1.57	0.1269
date1	1	17.7	0.14	0.7112
temp_dev	1	327	0.00	0.9971

Parametric Time Series Model

Observed Trend (Black) and Model Predicted (Red) in Stratum West Wall

Log Scale

Parameter = Turbidity (NTU) and Sample Level = Surface

