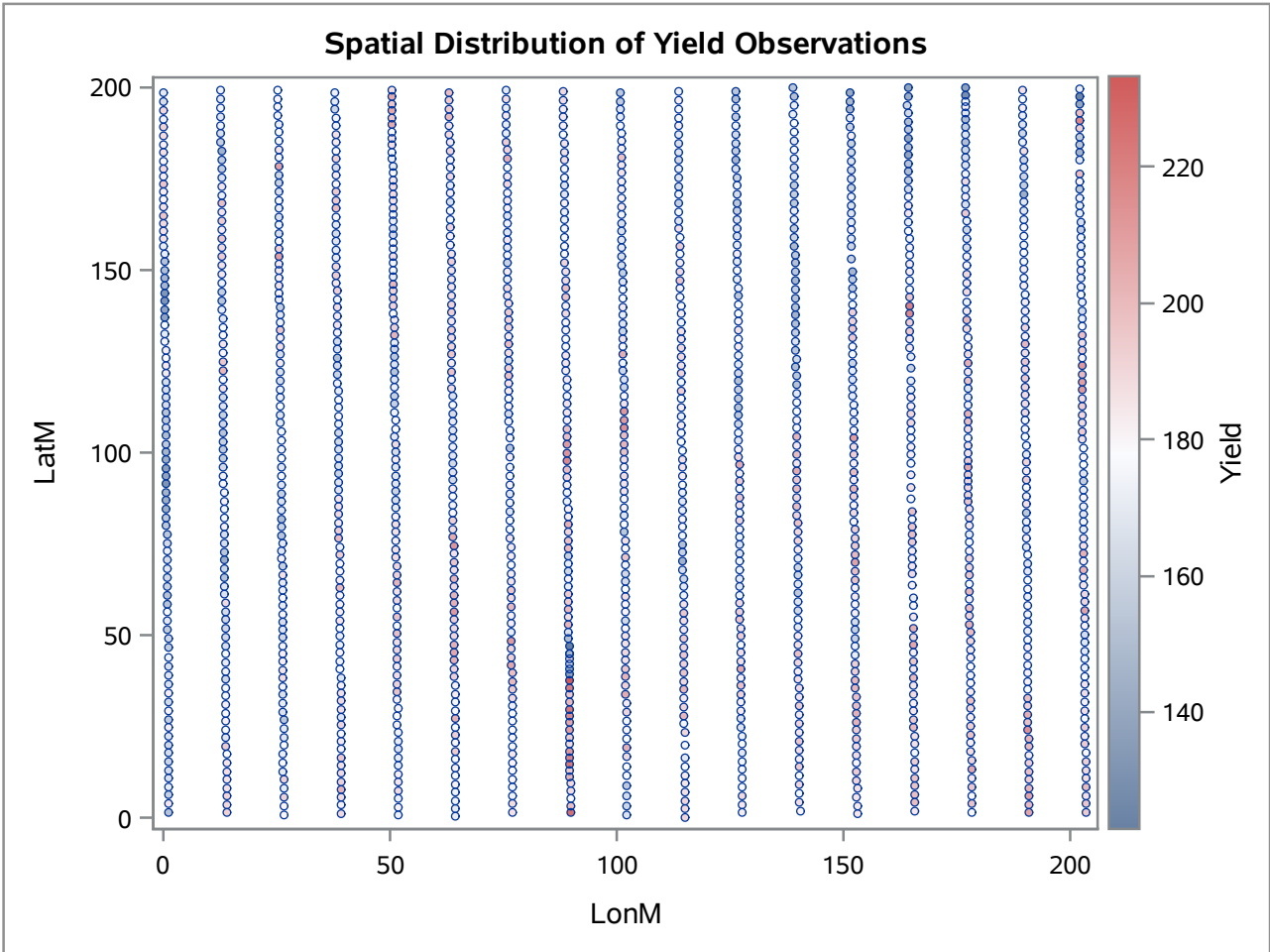


The VARIOGRAM Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497



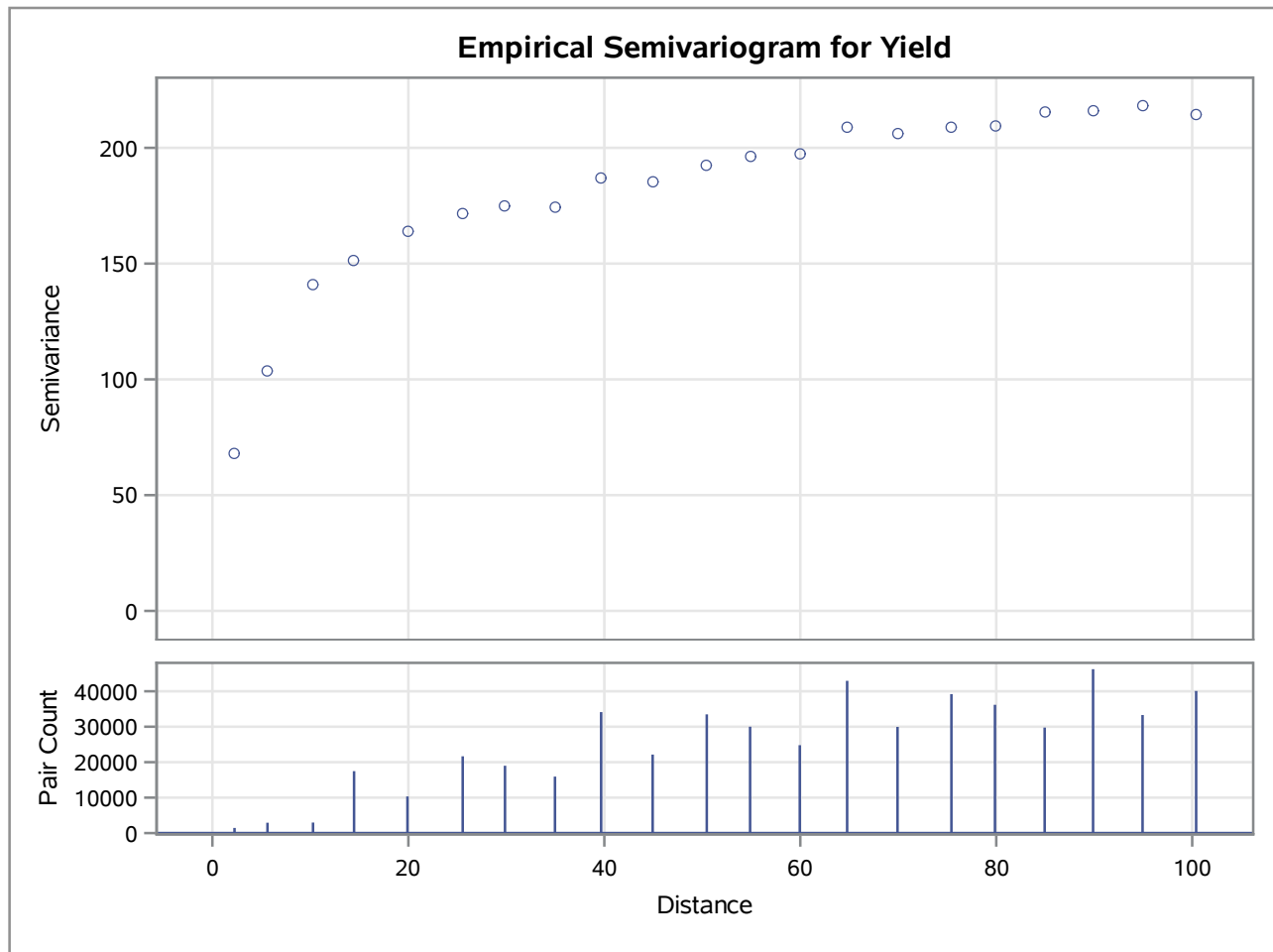
The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2977	10.27	140.893
3	17462	14.46	151.177
4	10332	19.91	163.680
5	21658	25.55	171.389
6	18993	29.86	175.079
7	15928	34.96	174.593
8	34130	39.67	187.106
9	22142	44.93	185.104
10	33484	50.46	192.475
11	30001	54.88	196.195
12	24788	59.95	197.271
13	42941	64.78	208.749
14	29953	69.92	206.092
15	39197	75.42	209.018
16	36185	79.87	209.214
17	29754	84.94	215.605
18	46228	89.88	215.871
19	33301	94.93	218.250
20	40076	100.40	214.187

The VARIOGRAM Procedure

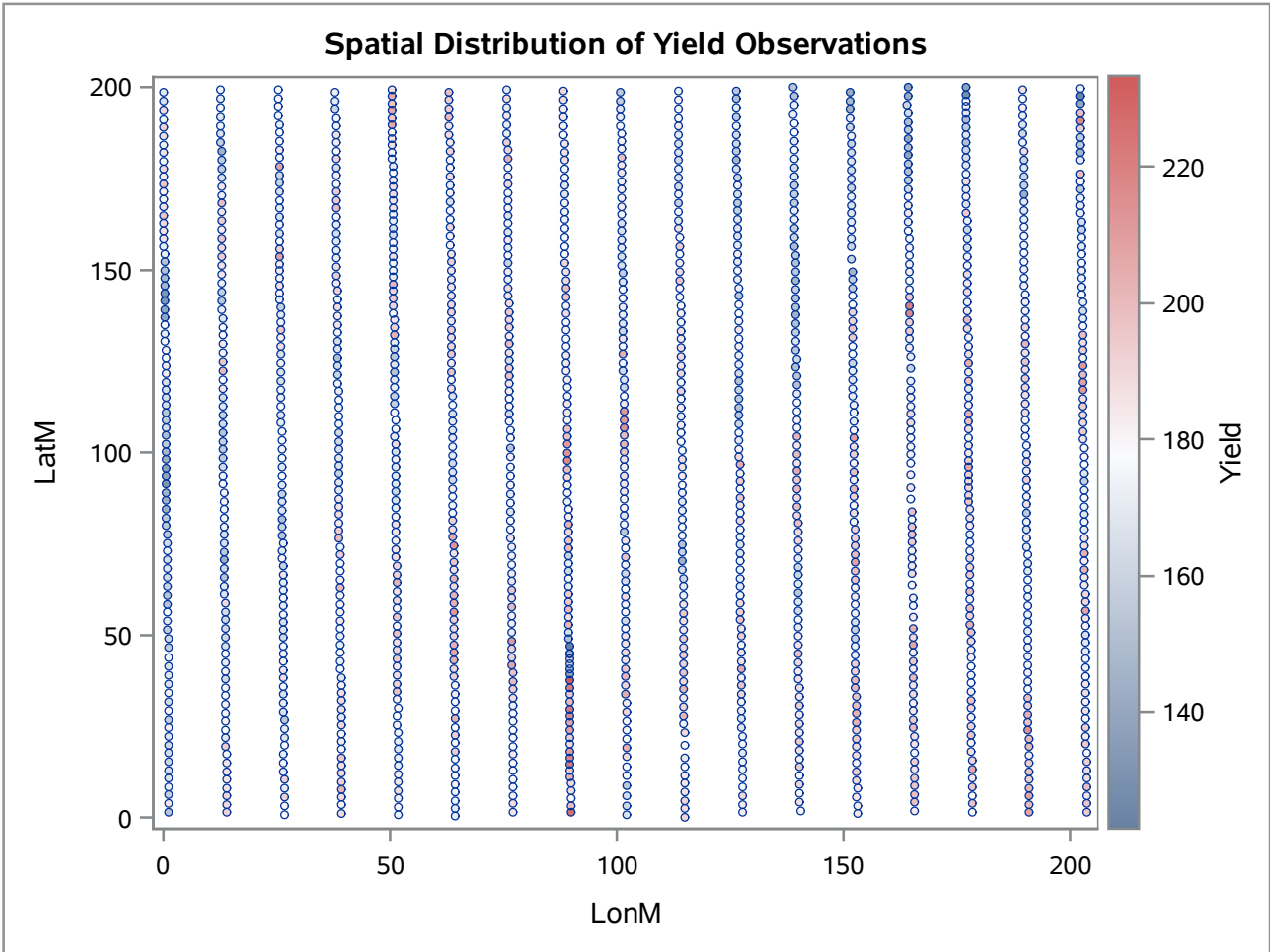
Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497



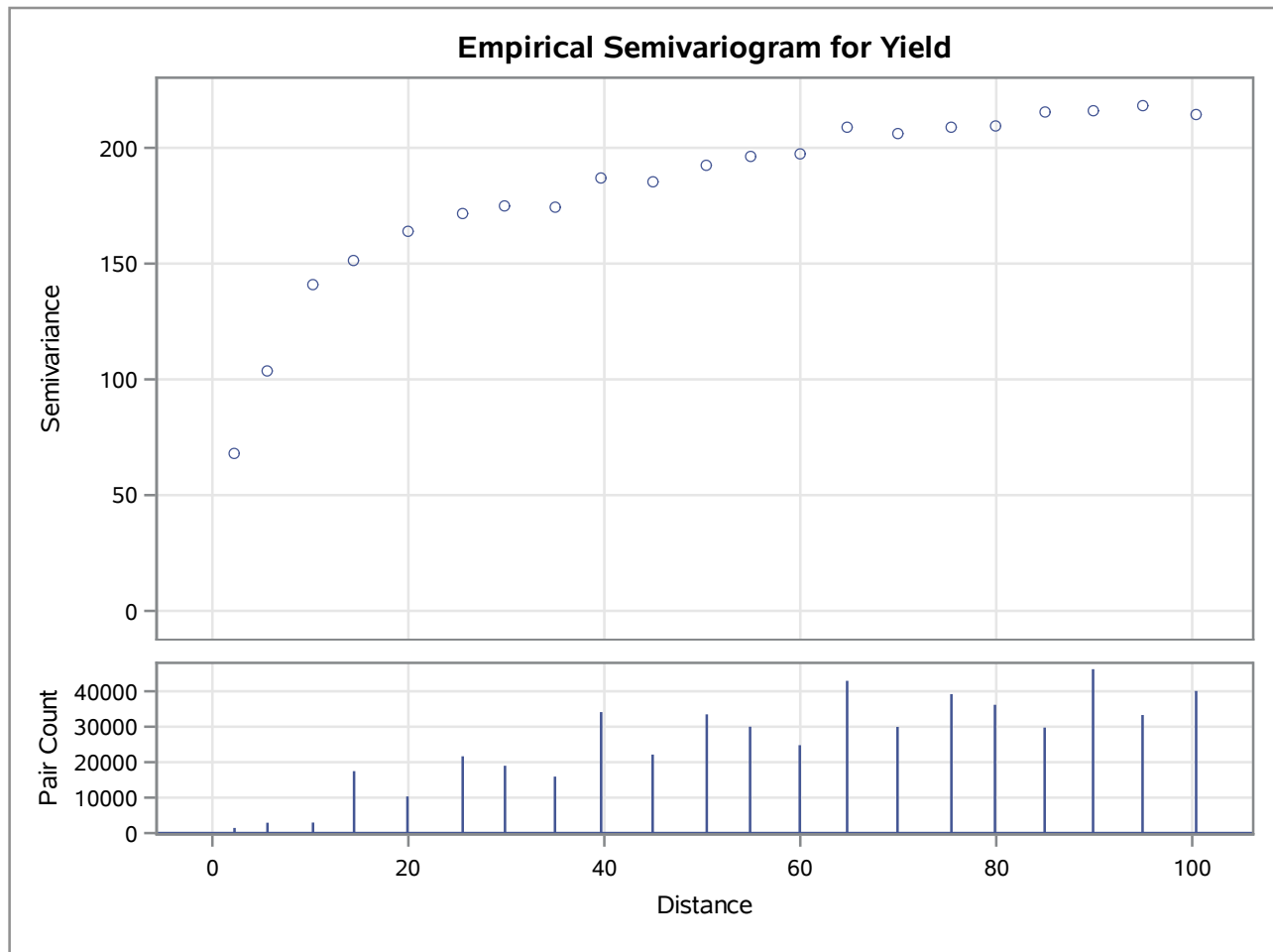
The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2977	10.27	140.893
3	17462	14.46	151.177
4	10332	19.91	163.680
5	21658	25.55	171.389
6	18993	29.86	175.079
7	15928	34.96	174.593
8	34130	39.67	187.106
9	22142	44.93	185.104
10	33484	50.46	192.475
11	30001	54.88	196.195
12	24788	59.95	197.271
13	42941	64.78	208.749
14	29953	69.92	206.092
15	39197	75.42	209.018
16	36185	79.87	209.214
17	29754	84.94	215.605
18	46228	89.88	215.871
19	33301	94.93	218.250
20	40076	100.40	214.187

The VARIOGRAM Procedure

Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: Omnidirectional

Current Model: Spherical

Semivariogram Model Fitting	
Name	Spherical
Label	Sph
Output Item Store	WORK.YELDVGM
Item Store Label	Yield Variogram

Model Information	
Parameter	Initial Value
Nugget	44.3014
Scale	171.8
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	15	Function Calls	53
Gradient Calls	0	Active Constraints	0
Objective Function	341.63914819	Max Abs Gradient Element	0.0000156531
Slope of Search Direction	-1.419189E-7		

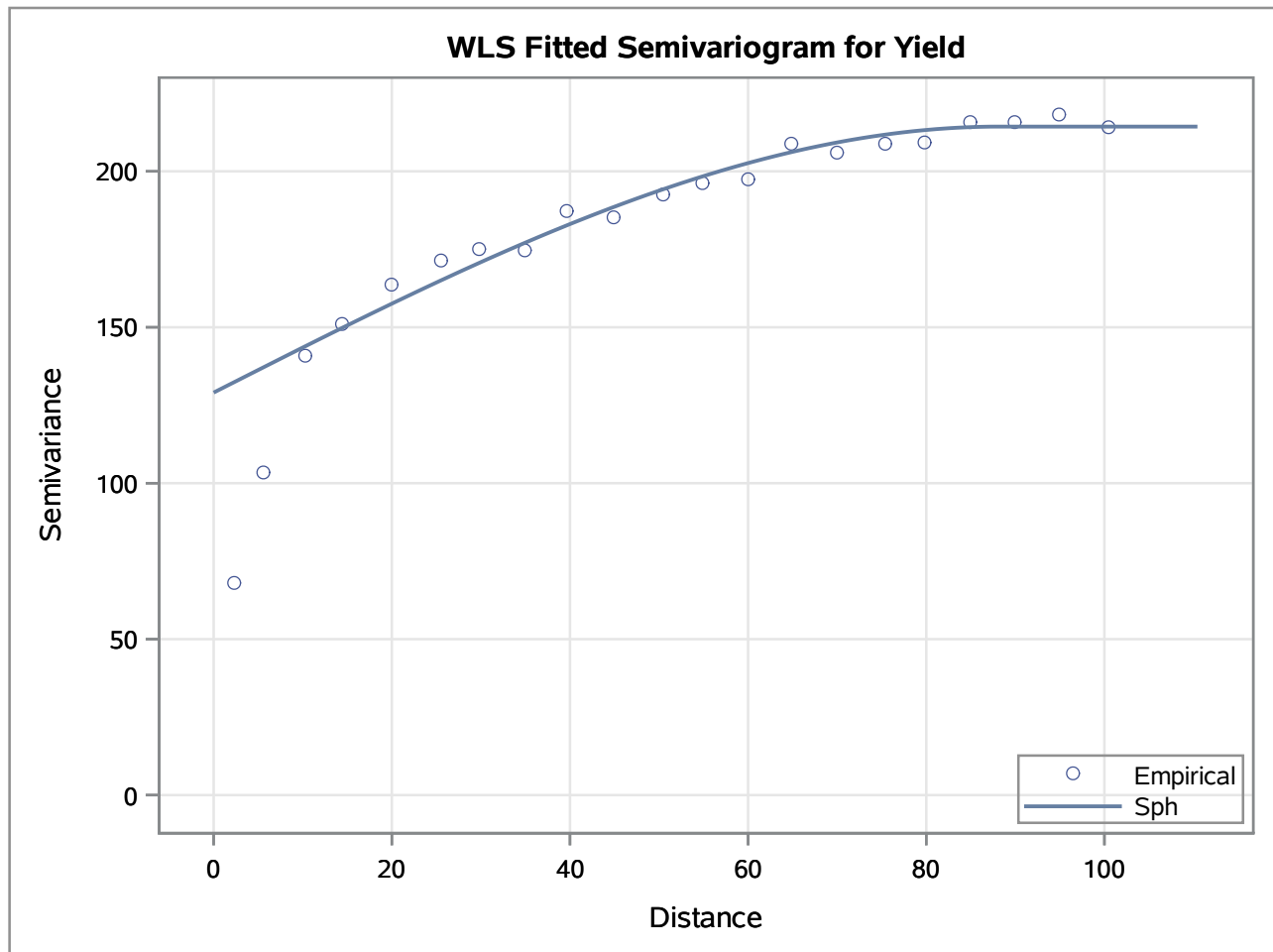
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	129.06	1.2391	18	104.16	<.0001
Scale	85.2820	1.1644	18	73.24	<.0001
Range	88.2322	1.6551	18	53.31	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	341.63915	64.57389

The VARIOGRAM Procedure

Dependent Variable: Yield



The VARIOGRAM Procedure**Dependent Variable: Yield**

Number of Observations Read	1497
Number of Observations Used	1497

The VARIOGRAM Procedure**Dependent Variable: Yield**

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2977	10.27	140.893
3	17462	14.46	151.177
4	10332	19.91	163.680
5	21658	25.55	171.389
6	18993	29.86	175.079
7	15928	34.96	174.593
8	34130	39.67	187.106
9	22142	44.93	185.104
10	33484	50.46	192.475
11	30001	54.88	196.195
12	24788	59.95	197.271
13	42941	64.78	208.749
14	29953	69.92	206.092
15	39197	75.42	209.018
16	36185	79.87	209.214
17	29754	84.94	215.605
18	46228	89.88	215.871
19	33301	94.93	218.250
20	40076	100.40	214.187

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information		
Parameter	Initial Value	Status
Nugget	0	Fixed
Scale	171.8	
Range	50.2004	

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	2
Fixed Parameters	1
Lower Boundaries	2
Upper Boundaries	0
Starting Values From	MODEL Statement and PROC

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	9	Function Calls	36
Gradient Calls	0	Active Constraints	0
Objective Function	2155.9585914	Max Abs Gradient Element	8.5606544E-6
Slope of Search Direction	-3.041093E-8		

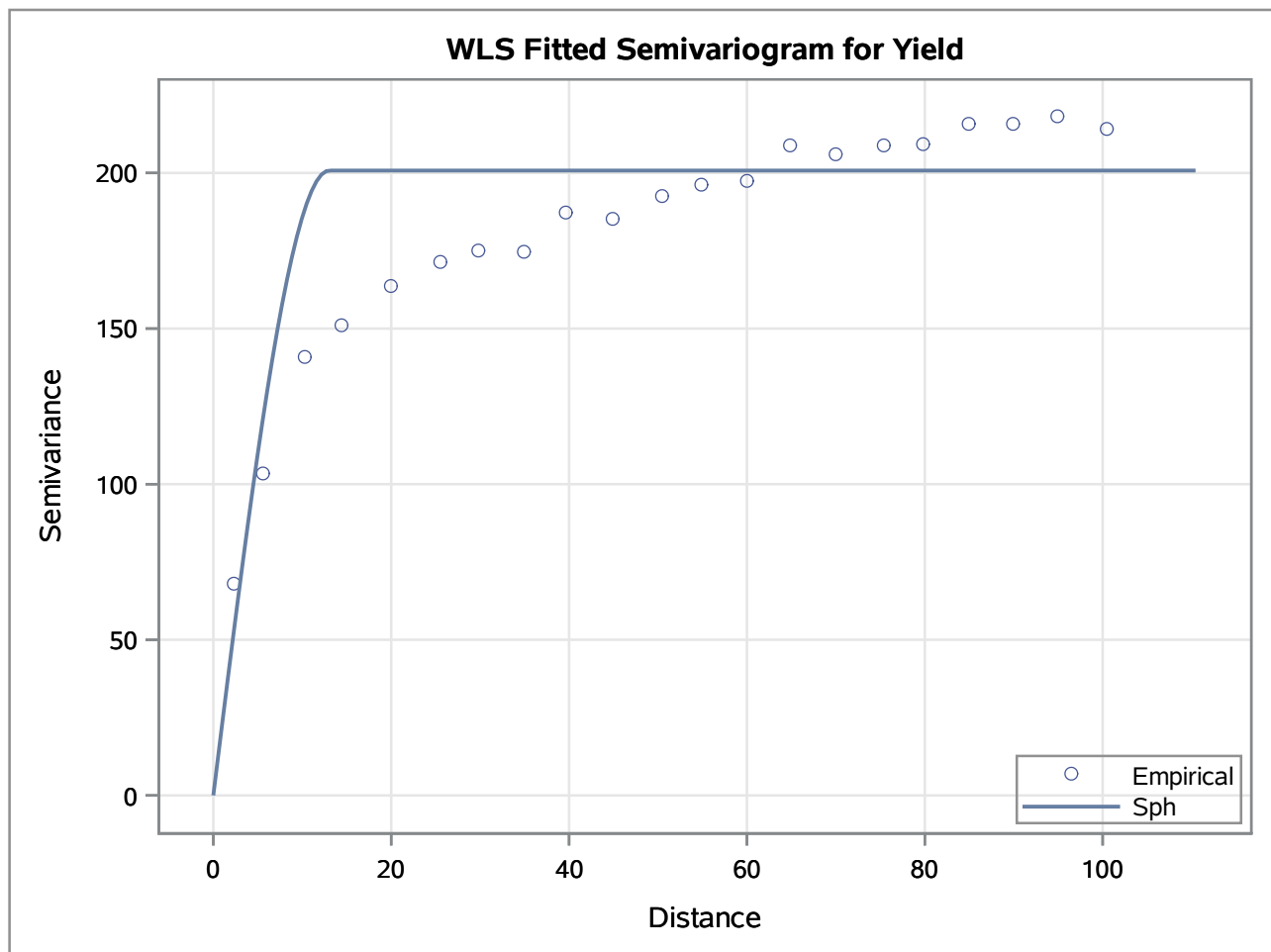
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Scale	200.78	0.2777	19	722.94	<.0001
Range	13.0260	0.2146	19	60.69	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	2156.0	101.26083

The VARIOGRAM Procedure

Dependent Variable: Yield



The VARIOGRAM Procedure**Dependent Variable: Yield**

Number of Observations Read	1497
Number of Observations Used	1497

The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2977	10.27	140.893
3	17462	14.46	151.177
4	10332	19.91	163.680
5	21658	25.55	171.389
6	18993	29.86	175.079
7	15928	34.96	174.593
8	34130	39.67	187.106
9	22142	44.93	185.104
10	33484	50.46	192.475
11	30001	54.88	196.195
12	24788	59.95	197.271
13	42941	64.78	208.749
14	29953	69.92	206.092
15	39197	75.42	209.018
16	36185	79.87	209.214
17	29754	84.94	215.605
18	46228	89.88	215.871
19	33301	94.93	218.250
20	40076	100.40	214.187

The VARIOGRAM Procedure

Dependent Variable: Yield
Angle: Omnidirectional
Current Model: Exponential

Semivariogram Model Fitting	
Name	Exponential
Label	Exp

Model Information	
Parameter	Initial Value
Nugget	44.3014
Scale	171.8
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Yield
Angle: Omnidirectional
Current Model: Exponential

Dual Quasi-Newton Optimization**Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	19	Function Calls	67
Gradient Calls	0	Active Constraints	0
Objective Function	229.37406281	Max Abs Gradient Element	0.0000414402
Slope of Search Direction	-2.245336E-6		

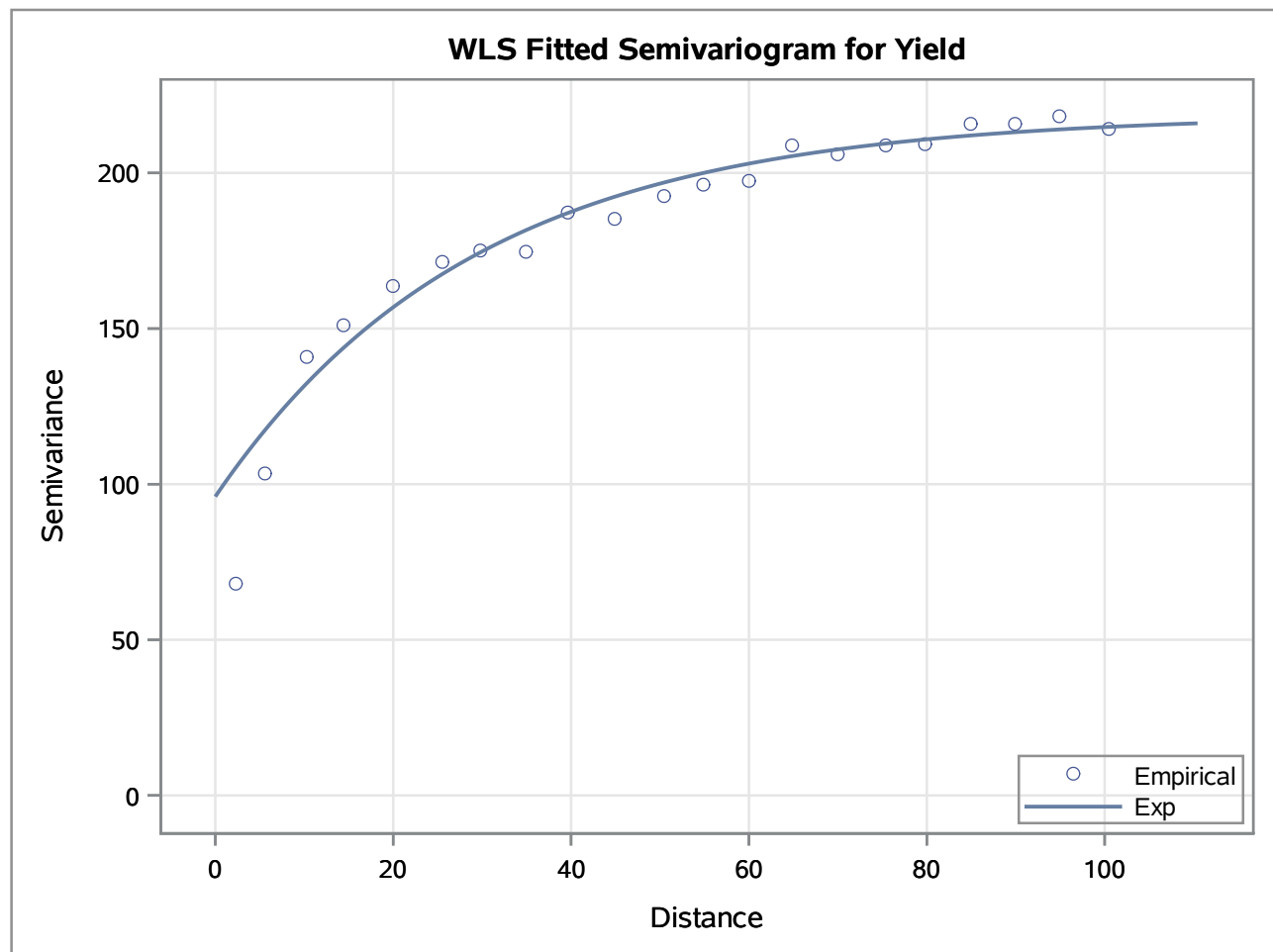
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	96.0142	2.5756	18	37.28	<.0001
Scale	122.73	1.9816	18	61.94	<.0001
Range	29.2212	1.1448	18	25.53	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Exp	229.37406	56.20747

The VARIOGRAM Procedure

Dependent Variable: Yield



The VARIOGRAM Procedure**Dependent Variable: Yield**

Number of Observations Read	1497
Number of Observations Used	1497

The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2977	10.27	140.893
3	17462	14.46	151.177
4	10332	19.91	163.680
5	21658	25.55	171.389
6	18993	29.86	175.079
7	15928	34.96	174.593
8	34130	39.67	187.106
9	22142	44.93	185.104
10	33484	50.46	192.475
11	30001	54.88	196.195
12	24788	59.95	197.271
13	42941	64.78	208.749
14	29953	69.92	206.092
15	39197	75.42	209.018
16	36185	79.87	209.214
17	29754	84.94	215.605
18	46228	89.88	215.871
19	33301	94.93	218.250
20	40076	100.40	214.187

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: Omnidirectional

Current Model: Gaussian

Semivariogram Model Fitting	
Name	Gaussian
Label	Gau

Model Information	
Parameter	Initial Value
Nugget	44.3014
Scale	171.8
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: Omnidirectional****Current Model: Gaussian****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	20	Function Calls	72
Gradient Calls	0	Active Constraints	0
Objective Function	421.76171907	Max Abs Gradient Element	6.8623962E-6
Slope of Search Direction	-2.652122E-6		

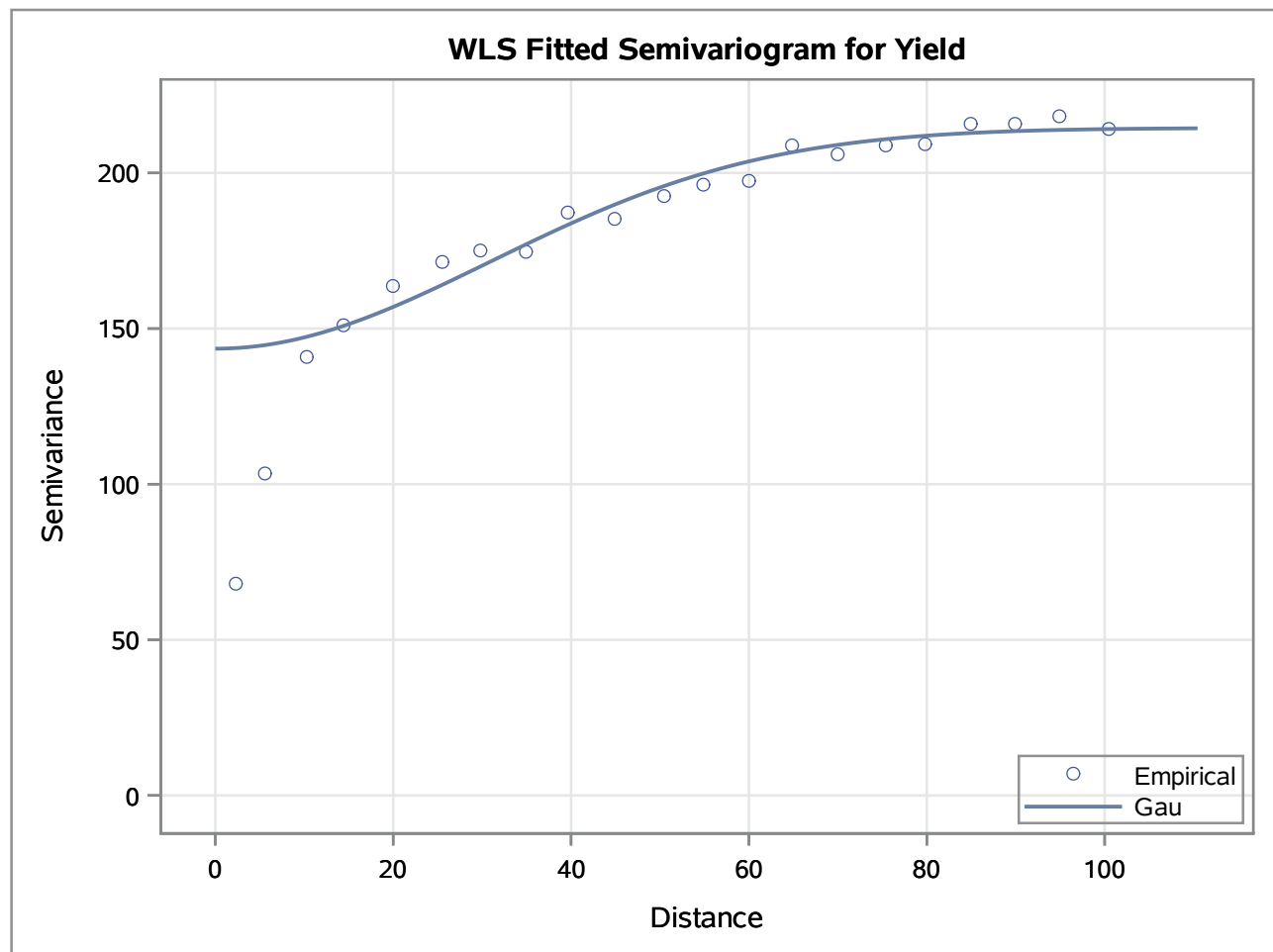
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	143.54	1.1081	18	129.53	<.0001
Scale	70.9172	0.9876	18	71.80	<.0001
Range	43.6771	0.8844	18	49.38	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Gau	421.76172	68.99828

The VARIOGRAM Procedure

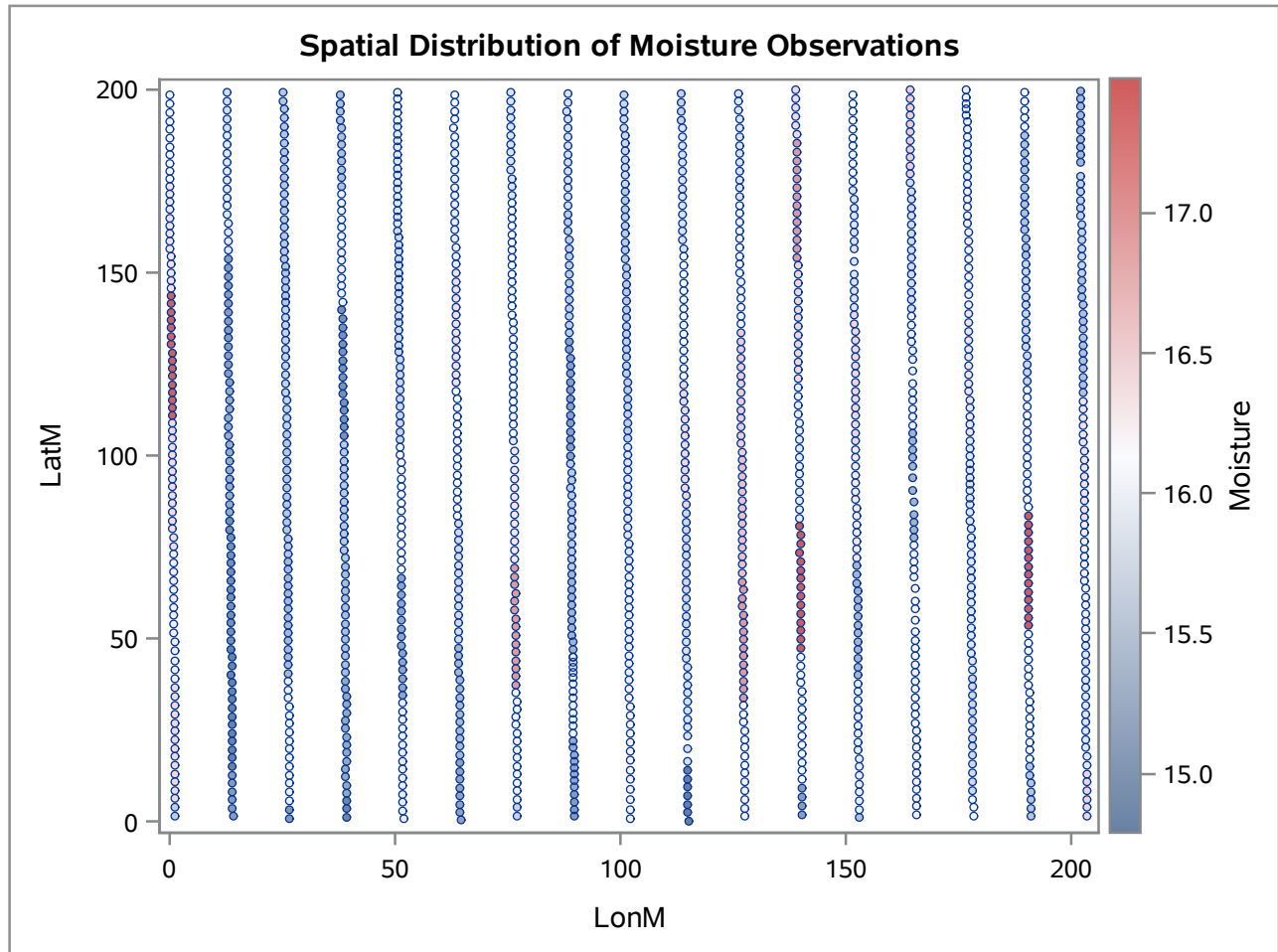
Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: Moisture

Number of Observations Read	1497
Number of Observations Used	1497



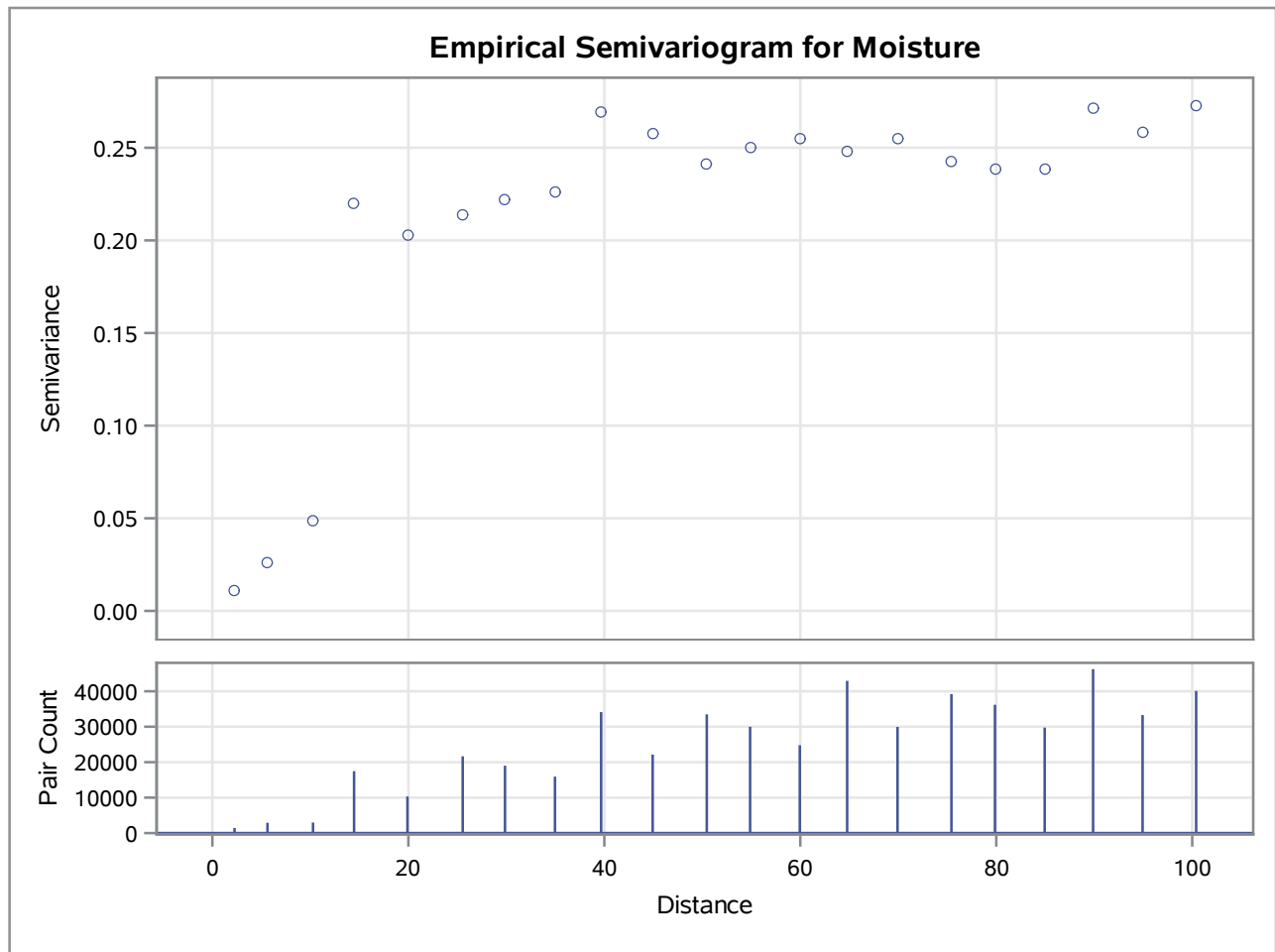
The VARIOGRAM Procedure

Dependent Variable: Moisture

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	0.011
1	2925	5.62	0.026
2	2977	10.27	0.049
3	17462	14.46	0.220
4	10332	19.91	0.203
5	21658	25.55	0.214
6	18993	29.86	0.222
7	15928	34.96	0.226
8	34130	39.67	0.270
9	22142	44.93	0.258
10	33484	50.46	0.241
11	30001	54.88	0.250
12	24788	59.95	0.255
13	42941	64.78	0.248
14	29953	69.92	0.255
15	39197	75.42	0.242
16	36185	79.87	0.238
17	29754	84.94	0.238
18	46228	89.88	0.271
19	33301	94.93	0.258
20	40076	100.40	0.273

The VARIOGRAM Procedure

Dependent Variable: Moisture



The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.000643
Scale	0.2667
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Moisture

Angle: Omnidirectional

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	14	Function Calls	53
Gradient Calls	0	Active Constraints	0
Objective Function	3277.1135707	Max Abs Gradient Element	0.0062234612
Slope of Search Direction	-5.933077E-7		

Convergence criterion (GCONV=1E-8) satisfied.

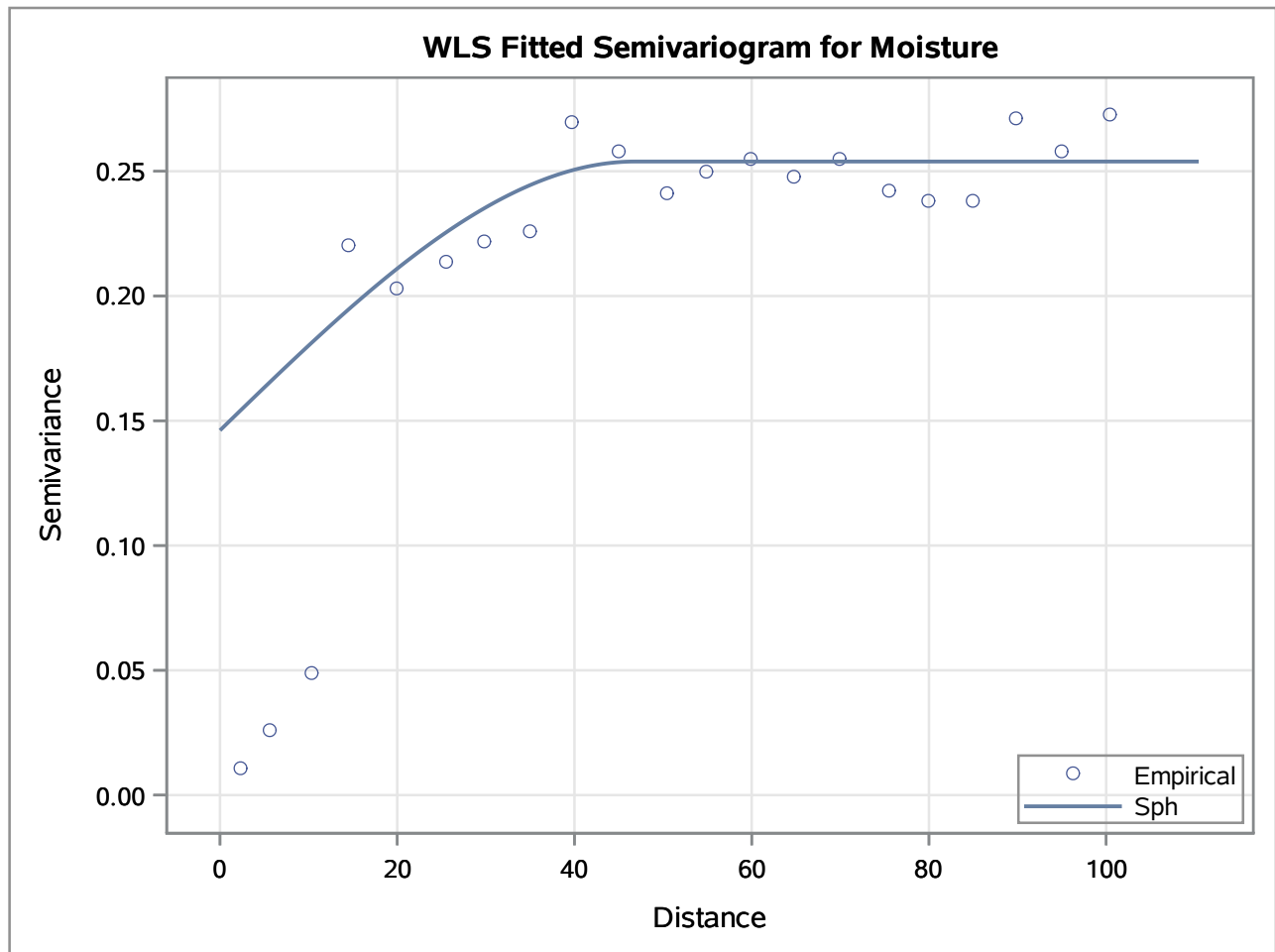
Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.1462	0.002919	18	50.08	<.0001	-0.00599
Scale	0.1077	0.002936	18	36.70	<.0001	-0.00622
Range	46.8263	0.8204	18	57.07	<.0001	3.809E-7

Fit Summary		
Model	Weighted SSE	AIC
Sph	3277.1	112.05411

The VARIOGRAM Procedure

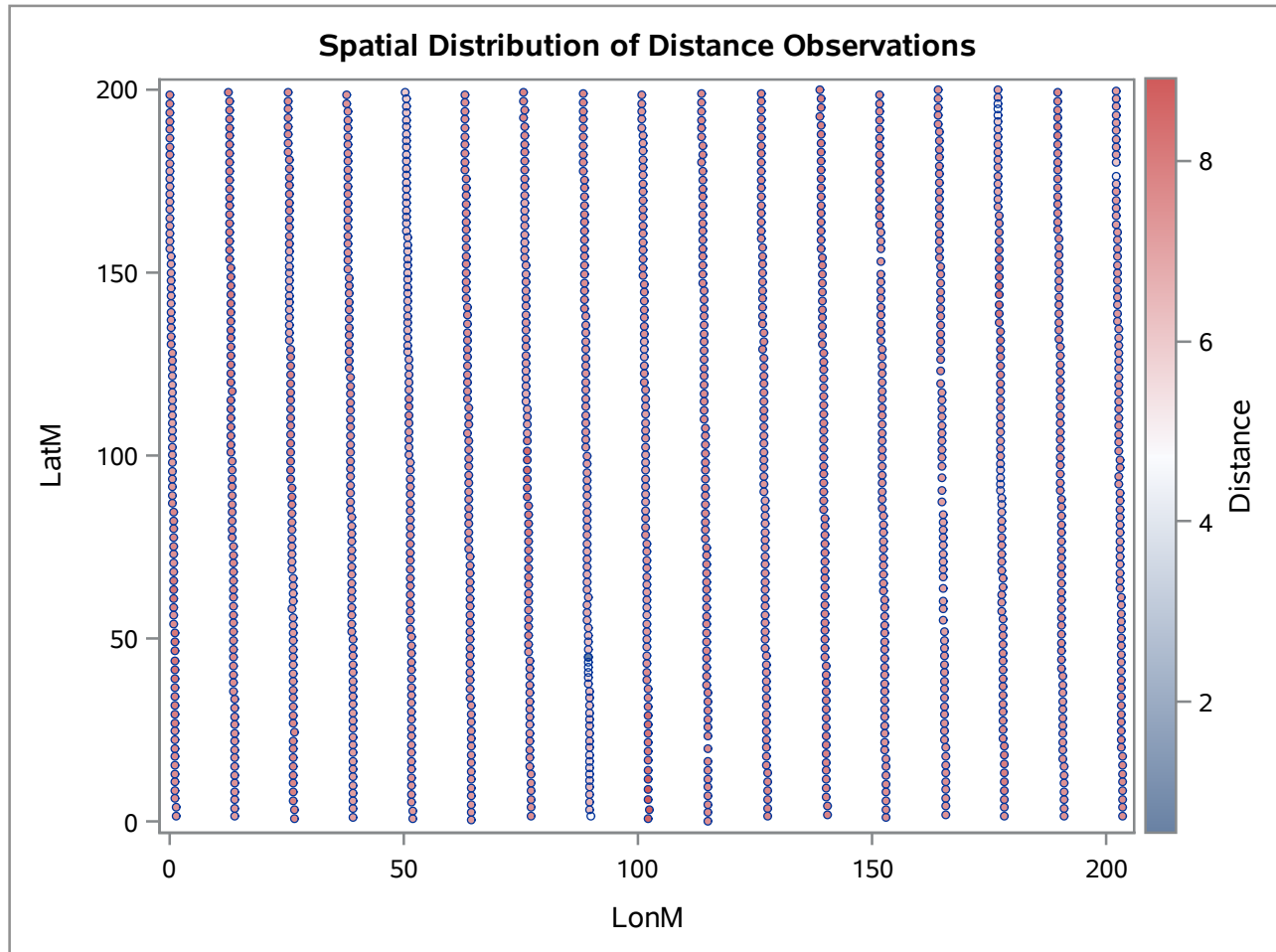
Dependent Variable: Moisture



The VARIOGRAM Procedure

Dependent Variable: Distance

Number of Observations Read	1497
Number of Observations Used	1497



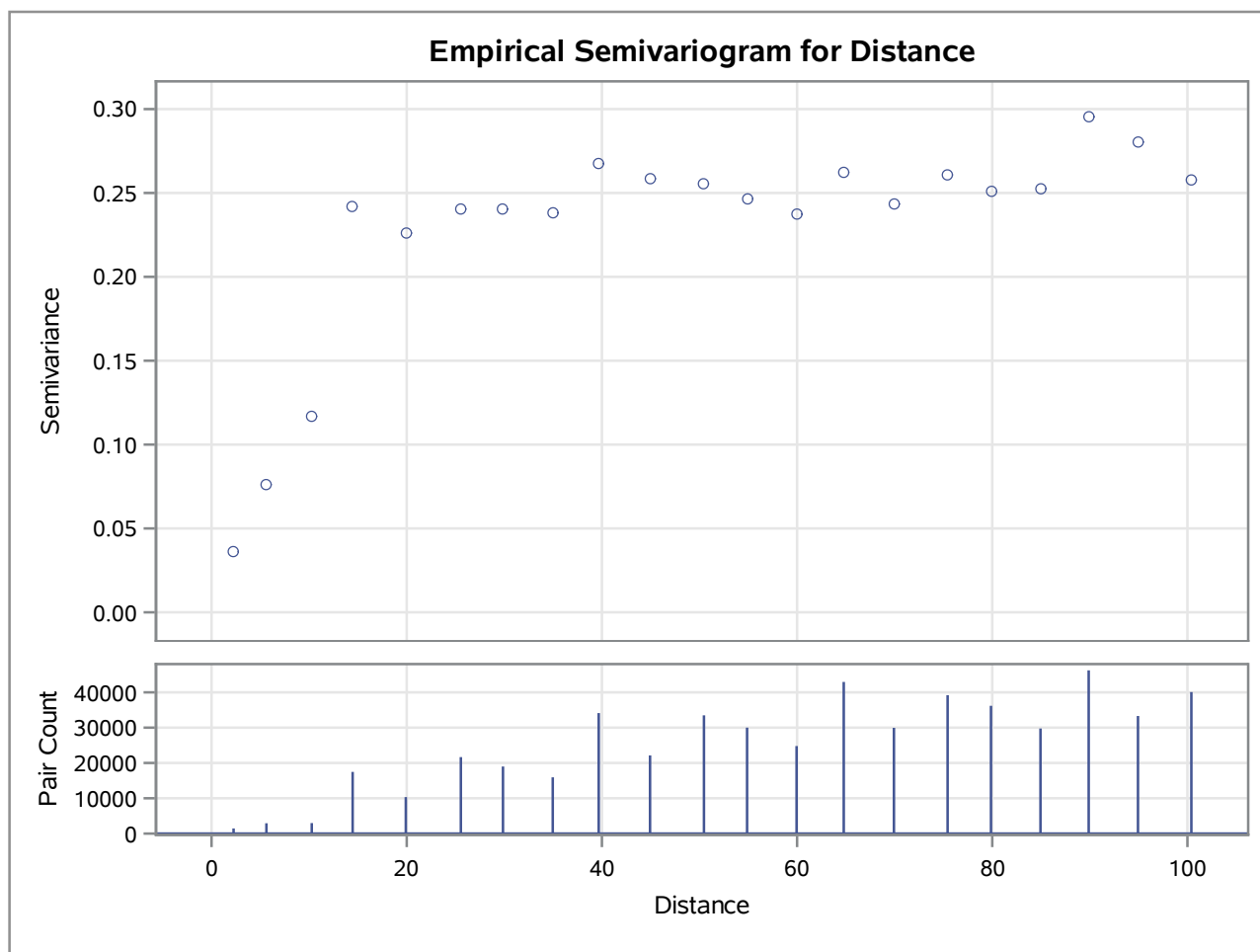
The VARIOGRAM Procedure

Dependent Variable: Distance

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	0.036
1	2925	5.62	0.076
2	2977	10.27	0.117
3	17462	14.46	0.242
4	10332	19.91	0.226
5	21658	25.55	0.240
6	18993	29.86	0.241
7	15928	34.96	0.238
8	34130	39.67	0.268
9	22142	44.93	0.259
10	33484	50.46	0.255
11	30001	54.88	0.246
12	24788	59.95	0.237
13	42941	64.78	0.262
14	29953	69.92	0.243
15	39197	75.42	0.261
16	36185	79.87	0.251
17	29754	84.94	0.252
18	46228	89.88	0.296
19	33301	94.93	0.281
20	40076	100.40	0.258

The VARIOGRAM Procedure

Dependent Variable: Distance



The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.00869
Scale	0.2693
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Distance

Angle: Omnidirectional

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	19	Function Calls	80
Gradient Calls	0	Active Constraints	1
Objective Function	1348.8534468	Max Abs Gradient Element	0.0892704425
Slope of Search Direction	-0.000010228		

Convergence criterion (GCONV=1E-8) satisfied.

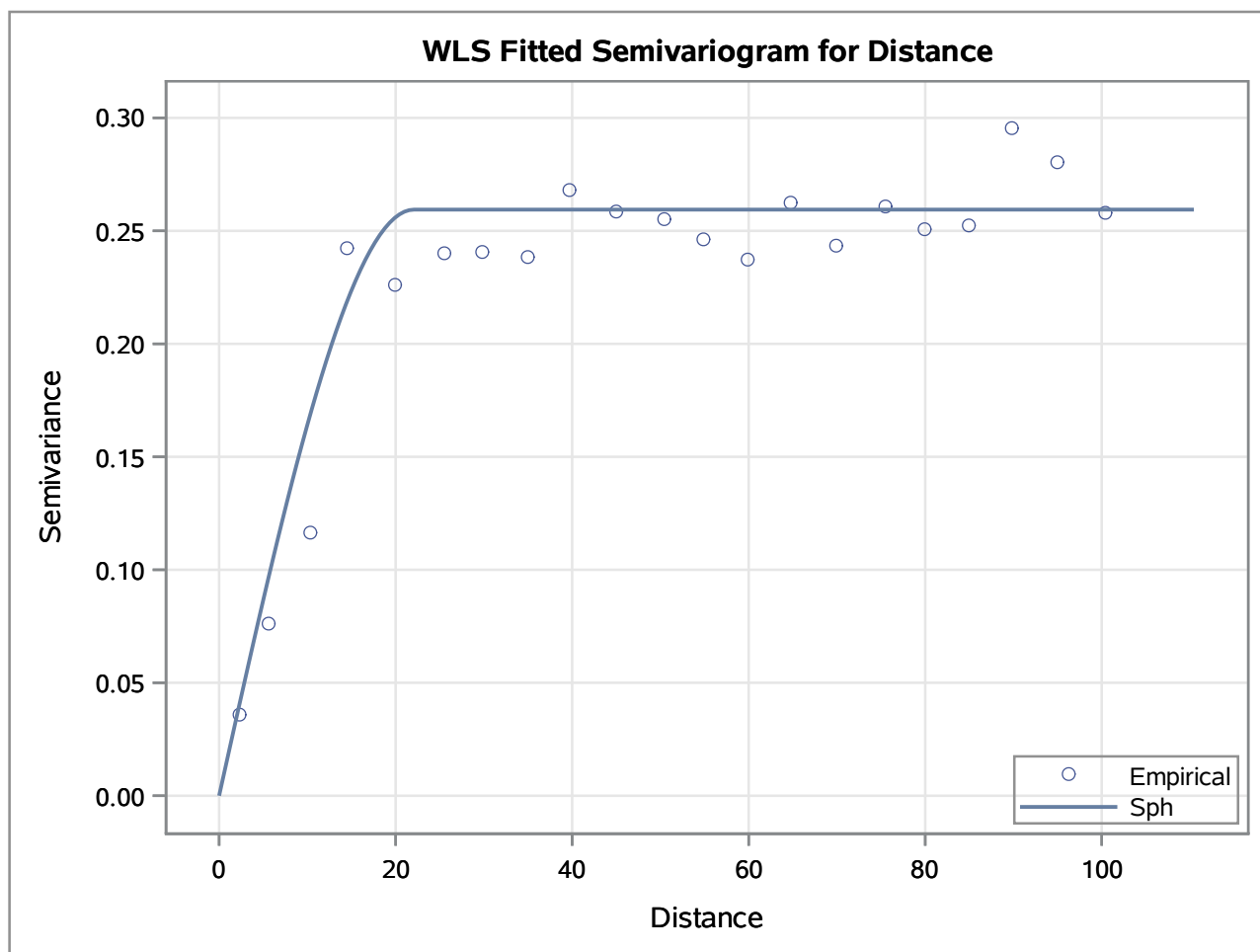
Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0	0	18	.	.	5733.025
Scale	0.2594	0.000367	18	706.24	<.0001	-0.08927
Range	22.0740	0.2002	18	110.28	<.0001	0.000029

Fit Summary		
Model	Weighted SSE	AIC
Sph	1348.9	93.41224

The VARIOGRAM Procedure

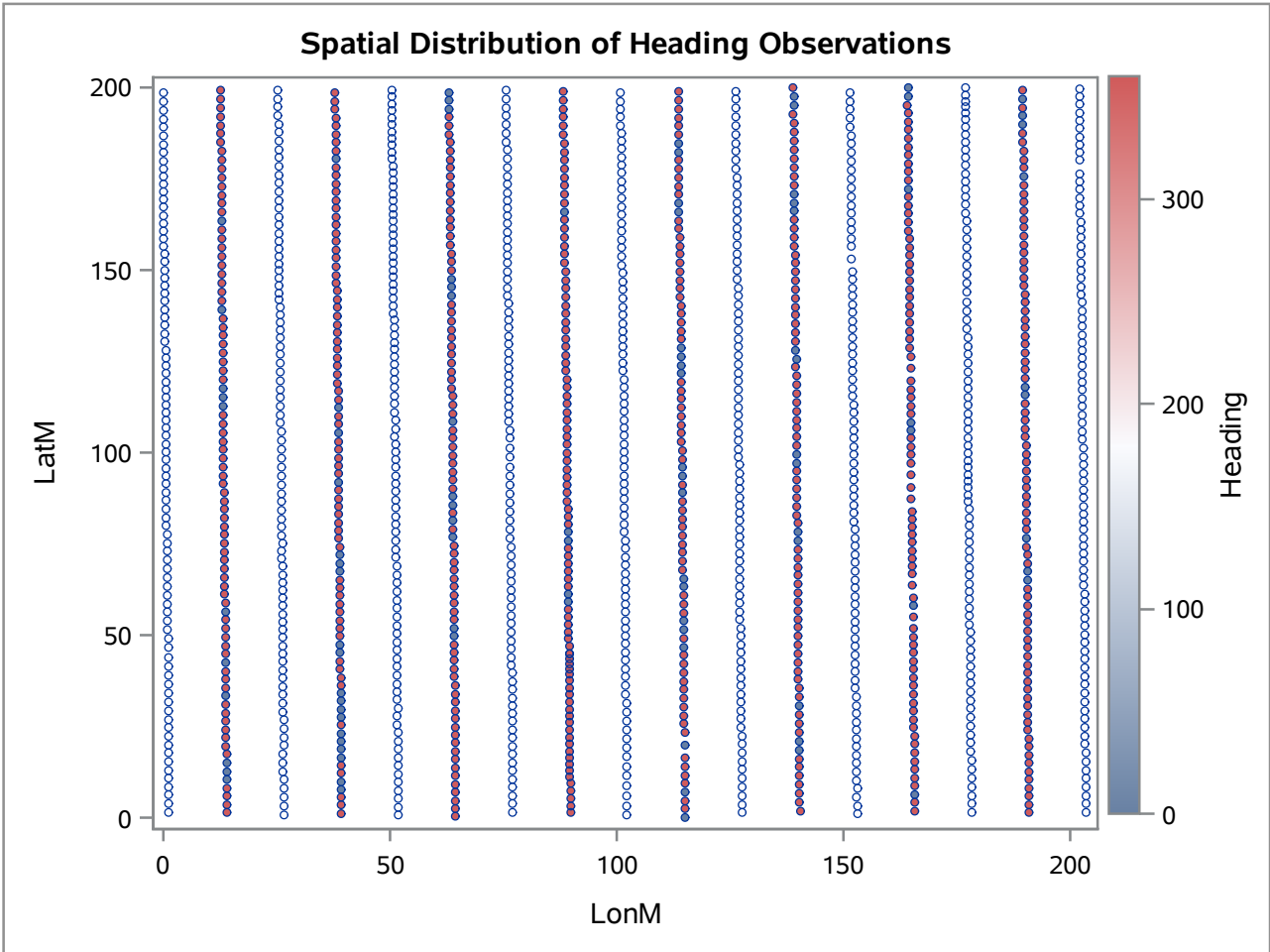
Dependent Variable: Distance



The VARIOGRAM Procedure

Dependent Variable: Heading

Number of Observations Read	1497
Number of Observations Used	1497



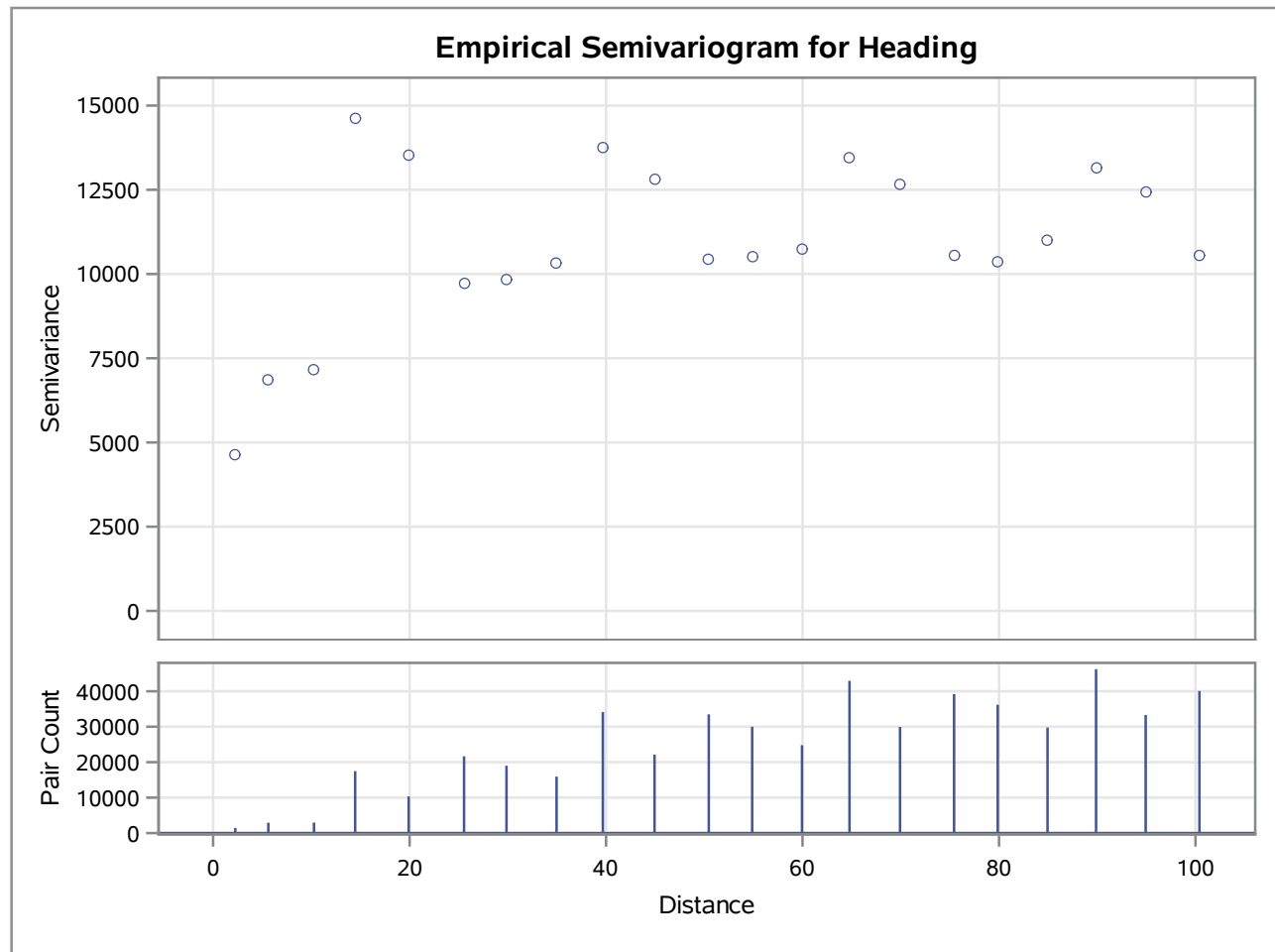
The VARIOGRAM Procedure

Dependent Variable: Heading

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	4643
1	2925	5.62	6850
2	2977	10.27	7153
3	17462	14.46	14604
4	10332	19.91	13534
5	21658	25.55	9740
6	18993	29.86	9852
7	15928	34.96	10308
8	34130	39.67	13737
9	22142	44.93	12805
10	33484	50.46	10456
11	30001	54.88	10496
12	24788	59.95	10725
13	42941	64.78	13436
14	29953	69.92	12676
15	39197	75.42	10533
16	36185	79.87	10348
17	29754	84.94	10988
18	46228	89.88	13147
19	33301	94.93	12419
20	40076	100.40	10548

The VARIOGRAM Procedure

Dependent Variable: Heading



The VARIOGRAM Procedure

Dependent Variable: Heading
Angle: Omnidirectional
Current Model: Spherical

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	3160.7
Scale	8877.7
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Heading
Angle: Omnidirectional
Current Model: Spherical

Dual Quasi-Newton Optimization**Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	13	Function Calls	55
Gradient Calls	0	Active Constraints	0
Objective Function	4187.6855736	Max Abs Gradient Element	0.0577282554
Slope of Search Direction	-9.712531E-6		

Convergence criterion (GCONV=1E-8) satisfied.

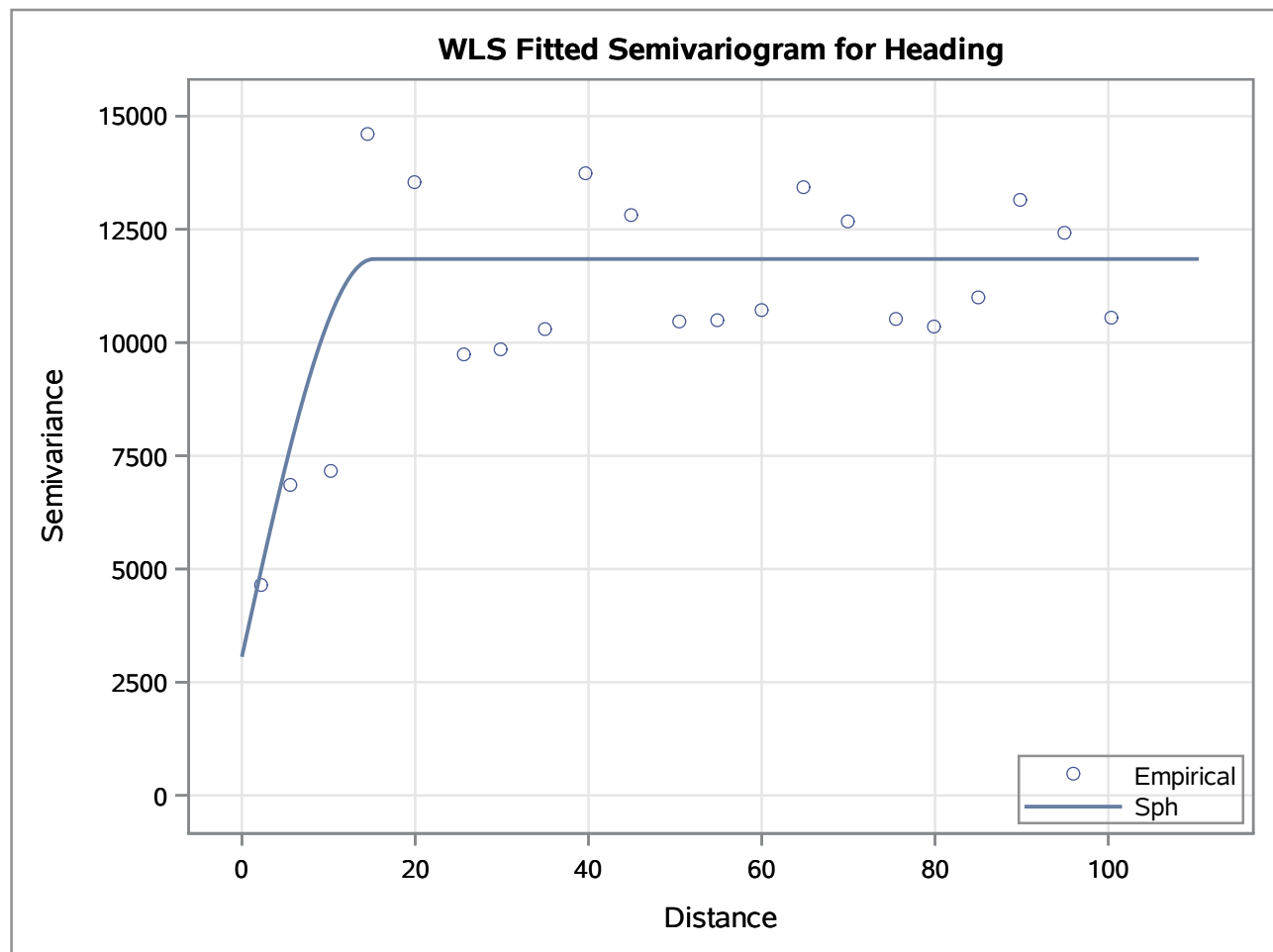
Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	3060.74	181.75	18	16.84	<.0001	0.018627
Scale	8784.01	183.01	18	48.00	<.0001	-0.02159
Range	15.1695	0.1532	18	99.04	<.0001	0.057728

Fit Summary		
Model	Weighted SSE	AIC
Sph	4187.7	117.20300

The VARIOGRAM Procedure

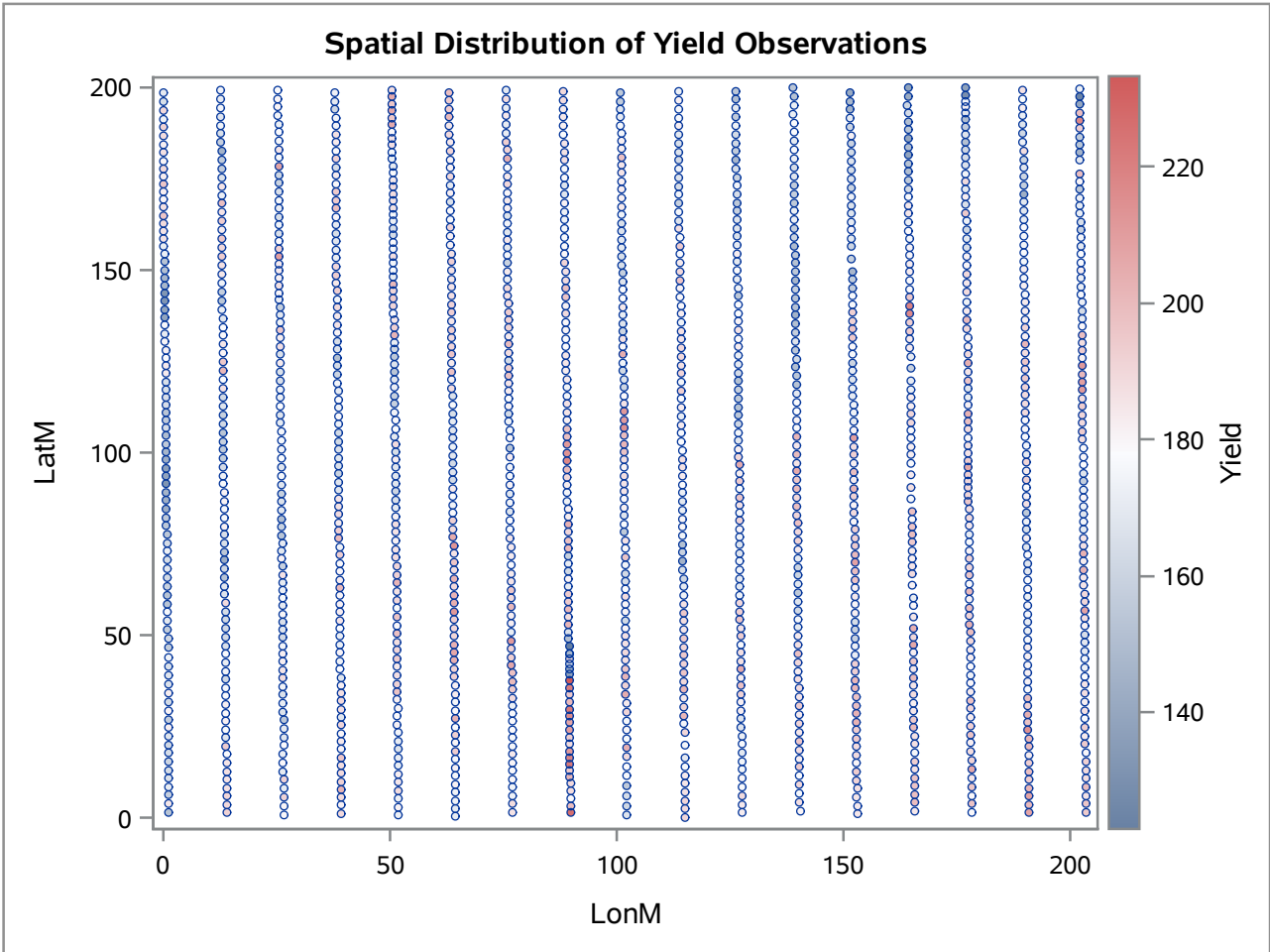
Dependent Variable: Heading



The VARIOGRAM Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497



The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram at Angle=0			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	68.083
1	2925	5.62	103.502
2	2923	10.23	140.736
3	2952	14.99	163.717
4	2947	19.88	174.972
5	2951	24.91	181.493
6	2863	30.00	195.105
7	7769	35.16	178.206
8	7841	40.01	180.431
9	7517	44.96	185.109
10	7385	49.96	186.950
11	7069	54.99	193.038
12	6763	59.99	191.575
13	7771	65.20	193.728
14	10514	69.98	189.953
15	9978	74.99	195.808
16	9525	79.97	202.770
17	9220	84.98	205.373
18	8730	89.99	211.750
19	8399	95.01	212.436
20	9883	100.07	219.484

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4138	15.4	151.900
4	3693	19.9	163.244
5	3516	25.1	167.960
6	8013	29.8	177.402
7	3793	34.9	173.789
8	5173	40.6	184.554

The VARIOGRAM Procedure

Dependent Variable: Yield

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
9	7285	44.9	184.869
10	6145	49.9	184.077
11	8553	55.3	189.461
12	9017	59.9	192.149
13	6737	64.7	196.888
14	8934	70.1	209.121
15	8037	74.9	210.411
16	7728	80.1	216.276
17	10253	84.9	214.877
18	8884	89.9	215.750
19	9470	95.2	225.888
20	8942	99.9	225.087

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	54	12.5	149.399
3	6366	13.0	145.835
4	0	.	.
5	11865	26.0	173.157
6	20	27.5	156.146
7	0	.	.
8	16287	38.9	194.605
9	0	.	.
10	13854	51.2	195.149
11	6133	53.5	201.352
12	0	.	.
13	20738	64.6	215.720
14	1932	68.0	224.554
15	13136	76.4	208.991
16	11611	79.5	199.305
17	3	82.5	352.652

The VARIOGRAM Procedure

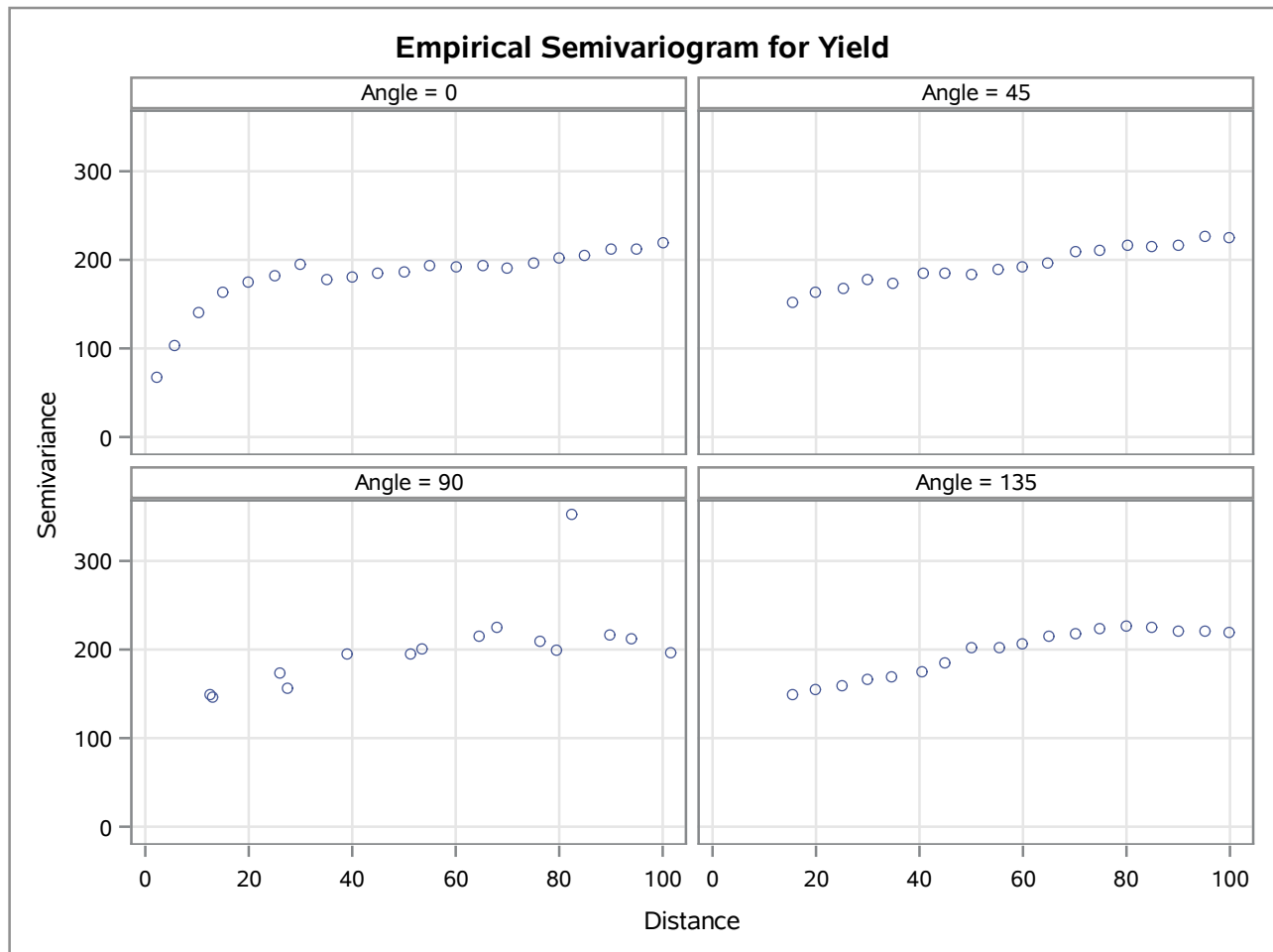
Dependent Variable: Yield

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
18	19620	89.8	215.837
19	6280	94.1	211.670
20	11235	101.6	196.469

Empirical Semivariogram at Angle=135			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4006	15.4	149.679
4	3692	19.9	155.102
5	3326	25.0	159.741
6	8097	29.9	165.746
7	4366	34.7	168.862
8	4829	40.6	175.388
9	7340	44.9	185.332
10	6100	49.9	201.551
11	8246	55.3	202.049
12	9008	59.9	206.674
13	7695	64.9	215.519
14	8573	70.1	218.570
15	8046	74.9	224.054
16	7321	80.0	225.861
17	10278	84.9	225.470
18	8994	90.0	220.067
19	9152	95.2	220.196
20	10016	99.9	219.103

The VARIOGRAM Procedure

Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 0

Current Model: Spherical

Semivariogram Model Fitting at Angle=0	
Name	Spherical
Label	Sph
Output Item Store	WORK.YIELDANIVGM
Item Store Label	Anisotropic Yield Variogram

Model Information	
Parameter	Initial Value
Nugget	44.3014
Scale	170.3
Range	50.0343

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 0

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	13	Function Calls	43
Gradient Calls	0	Active Constraints	0
Objective Function	247.81596064	Max Abs Gradient Element	3.0367102E-6
Slope of Search Direction	-1.04617E-8		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	53.3370	2.8096	18	18.98	<.0001
Scale	143.86	2.7919	18	51.53	<.0001
Range	25.5080	0.9563	18	26.68	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	247.81596	57.83144

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 45

Current Model: Spherical

Semivariogram Model Fitting at Angle=45	
Name	Spherical
Label	Sph
Output Item Store	WORK.YIELDANIVGM
Item Store Label	Anisotropic Yield Variogram

Model Information	
Parameter	Initial Value
Nugget	113.4
Scale	108.9
Range	49.9590

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: 45****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	17	Function Calls	68
Gradient Calls	0	Active Constraints	0
Objective Function	22.814453677	Max Abs Gradient Element	0.0002092844
Slope of Search Direction	-1.231305E-7		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	145.09	2.3819	15	60.91	<.0001
Scale	121.76	35.8650	15	3.40	0.0040
Range	207.03	75.0687	15	2.76	0.0147

Fit Summary			
Model	Weighted SSE	AIC	Notes
Sph	22.81445	10.26641	Questionable fit

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 90

Current Model: Spherical

Semivariogram Model Fitting at Angle=90	
Name	Spherical
Label	Sph
Output Item Store	WORK.YIELDANIVGM
Item Store Label	Anisotropic Yield Variogram

Model Information	
Parameter	Initial Value
Nugget	62.8361
Scale	145.2
Range	50.7775

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 90

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	12	Function Calls	48
Gradient Calls	0	Active Constraints	0
Objective Function	77.43855157	Max Abs Gradient Element	4.2416029E-6
Slope of Search Direction	-2.926048E-8		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	123.37	2.7437	12	44.97	<.0001
Scale	86.0678	2.8070	12	30.66	<.0001
Range	66.2157	1.7415	12	38.02	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	77.43855	30.62152

The VARIOGRAM Procedure

Dependent Variable: Yield

Angle: 135

Current Model: Spherical

Semivariogram Model Fitting at Angle=135	
Name	Spherical
Label	Sph
Output Item Store	WORK.YIELDANIVGM
Item Store Label	Anisotropic Yield Variogram

Model Information	
Parameter	Initial Value
Nugget	131.0
Scale	88.8222
Range	49.9323

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Yield****Angle: 135****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	13	Function Calls	44
Gradient Calls	0	Active Constraints	0
Objective Function	26.826455696	Max Abs Gradient Element	6.6861247E-7
Slope of Search Direction	-2.146442E-9		

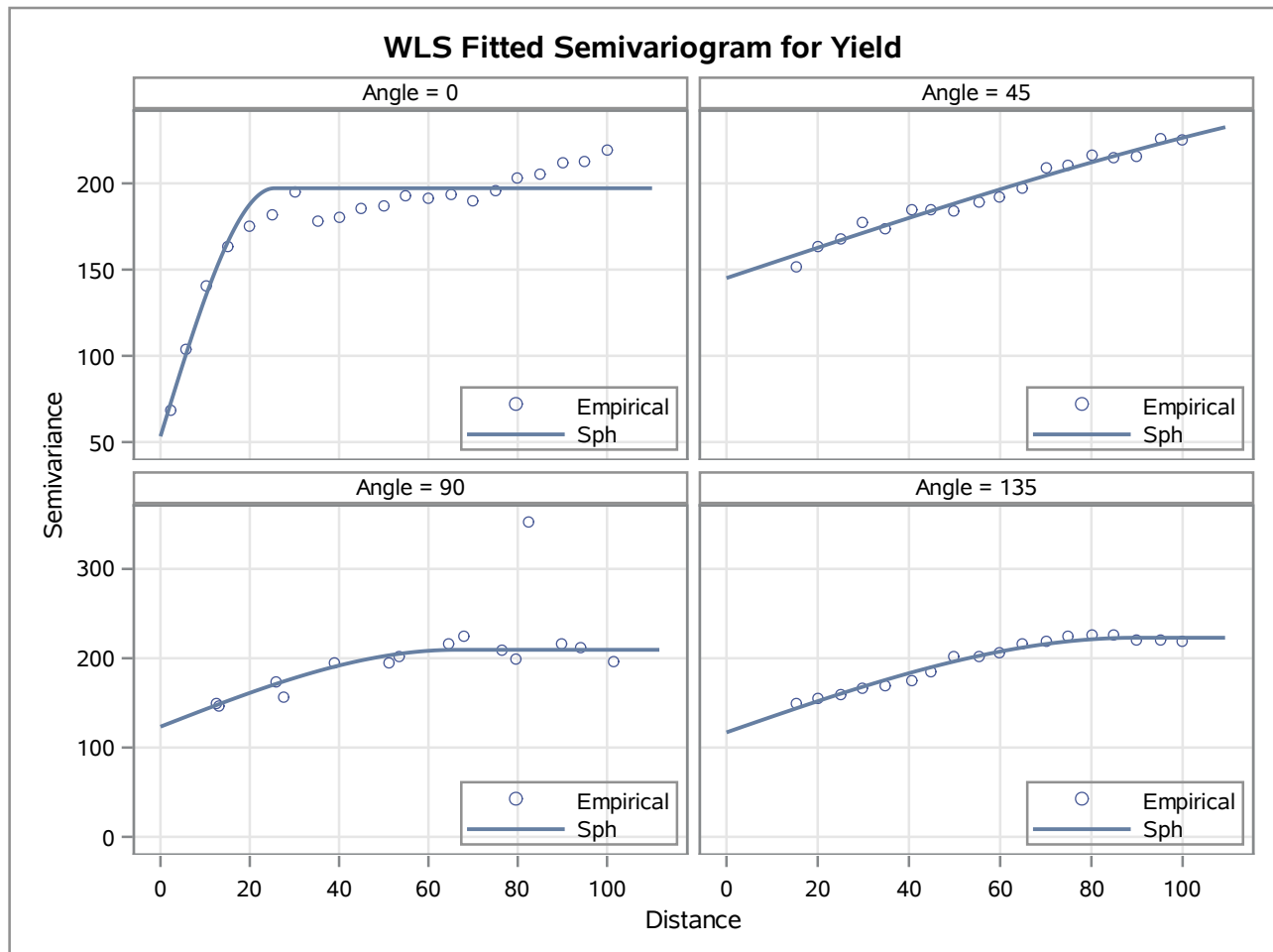
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	117.01	2.1814	15	53.64	<.0001
Scale	105.94	2.2855	15	46.36	<.0001
Range	89.5996	2.0547	15	43.61	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	26.82646	13.18230

The VARIOGRAM Procedure

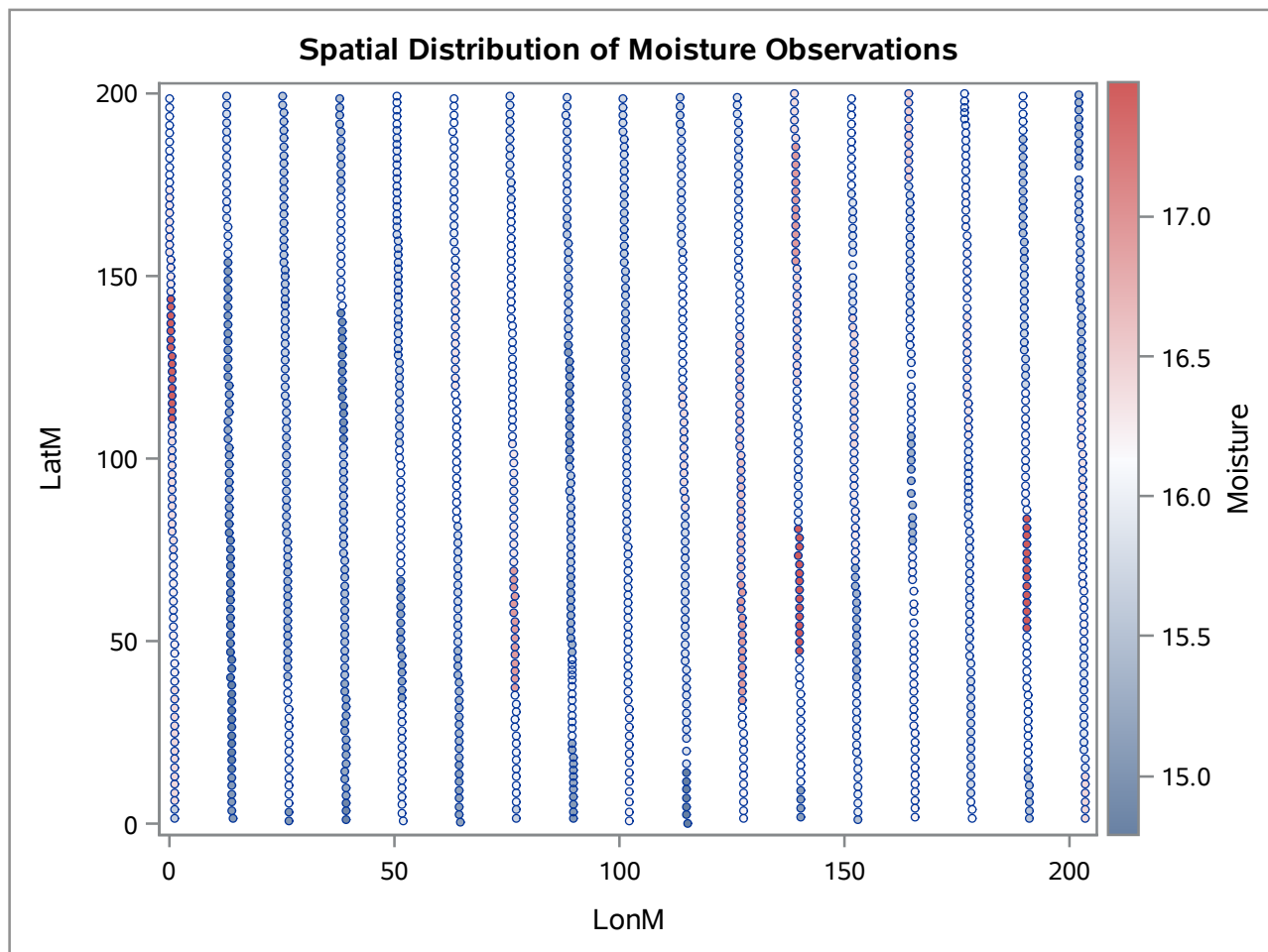
Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: Moisture

Number of Observations Read	1497
Number of Observations Used	1497



The VARIOGRAM Procedure

Dependent Variable: Moisture

Empirical Semivariogram at Angle=0			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	0.011
1	2925	5.62	0.026
2	2923	10.23	0.047
3	2952	14.99	0.069
4	2947	19.88	0.088
5	2951	24.91	0.114
6	2863	30.00	0.142
7	7769	35.16	0.217
8	7841	40.01	0.223
9	7517	44.96	0.225
10	7385	49.96	0.231
11	7069	54.99	0.228
12	6763	59.99	0.225
13	7771	65.20	0.219
14	10514	69.98	0.221
15	9978	74.99	0.229
16	9525	79.97	0.220
17	9220	84.98	0.219
18	8730	89.99	0.222
19	8399	95.01	0.222
20	9883	100.07	0.232

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4138	15.4	0.247
4	3693	19.9	0.241
5	3516	25.1	0.234
6	8013	29.8	0.237
7	3793	34.9	0.238
8	5173	40.6	0.268

The VARIOGRAM Procedure

Dependent Variable: Moisture

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
9	7285	44.9	0.281
10	6145	49.9	0.280
11	8553	55.3	0.271
12	9017	59.9	0.276
13	6737	64.7	0.288
14	8934	70.1	0.288
15	8037	74.9	0.289
16	7728	80.1	0.281
17	10253	84.9	0.270
18	8884	89.9	0.272
19	9470	95.2	0.276
20	8942	99.9	0.295

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	54	12.5	0.160
3	6366	13.0	0.249
4	0	.	.
5	11865	26.0	0.218
6	20	27.5	0.199
7	0	.	.
8	16287	38.9	0.298
9	0	.	.
10	13854	51.2	0.220
11	6133	53.5	0.237
12	0	.	.
13	20738	64.6	0.237
14	1932	68.0	0.238
15	13136	76.4	0.214
16	11611	79.5	0.210
17	3	82.5	0.099

The VARIOGRAM Procedure

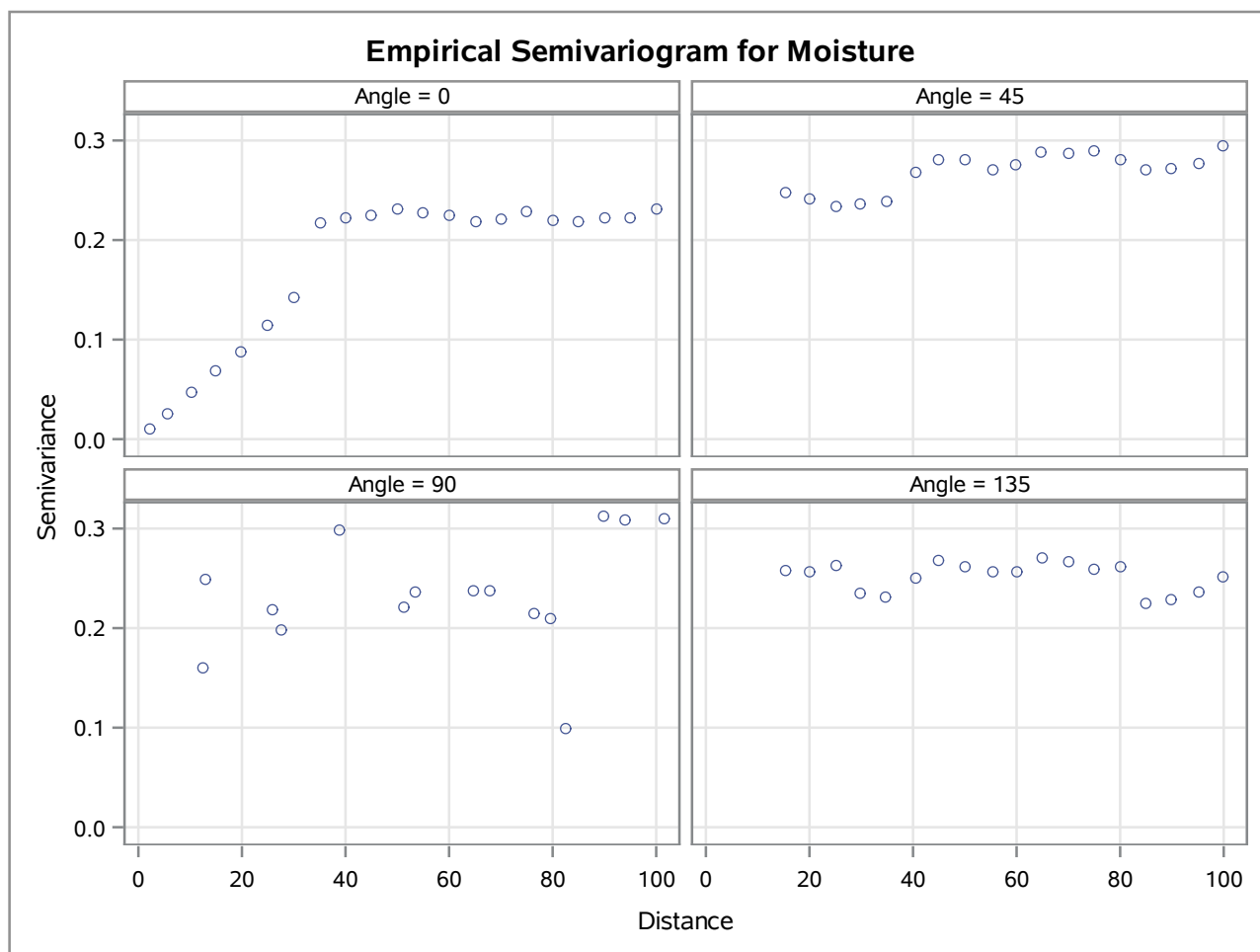
Dependent Variable: Moisture

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
18	19620	89.8	0.312
19	6280	94.1	0.309
20	11235	101.6	0.310

Empirical Semivariogram at Angle=135			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4006	15.4	0.258
4	3692	19.9	0.257
5	3326	25.0	0.263
6	8097	29.9	0.235
7	4366	34.7	0.231
8	4829	40.6	0.250
9	7340	44.9	0.269
10	6100	49.9	0.262
11	8246	55.3	0.257
12	9008	59.9	0.256
13	7695	64.9	0.270
14	8573	70.1	0.266
15	8046	74.9	0.259
16	7321	80.0	0.262
17	10278	84.9	0.224
18	8994	90.0	0.229
19	9152	95.2	0.237
20	10016	99.9	0.252

The VARIOGRAM Procedure

Dependent Variable: Moisture



The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 0****Current Model: Spherical**

Semivariogram Model Fitting at Angle=0	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.000643
Scale	0.2246
Range	50.0343

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 0****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	7	Function Calls	25
Gradient Calls	0	Active Constraints	1
Objective Function	611.39397393	Max Abs Gradient Element	0.0008732425
Slope of Search Direction	-7.117699E-8		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	0	0	18	.	.
Scale	0.2272	0.000753	18	301.69	<.0001
Range	58.5795	0.4352	18	134.60	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	611.39397	76.79560

The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 45****Current Model: Spherical**

Semivariogram Model Fitting at Angle=45	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.2271
Scale	0.0539
Range	49.9590

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 45****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	14	Function Calls	52
Gradient Calls	0	Active Constraints	0
Objective Function	83.80099471	Max Abs Gradient Element	0.000043289
Slope of Search Direction	-3.808954E-9		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	0.2094	0.003869	15	54.12	<.0001
Scale	0.07254	0.003970	15	18.27	<.0001
Range	73.2662	3.0560	15	23.97	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	83.80099	33.68532

The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 90****Current Model: Spherical**

Semivariogram Model Fitting at Angle=90	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0
Scale	0.3105
Range	50.7775

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Moisture****Angle: 90****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	15	Function Calls	64
Gradient Calls	0	Active Constraints	0
Objective Function	1679.5168387	Max Abs Gradient Element	0.0641752069
Slope of Search Direction	-0.000015582		

Convergence criterion (GCONV=1E-8) satisfied.

Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.2097	0.004698	12	44.64	<.0001	0.064175
Scale	0.05619	0.004856	12	11.57	<.0001	0.060324
Range	43.9200	1.4287	12	30.74	<.0001	0.000048

Fit Summary		
Model	Weighted SSE	AIC
Sph	1679.5	76.77317

The VARIOGRAM Procedure

Dependent Variable: Moisture

Angle: 135

Current Model: Spherical

Semivariogram Model Fitting at Angle=135	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.2561
Scale	0
Range	49.9323

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Moisture

Angle: 135

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	10	Function Calls	51
Gradient Calls	0	Active Constraints	0
Objective Function	218.67566618	Max Abs Gradient Element	18.138305404
Slope of Search Direction	-1.009179E-6		

Convergence criterion (GCONV=1E-8) satisfied.

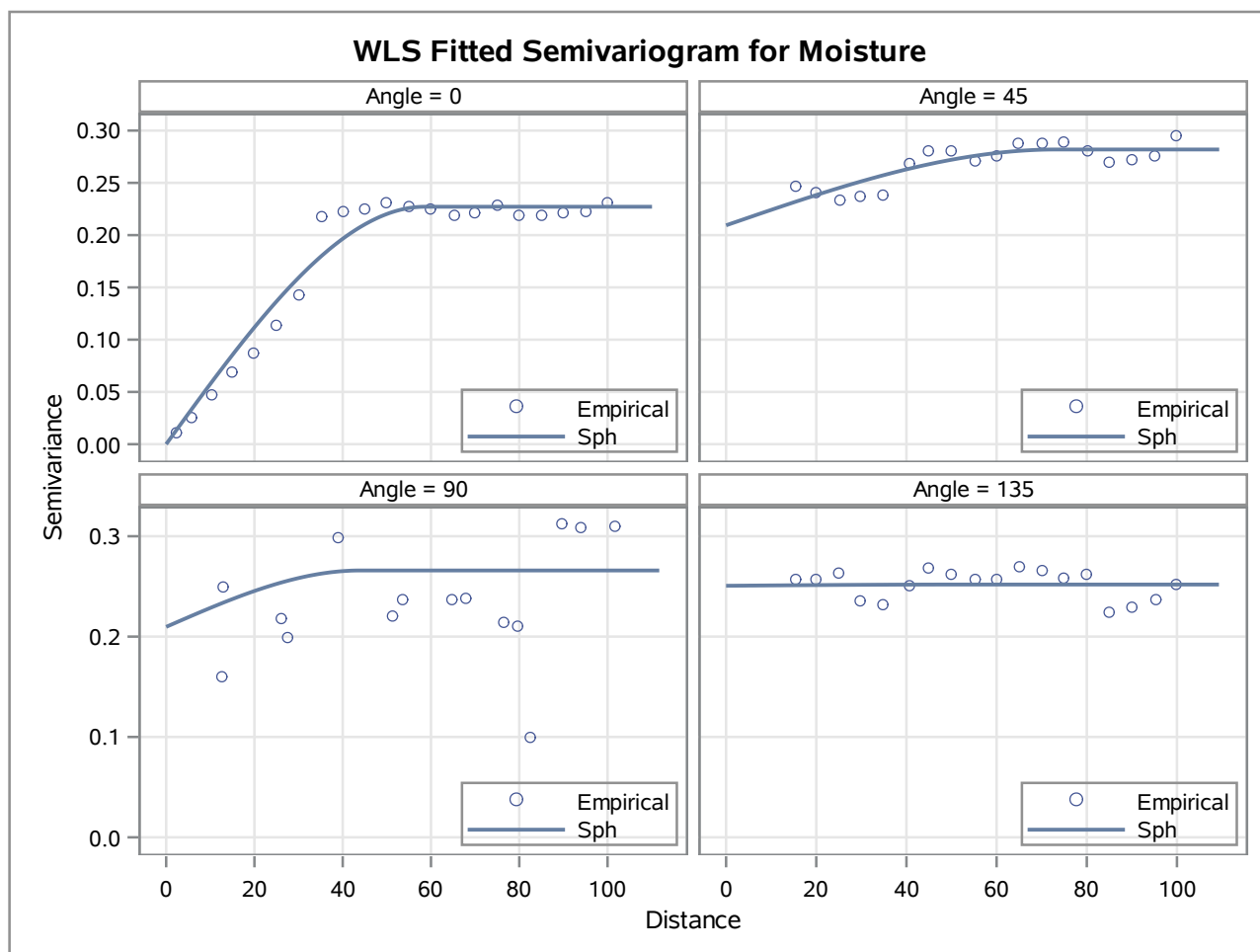
Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.2506	0.007574	15	33.09	<.0001	-18.1383
Scale	0.001233	0.008125	15	0.15	0.8814	-12.5154
Range	51.5414	31.8567	15	1.62	0.1265	-0.01138

Fit Summary		
Model	Weighted SSE	AIC
Sph	218.67566	50.94992

The VARIOGRAM Procedure

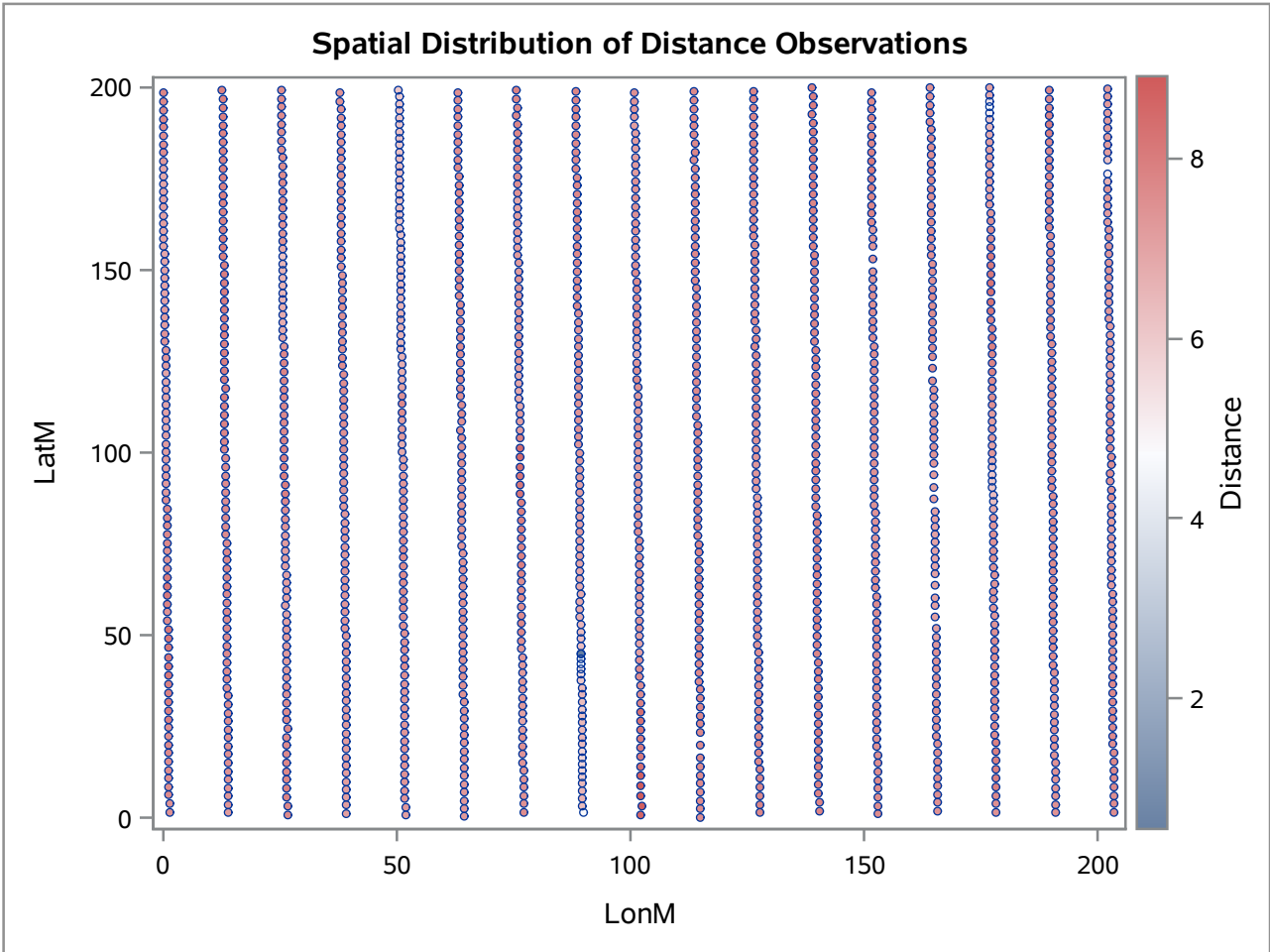
Dependent Variable: Moisture



The VARIOGRAM Procedure

Dependent Variable: Distance

Number of Observations Read	1497
Number of Observations Used	1497



The VARIOGRAM Procedure

Dependent Variable: Distance

Empirical Semivariogram at Angle=0			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	0.036
1	2925	5.62	0.076
2	2923	10.23	0.112
3	2952	14.99	0.116
4	2947	19.88	0.121
5	2951	24.91	0.148
6	2863	30.00	0.149
7	7769	35.16	0.229
8	7841	40.01	0.248
9	7517	44.96	0.228
10	7385	49.96	0.203
11	7069	54.99	0.210
12	6763	59.99	0.208
13	7771	65.20	0.219
14	10514	69.98	0.216
15	9978	74.99	0.229
16	9525	79.97	0.231
17	9220	84.98	0.236
18	8730	89.99	0.241
19	8399	95.01	0.247
20	9883	100.07	0.251

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4138	15.4	0.262
4	3693	19.9	0.248
5	3516	25.1	0.248
6	8013	29.8	0.258
7	3793	34.9	0.259
8	5173	40.6	0.262

The VARIOGRAM Procedure

Dependent Variable: Distance

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
9	7285	44.9	0.285
10	6145	49.9	0.270
11	8553	55.3	0.266
12	9017	59.9	0.259
13	6737	64.7	0.261
14	8934	70.1	0.267
15	8037	74.9	0.281
16	7728	80.1	0.252
17	10253	84.9	0.256
18	8884	89.9	0.239
19	9470	95.2	0.273
20	8942	99.9	0.250

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	54	12.5	0.380
3	6366	13.0	0.266
4	0	.	.
5	11865	26.0	0.255
6	20	27.5	0.102
7	0	.	.
8	16287	38.9	0.286
9	0	.	.
10	13854	51.2	0.267
11	6133	53.5	0.261
12	0	.	.
13	20738	64.6	0.292
14	1932	68.0	0.306
15	13136	76.4	0.281
16	11611	79.5	0.286
17	3	82.5	6.174

The VARIOGRAM Procedure

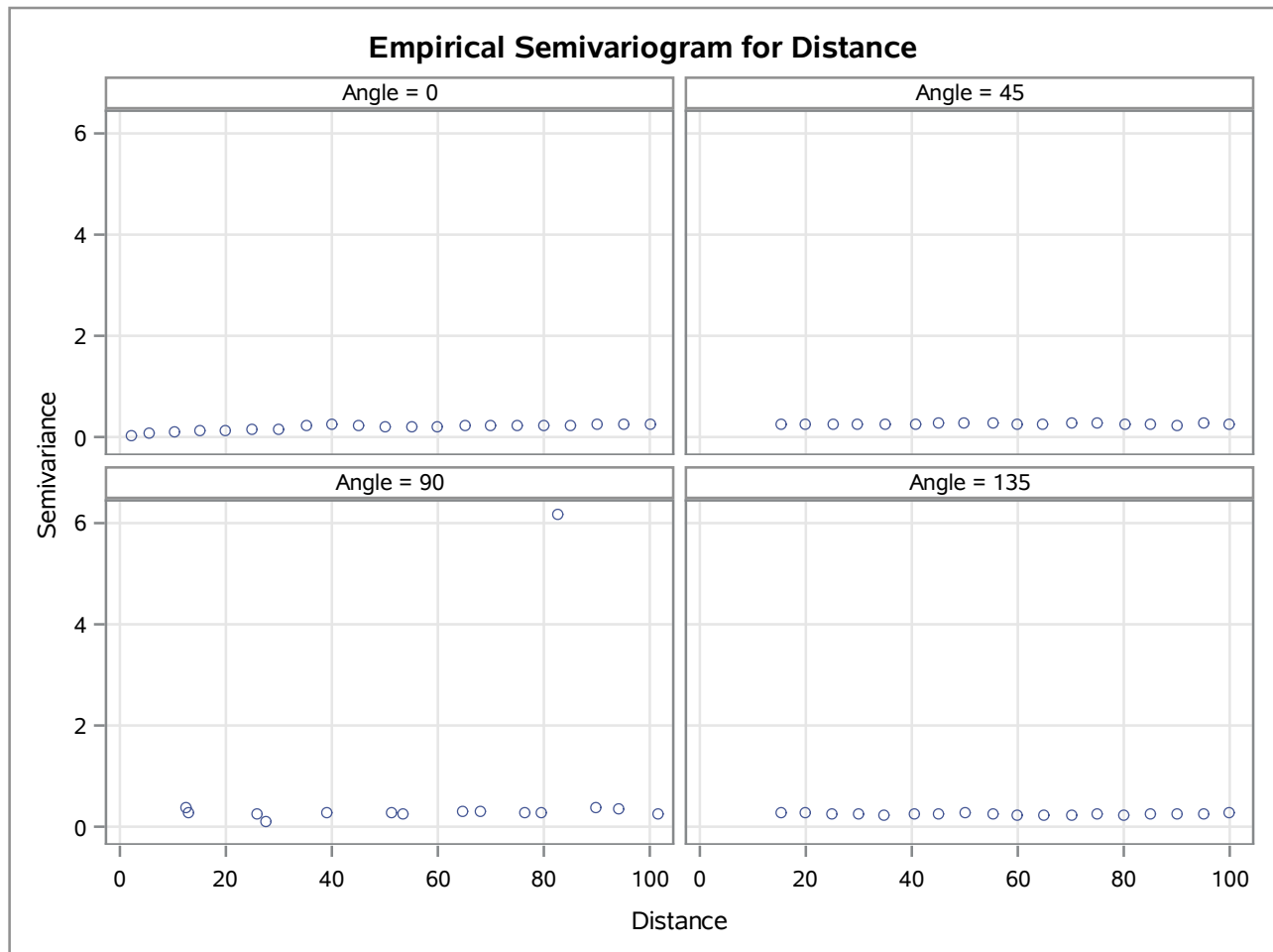
Dependent Variable: Distance

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
18	19620	89.8	0.367
19	6280	94.1	0.363
20	11235	101.6	0.249

Empirical Semivariogram at Angle=135			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4006	15.4	0.276
4	3692	19.9	0.288
5	3326	25.0	0.261
6	8097	29.9	0.257
7	4366	34.7	0.236
8	4829	40.6	0.243
9	7340	44.9	0.264
10	6100	49.9	0.275
11	8246	55.3	0.246
12	9008	59.9	0.238
13	7695	64.9	0.227
14	8573	70.1	0.237
15	8046	74.9	0.246
16	7321	80.0	0.218
17	10278	84.9	0.261
18	8994	90.0	0.247
19	9152	95.2	0.262
20	10016	99.9	0.281

The VARIOGRAM Procedure

Dependent Variable: Distance



The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 0****Current Model: Spherical**

Semivariogram Model Fitting at Angle=0	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.00869
Scale	0.2379
Range	50.0343

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 0****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	10	Function Calls	39
Gradient Calls	0	Active Constraints	0
Objective Function	569.03102406	Max Abs Gradient Element	0.0032042689
Slope of Search Direction	-4.185827E-6		

Convergence criterion (GCONV=1E-8) satisfied.

Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.03331	0.001259	18	26.46	<.0001	-0.00203
Scale	0.1968	0.001400	18	140.60	<.0001	0.003204
Range	46.7707	0.6475	18	72.23	<.0001	0.000044

Fit Summary		
Model	Weighted SSE	AIC
Sph	569.03102	75.28766

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 45****Current Model: Spherical**

Semivariogram Model Fitting at Angle=45	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.2138
Scale	0.0405
Range	49.9590

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 45****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	13	Function Calls	55
Gradient Calls	0	Active Constraints	0
Objective Function	121.44237326	Max Abs Gradient Element	0.0043552177
Slope of Search Direction	-3.471525E-7		

Convergence criterion (GCONV=1E-8) satisfied.

Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.2430	0.005748	15	42.27	<.0001	0.004355
Scale	0.02006	0.005951	15	3.37	0.0042	0.002312
Range	47.6919	4.1861	15	11.39	<.0001	-7.44E-7

Fit Summary		
Model	Weighted SSE	AIC
Sph	121.44237	40.36323

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 90****Current Model: Spherical**

Semivariogram Model Fitting at Angle=90	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0
Scale	0.3266
Range	50.7775

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 90****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	52	Function Calls	173
Gradient Calls	0	Active Constraints	0
Objective Function	1309.4230265	Max Abs Gradient Element	1.6079199509
Slope of Search Direction	-8.821325E-6		

Convergence criterion (GCONV=1E-8) satisfied.

Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.2381	0.001988	12	119.77	<.0001	1.60792
Scale	60.2457	1.9595	12	30.75	<.0001	0.001094
Range	96463	0	12	.	.	-6.84E-7

Fit Summary			
Model	Weighted SSE	AIC	Notes
Sph	1309.4	73.03938	Questionable fit

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 135****Current Model: Spherical**

Semivariogram Model Fitting at Angle=135	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0.2348
Scale	0.0287
Range	49.9323

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Distance****Angle: 135****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	6	Function Calls	20
Gradient Calls	0	Active Constraints	1
Objective Function	325.37215209	Max Abs Gradient Element	0.0011557807
Slope of Search Direction	-1.65641E-10		

Convergence criterion (GCONV=1E-8) satisfied.

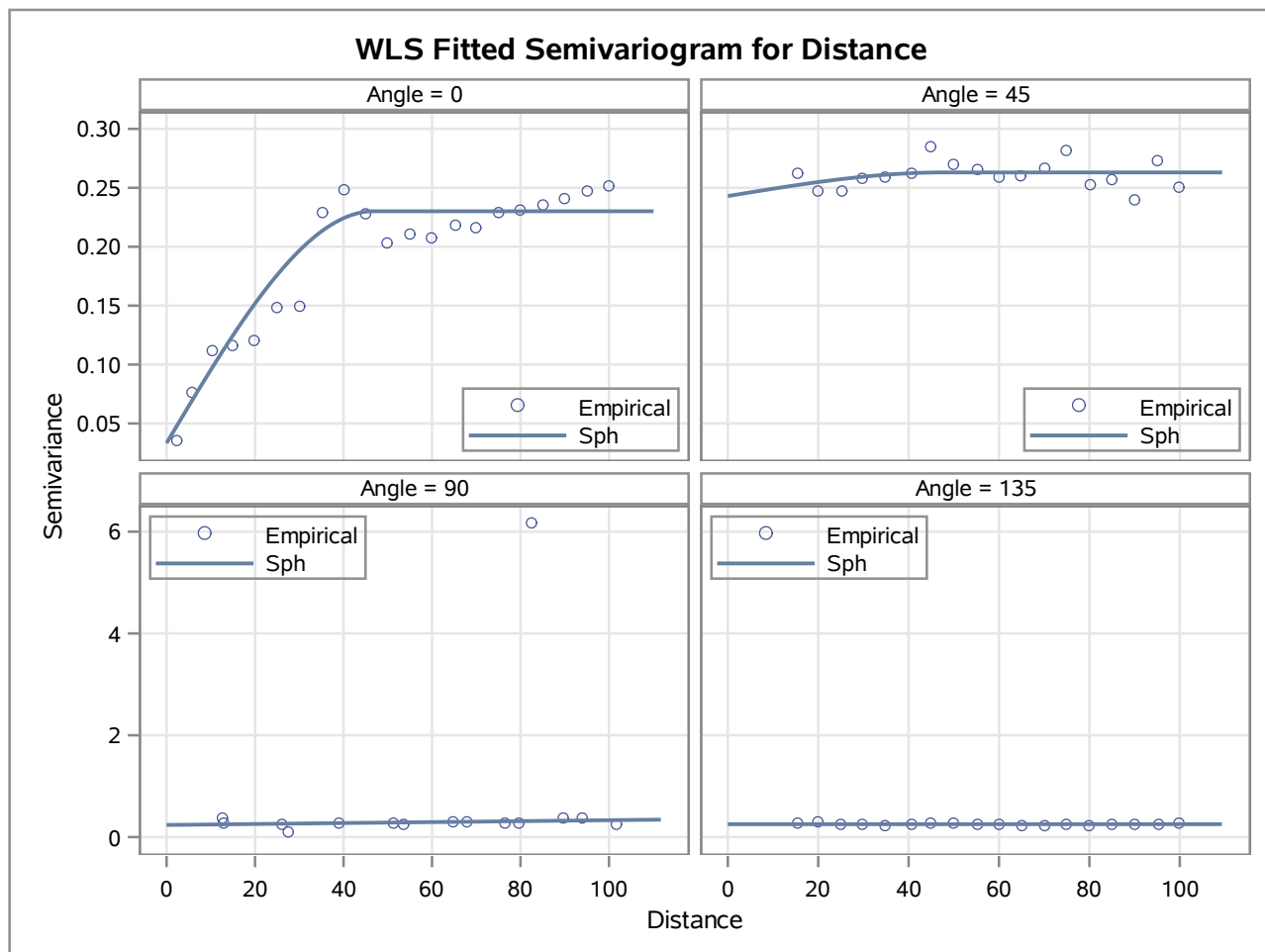
Note: At least one element of the gradient is greater than 1e-3.

Parameter Estimates						
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t	Gradient
Nugget	0.2537	0.004417	15	57.44	<.0001	-0.00116
Scale	1E-6	0.004699	15	0.00	0.9998	1858.3
Range	49.9312	0	15	.	.	0.000032

Fit Summary		
Model	Weighted SSE	AIC
Sph	325.37215	58.10276

The VARIOGRAM Procedure

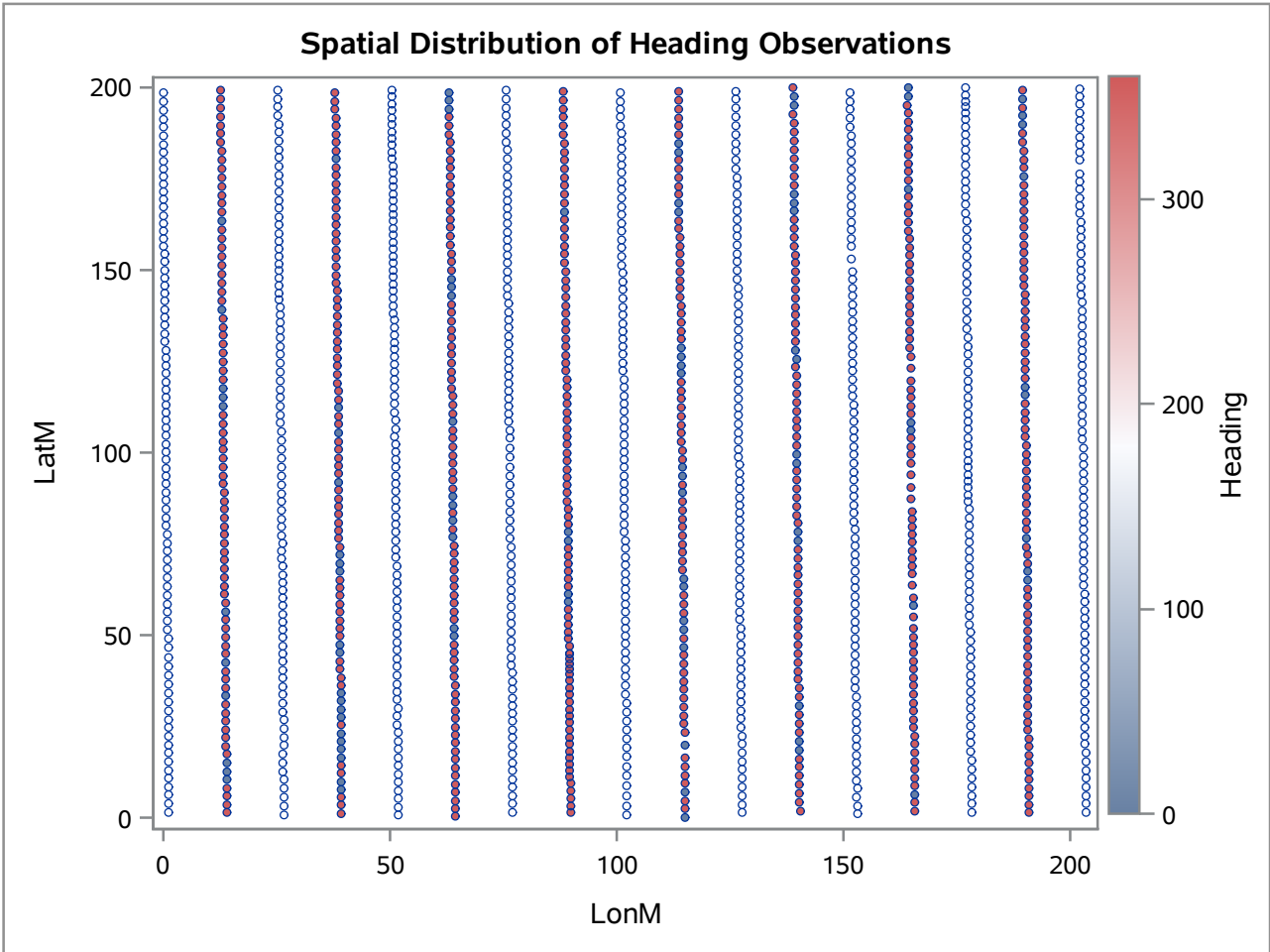
Dependent Variable: Distance



The VARIOGRAM Procedure

Dependent Variable: Heading

Number of Observations Read	1497
Number of Observations Used	1497



The VARIOGRAM Procedure

Dependent Variable: Heading

Empirical Semivariogram at Angle=0			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	4643
1	2925	5.62	6850
2	2923	10.23	6986
3	2952	14.99	6850
4	2947	19.88	6906
5	2951	24.91	6437
6	2863	30.00	7094
7	7769	35.16	12967
8	7841	40.01	12994
9	7517	44.96	13075
10	7385	49.96	13064
11	7069	54.99	13042
12	6763	59.99	13020
13	7771	65.20	12215
14	10514	69.98	10860
15	9978	74.99	10614
16	9525	79.97	10740
17	9220	84.98	10970
18	8730	89.99	10747
19	8399	95.01	10733
20	9883	100.07	11943

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4138	15.4	16184
4	3693	19.9	16181
5	3516	25.1	15444
6	8013	29.8	10335
7	3793	34.9	7438
8	5173	40.6	10503

The VARIOGRAM Procedure

Dependent Variable: Heading

Empirical Semivariogram at Angle=45			
Lag Class	Pair Count	Average Distance	Semivariance
9	7285	44.9	12658
10	6145	49.9	12413
11	8553	55.3	10831
12	9017	59.9	10095
13	6737	64.7	10356
14	8934	70.1	13547
15	8037	74.9	13735
16	7728	80.1	13275
17	10253	84.9	11345
18	8884	89.9	11207
19	9470	95.2	12471
20	8942	99.9	12373

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	54	12.5	16185
3	6366	13.0	16183
4	0	.	.
5	11865	26.0	7117
6	20	27.5	22600
7	0	.	.
8	16287	38.9	16181
9	0	.	.
10	13854	51.2	7387
11	6133	53.5	7143
12	0	.	.
13	20738	64.6	16179
14	1932	68.0	16181
15	13136	76.4	6867
16	11611	79.5	6406
17	3	82.5	0.025

The VARIOGRAM Procedure

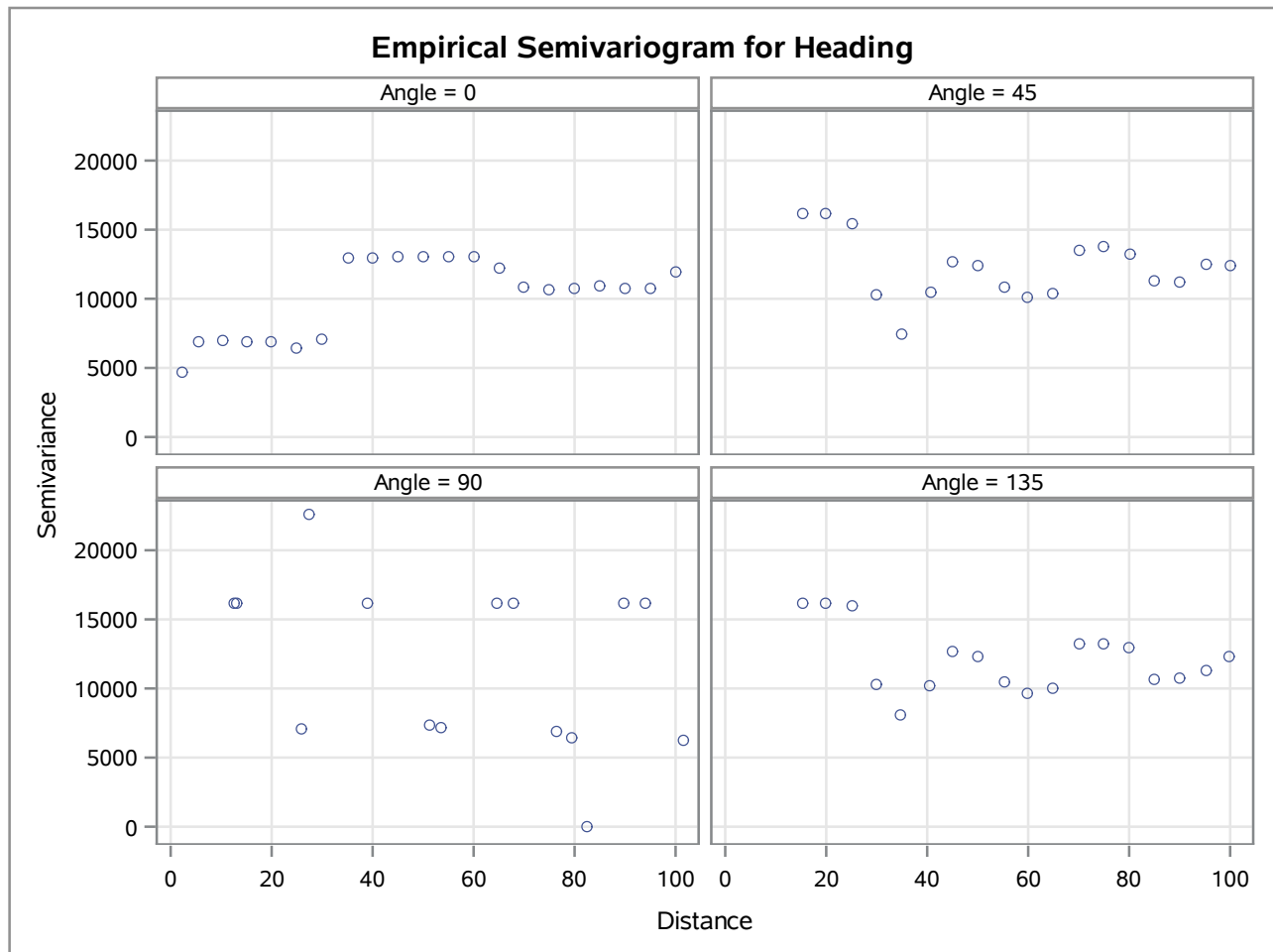
Dependent Variable: Heading

Empirical Semivariogram at Angle=90			
Lag Class	Pair Count	Average Distance	Semivariance
18	19620	89.8	16179
19	6280	94.1	16181
20	11235	101.6	6264

Empirical Semivariogram at Angle=135			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	0	.	.
3	4006	15.4	16179
4	3692	19.9	16178
5	3326	25.0	15995
6	8097	29.9	10317
7	4366	34.7	8071
8	4829	40.6	10168
9	7340	44.9	12674
10	6100	49.9	12295
11	8246	55.3	10461
12	9008	59.9	9634
13	7695	64.9	9971
14	8573	70.1	13206
15	8046	74.9	13221
16	7321	80.0	12999
17	10278	84.9	10652
18	8994	90.0	10782
19	9152	95.2	11332
20	10016	99.9	12349

The VARIOGRAM Procedure

Dependent Variable: Heading



The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 0****Current Model: Spherical**

Semivariogram Model Fitting at Angle=0	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	3160.7
Scale	7980.2
Range	50.0343

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 0****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	24	Function Calls	88
Gradient Calls	0	Active Constraints	0
Objective Function	1015.6160236	Max Abs Gradient Element	2.0644439E-8
Slope of Search Direction	-5.64508E-10		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	4576.19	81.9278	18	55.86	<.0001
Scale	7242.66	90.2981	18	80.21	<.0001
Range	46.9709	0.6751	18	69.58	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	1015.6	87.45329

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 45****Current Model: Spherical**

Semivariogram Model Fitting at Angle=45	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	16173.9
Scale	0
Range	49.9590

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Heading

Angle: 45

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	7	Function Calls	31
Gradient Calls	0	Active Constraints	2
Objective Function	1443.6842668	Max Abs Gradient Element	7.7175605E-7
Slope of Search Direction	-0.000054216		

Convergence criterion (ABSGCONV=0.00001) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	12334	34.8262	15	354.15	<.0001
Scale	1E-6	0	15	.	.
Range	1E-6	0	15	.	.

Fit Summary		
Model	Weighted SSE	AIC
Sph	1443.7	84.92247

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 90****Current Model: Spherical**

Semivariogram Model Fitting at Angle=90	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	16129.7
Scale	0
Range	50.7775

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 90****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	10	Function Calls	41
Gradient Calls	0	Active Constraints	1
Objective Function	9639.0692073	Max Abs Gradient Element	5.1306558E-8
Slope of Search Direction	-0.000054497		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	13510	269.49	12	50.13	<.0001
Scale	1E-6	279.32	12	0.00	1.0000
Range	34.4267	0	12	.	.

Fit Summary		
Model	Weighted SSE	AIC
Sph	9639.1	102.98294

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 135****Current Model: Spherical**

Semivariogram Model Fitting at Angle=135	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	16175.3
Scale	0
Range	49.9323

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Heading****Angle: 135****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	10	Function Calls	42
Gradient Calls	0	Active Constraints	0
Objective Function	1627.1373898	Max Abs Gradient Element	0.0000903383
Slope of Search Direction	-0.000012753		

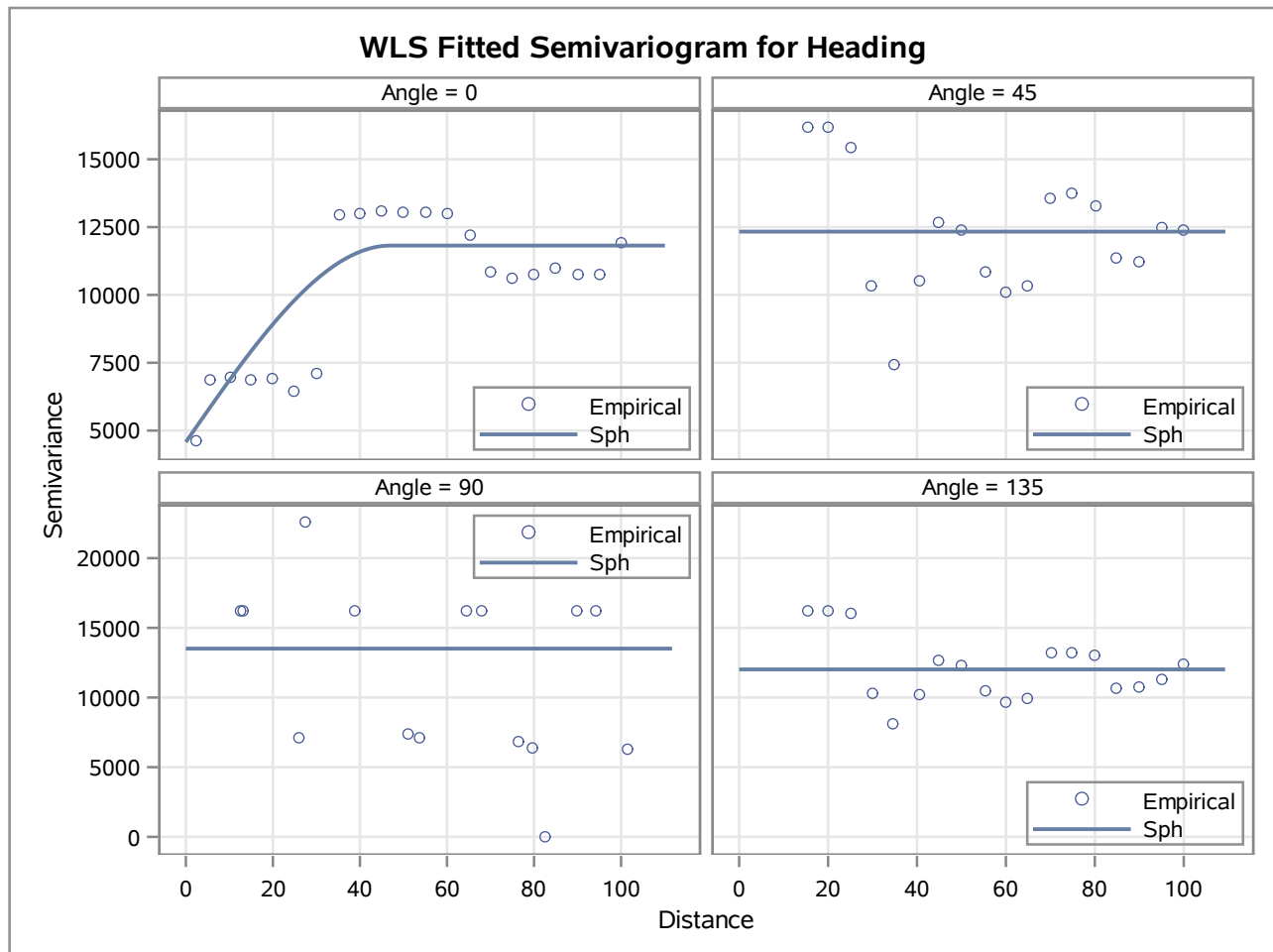
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	12016	33.8753	15	354.71	<.0001
Scale	0.2609	0	15	.	.
Range	15.6274	46.1599	15	0.34	0.7396

Fit Summary		
Model	Weighted SSE	AIC
Sph	1627.1	87.07570

The VARIOGRAM Procedure

Dependent Variable: Heading



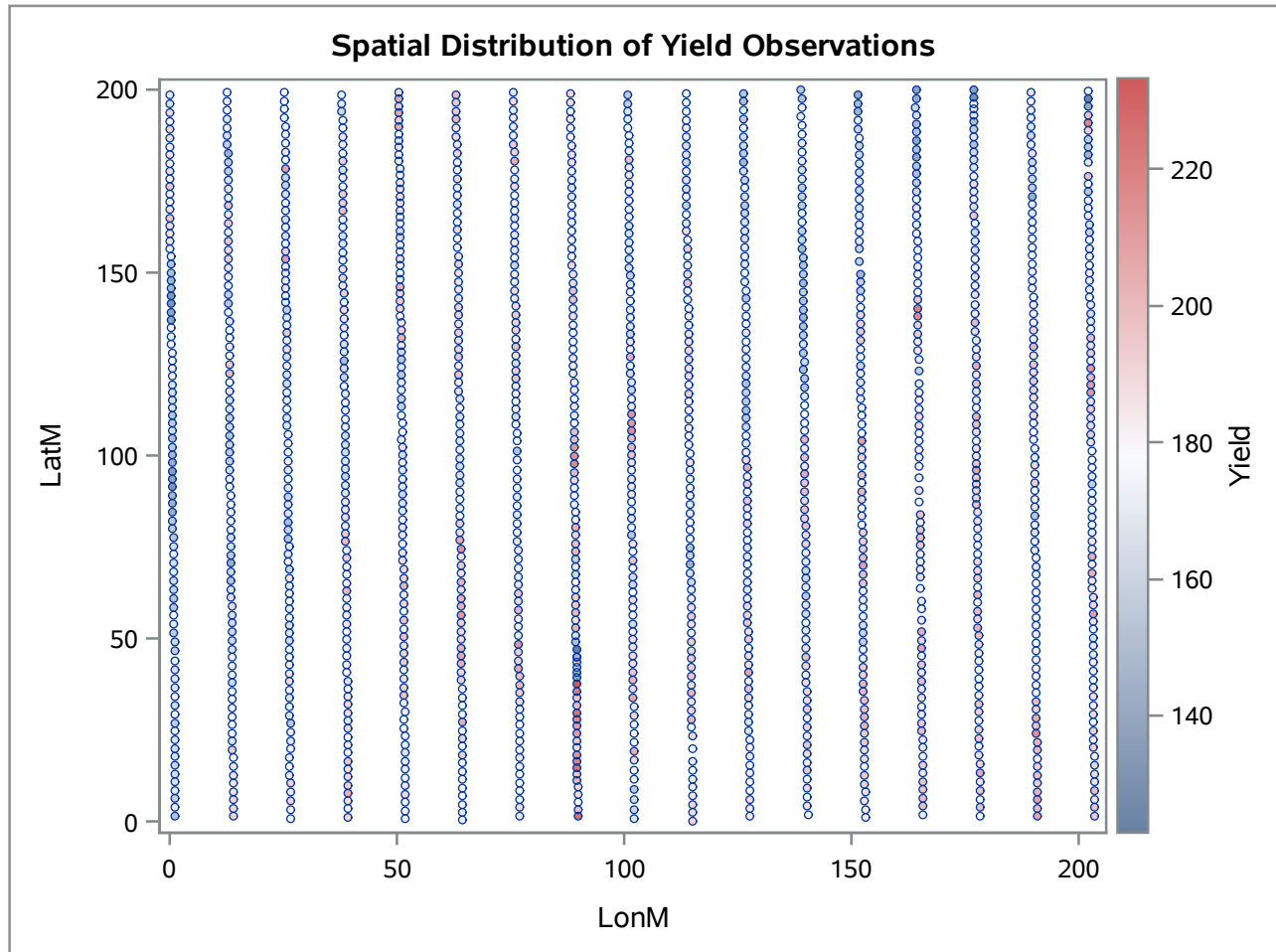
The KRIGE2D Procedure

Correlation Model Item Store Information	
Input Item Store	WORK.YIELDVGM
Item Store Label	Yield Variogram
Data Set Created From	WORK.SAMPLE
By-group Information	No By-groups Present
Created By	PROC VARIOGRAM
Date Created	20OCT17:09:29:23

The KRIGE2D Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497

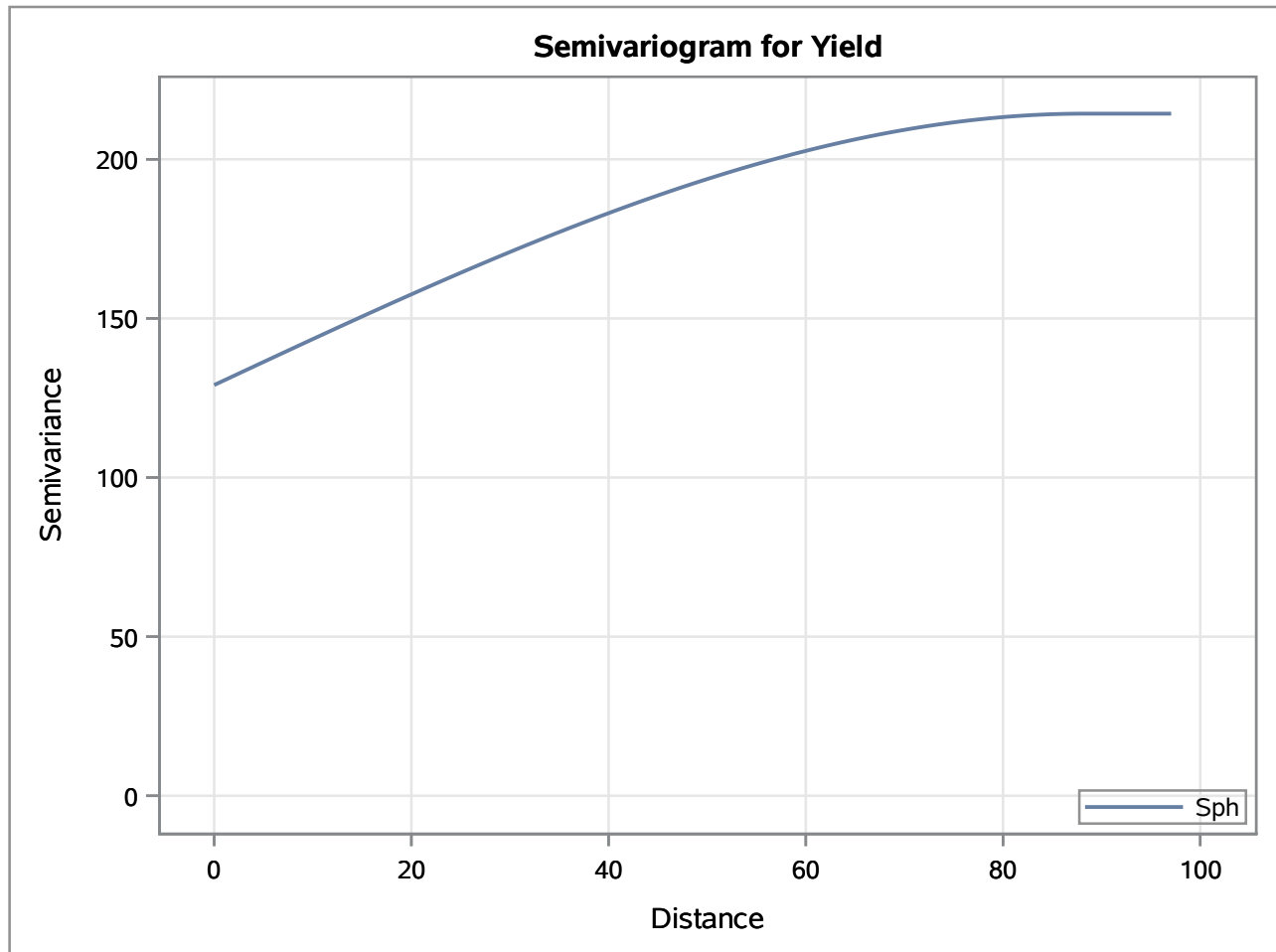


Kriging Information	
Prediction Grid Points	361
Type of Analysis	Local
Neighborhood Search Radius	100
Minimum Neighbors	20
Maximum Neighbors	All Within Radius

The KRIGE2D Procedure

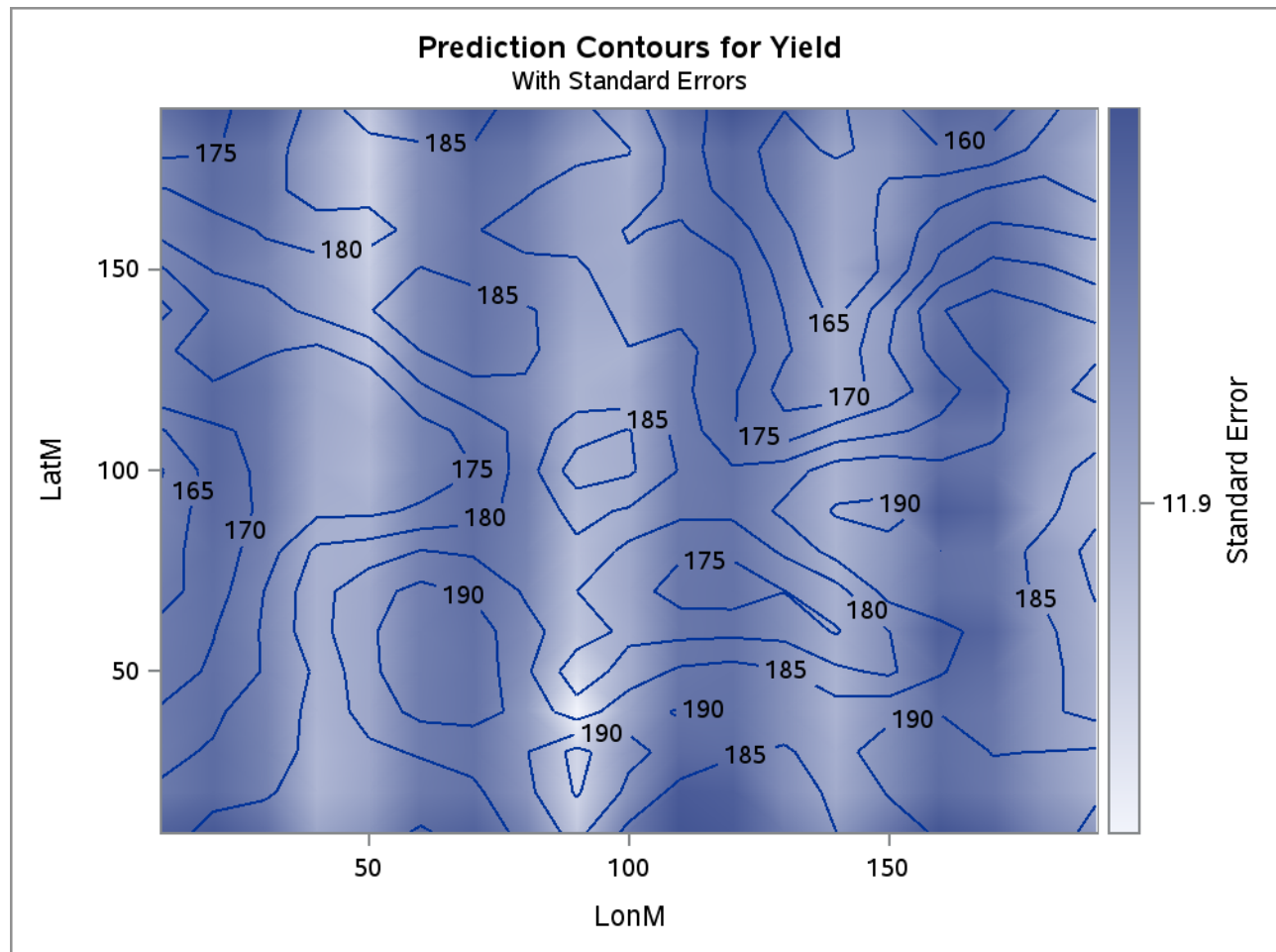
Dependent Variable: Yield
Prediction: Pred1, Model: Model1

Covariance Model Information	
Type	Spherical
Sill	85.282046
Range	88.232175
Nugget Effect	129.06288



The KRIGE2D Procedure

Dependent Variable: Yield
Prediction: Pred1, Model: Model1



The VARIOGRAM Procedure

Dependent Variable: YieldOrdered

Number of Observations Read	1497
Number of Observations Used	1497

Pairs Information	
Number of Lags	11
Lag Distance	28.53
Maximum Data Distance in LonM	203.54
Maximum Data Distance in LatM	199.86
Maximum Data Distance	285.26

Pairwise Distance Intervals				
Lag Class	Bounds		Number of Pairs	Percentage of Pairs
0	0.00	14.26	16546	1.48%
1	14.26	42.79	110586	9.88%
2	42.79	71.32	175379	15.66%
3	71.32	99.84	205289	18.33%
4	99.84	128.37	216407	19.33%
5	128.37	156.89	181586	16.22%
6	156.89	185.42	129375	11.55%
7	185.42	213.95	64773	5.78%
8	213.95	242.47	16895	1.51%
9	242.47	271.00	2830	0.25%
10	271.00	299.53	90	0.01%

Autocorrelation Statistics for YieldOrdered						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.317	-0.000668	0.00116	273.1	<.0001
Randomization	Geary's c	0.563	1.000000	0.00523	-83.5	<.0001

The VARIOGRAM Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497

Pairs Information	
Number of Lags	11
Lag Distance	28.53
Maximum Data Distance in LonM	203.54
Maximum Data Distance in LatM	199.86
Maximum Data Distance	285.26

Pairwise Distance Intervals				
Lag Class	Bounds		Number of Pairs	Percentage of Pairs
0	0.00	14.26	16546	1.48%
1	14.26	42.79	110586	9.88%
2	42.79	71.32	175379	15.66%
3	71.32	99.84	205289	18.33%
4	99.84	128.37	216407	19.33%
5	128.37	156.89	181586	16.22%
6	156.89	185.42	129375	11.55%
7	185.42	213.95	64773	5.78%
8	213.95	242.47	16895	1.51%
9	242.47	271.00	2830	0.25%
10	271.00	299.53	90	0.01%

Autocorrelation Statistics for Yield						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.0861	-0.000668	0.00116	74.6	<.0001
Randomization	Geary's c	0.8976	1.000000	0.00523	-19.6	<.0001

The VARIOGRAM Procedure

Dependent Variable: YieldDisordered

Number of Observations Read	1497
Number of Observations Used	1497

Pairs Information	
Number of Lags	11
Lag Distance	28.53
Maximum Data Distance in LonM	203.54
Maximum Data Distance in LatM	199.86
Maximum Data Distance	285.26

Pairwise Distance Intervals				
Lag Class	Bounds		Number of Pairs	Percentage of Pairs
0	0.00	14.26	16546	1.48%
1	14.26	42.79	110586	9.88%
2	42.79	71.32	175379	15.66%
3	71.32	99.84	205289	18.33%
4	99.84	128.37	216407	19.33%
5	128.37	156.89	181586	16.22%
6	156.89	185.42	129375	11.55%
7	185.42	213.95	64773	5.78%
8	213.95	242.47	16895	1.51%
9	242.47	271.00	2830	0.25%
10	271.00	299.53	90	0.01%

Autocorrelation Statistics for YieldDisordered						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	-0.00148	-0.000668	0.00116	-0.7	0.4839
Randomization	Geary's c	0.88140	1.000000	0.00523	-22.7	<.0001

The VARIOGRAM Procedure

Dependent Variable: YieldWhiteNoise

Number of Observations Read	1497
Number of Observations Used	1497

Pairs Information	
Number of Lags	11
Lag Distance	28.53
Maximum Data Distance in LonM	203.54
Maximum Data Distance in LatM	199.86
Maximum Data Distance	285.26

Pairwise Distance Intervals				
Lag Class	Bounds		Number of Pairs	Percentage of Pairs
0	0.00	14.26	16546	1.48%
1	14.26	42.79	110586	9.88%
2	42.79	71.32	175379	15.66%
3	71.32	99.84	205289	18.33%
4	99.84	128.37	216407	19.33%
5	128.37	156.89	181586	16.22%
6	156.89	185.42	129375	11.55%
7	185.42	213.95	64773	5.78%
8	213.95	242.47	16895	1.51%
9	242.47	271.00	2830	0.25%
10	271.00	299.53	90	0.01%

Autocorrelation Statistics for YieldWhiteNoise						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.000478	-0.000668	0.00116	0.985	0.3244
Randomization	Geary's c	1.005033	1.000000	0.00523	0.962	0.3362

The VARIOGRAM Procedure

Dependent Variable: YieldChecked

Number of Observations Read	1497
Number of Observations Used	1497

Pairs Information	
Number of Lags	11
Lag Distance	28.53
Maximum Data Distance in LonM	203.54
Maximum Data Distance in LatM	199.86
Maximum Data Distance	285.26

Pairwise Distance Intervals				
Lag Class	Bounds		Number of Pairs	Percentage of Pairs
0	0.00	14.26	16546	1.48%
1	14.26	42.79	110586	9.88%
2	42.79	71.32	175379	15.66%
3	71.32	99.84	205289	18.33%
4	99.84	128.37	216407	19.33%
5	128.37	156.89	181586	16.22%
6	156.89	185.42	129375	11.55%
7	185.42	213.95	64773	5.78%
8	213.95	242.47	16895	1.51%
9	242.47	271.00	2830	0.25%
10	271.00	299.53	90	0.01%

Autocorrelation Statistics for YieldChecked						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	-0.0193	-0.000668	0.00116	-16	<.0001
Randomization	Geary's c	1.0186	1.000000	0.00116	16	<.0001

The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	5240.664326	5240.664326	863.75	<.0001
Error	198	1201.327407	6.067310		
Corrected Total	199	6441.991732			

R-Square	Coeff Var	Root MSE	trenderror Mean
0.813516	528.2821	2.463191	0.466264

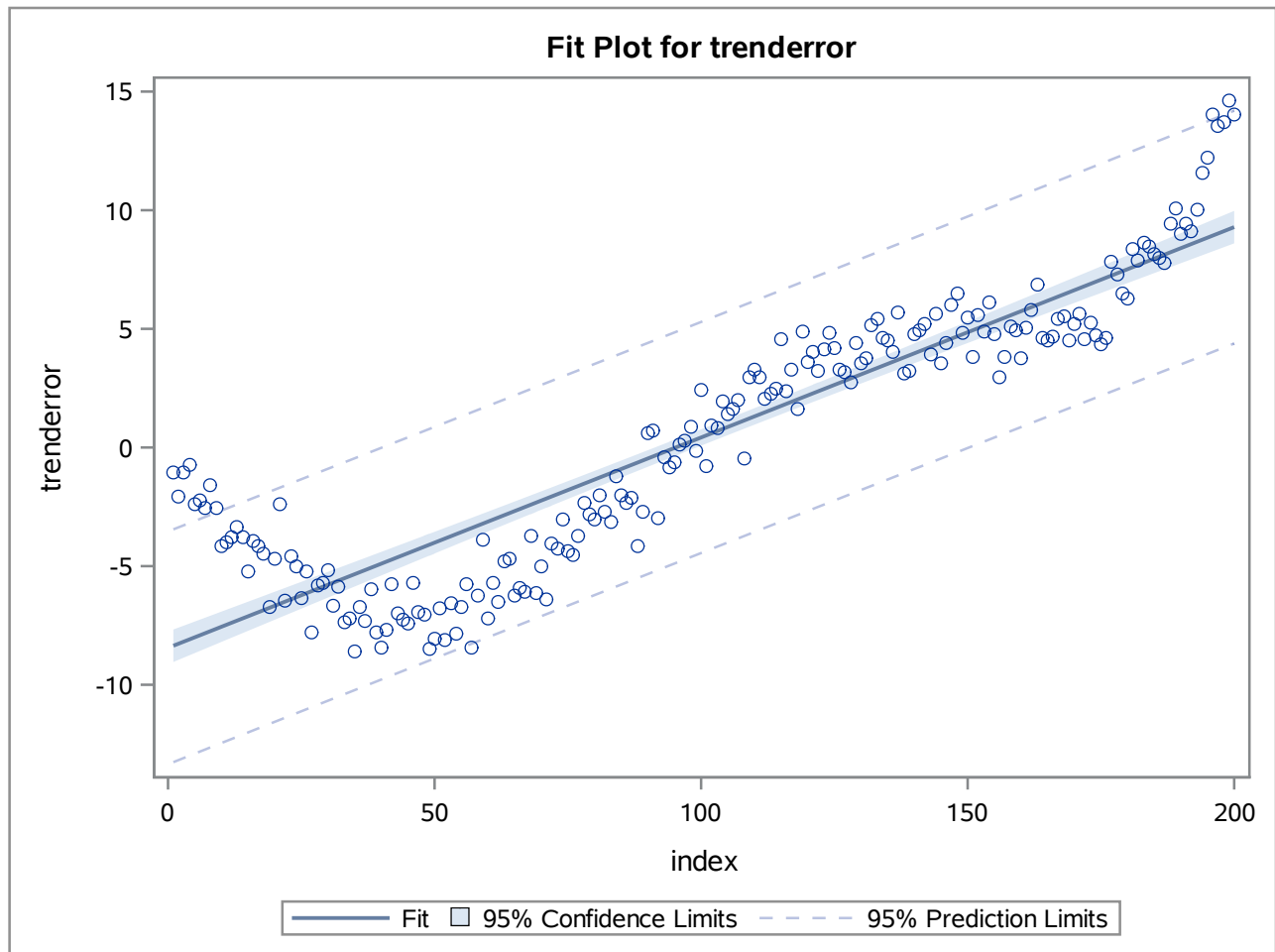
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	863.75	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	863.75	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-8.444404235	0.34965822	-24.15	<.0001
index	0.088663369	0.00301682	29.39	<.0001

The GLM Procedure

Dependent Variable: trenderror



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	5548.680510	2774.340255	611.82	<.0001
Error	197	893.311222	4.534575		
Corrected Total	199	6441.991732			

R-Square	Coeff Var	Root MSE	trenderror Mean
0.861330	456.7053	2.129454	0.466264

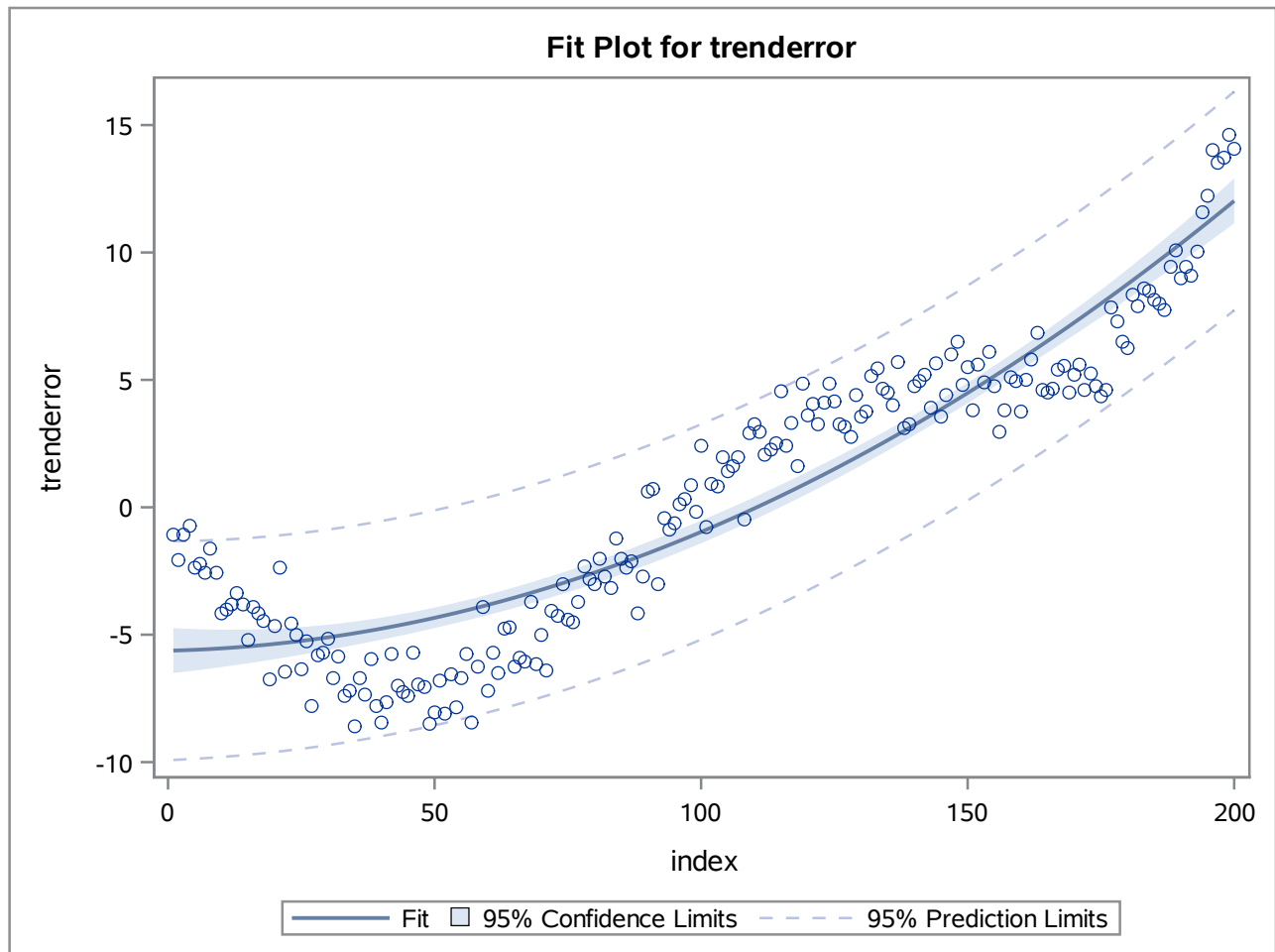
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	1155.71	<.0001
index*index	1	308.016184	308.016184	67.93	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	1.0289938	1.0289938	0.23	0.6343
index*index	1	308.0161844	308.0161844	67.93	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-5.627504734	0.45628063	-12.33	<.0001
index	0.004993087	0.01048168	0.48	0.6343
index*index	0.000416270	0.00005051	8.24	<.0001

The GLM Procedure

Dependent Variable: trenderror



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	5792.230343	1930.743448	582.41	<.0001
Error	196	649.761389	3.315109		
Corrected Total	199	6441.991732			

R-Square	Coeff Var	Root MSE	trenderror Mean
0.899137	390.4961	1.820744	0.466264

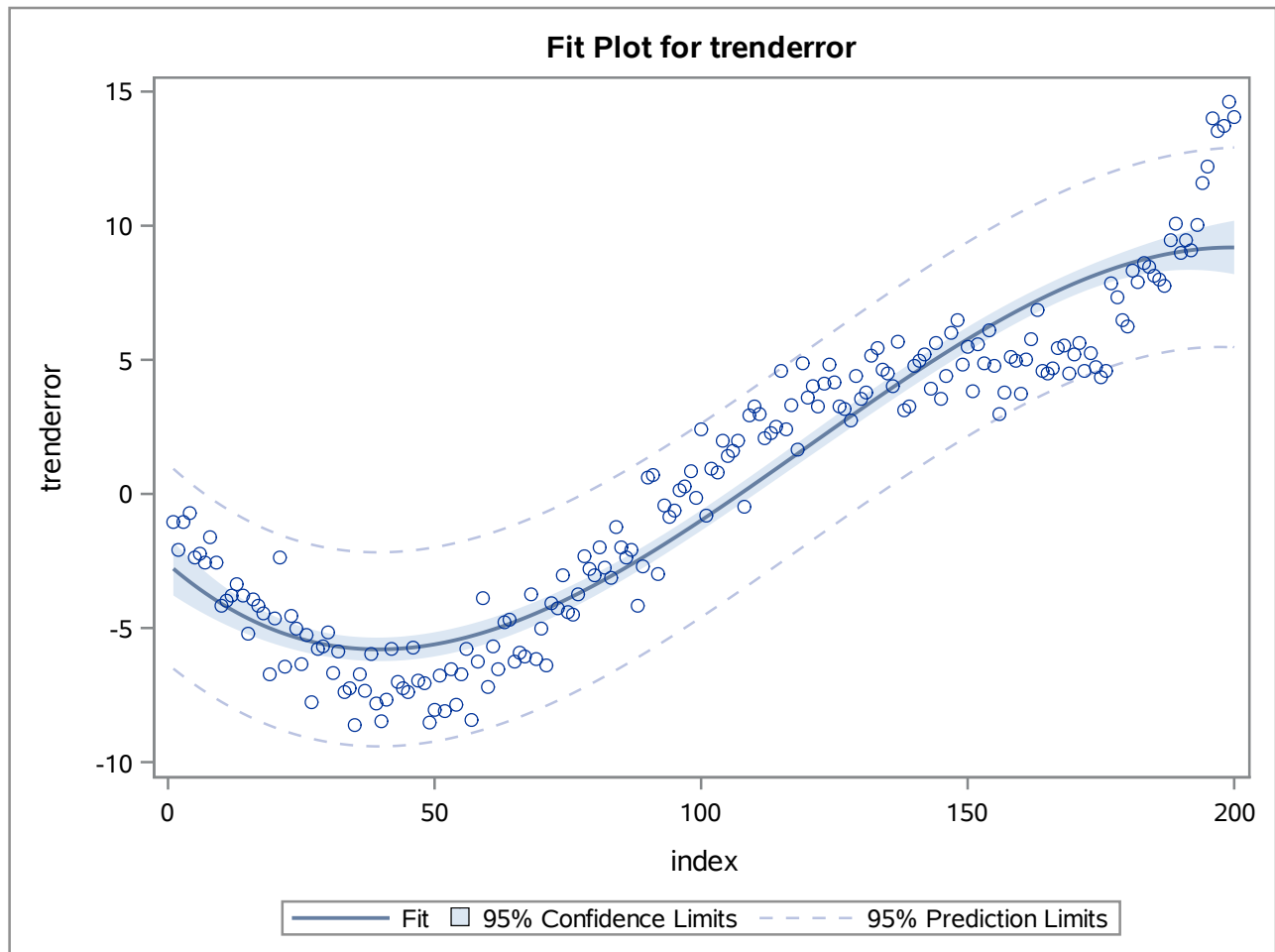
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	1580.84	<.0001
index*index	1	308.016184	308.016184	92.91	<.0001
index*index*index	1	243.549833	243.549833	73.47	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	193.7142916	193.7142916	58.43	<.0001
index*index	1	334.9108675	334.9108675	101.03	<.0001
index*index*index	1	243.5498333	243.5498333	73.47	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-2.618953398	0.52479306	-4.99	<.0001
index	-0.172413561	0.02255483	-7.64	<.0001
index*index	0.002617327	0.00026040	10.05	<.0001
index*index*index	-0.000007300	0.00000085	-8.57	<.0001

The GLM Procedure

Dependent Variable: trenderror



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6174.722848	1543.680712	1126.27	<.0001
Error	195	267.268885	1.370610		
Corrected Total	199	6441.991732			

R-Square	Coeff Var	Root MSE	trenderror Mean
0.958511	251.0873	1.170730	0.466264

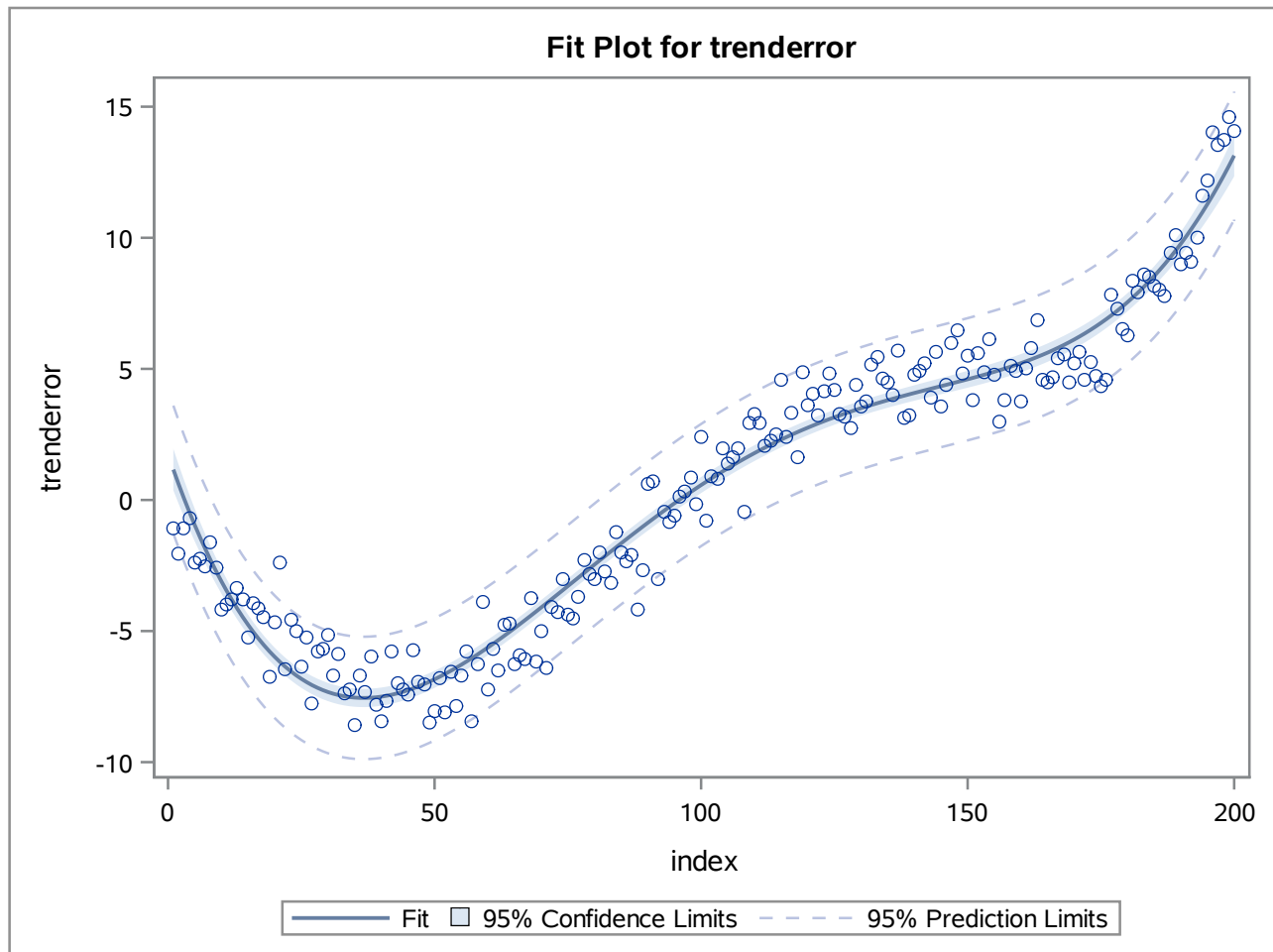
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	3823.60	<.0001
index*index	1	308.016184	308.016184	224.73	<.0001
index*index*index	1	243.549833	243.549833	177.69	<.0001
inde*inde*inde*index	1	382.492504	382.492504	279.07	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	570.4811509	570.4811509	416.22	<.0001
index*index	1	573.5075742	573.5075742	418.43	<.0001
index*index*index	1	455.6692187	455.6692187	332.46	<.0001
inde*inde*inde*index	1	382.4925042	382.4925042	279.07	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	1.742530317	0.42664993	4.08	<.0001
index	-0.596871279	0.02925613	-20.40	<.0001
index*index	0.012064913	0.00058981	20.46	<.0001
index*index*index	-0.000080294	0.00000440	-18.23	<.0001
inde*inde*inde*index	0.000000182	0.00000001	16.71	<.0001

The GLM Procedure

Dependent Variable: trenderror



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6264.922768	1252.984554	1372.79	<.0001
Error	194	177.068964	0.912727		
Corrected Total	199	6441.991732			

R-Square	Coeff Var	Root MSE	trenderror Mean
0.972513	204.8982	0.955367	0.466264

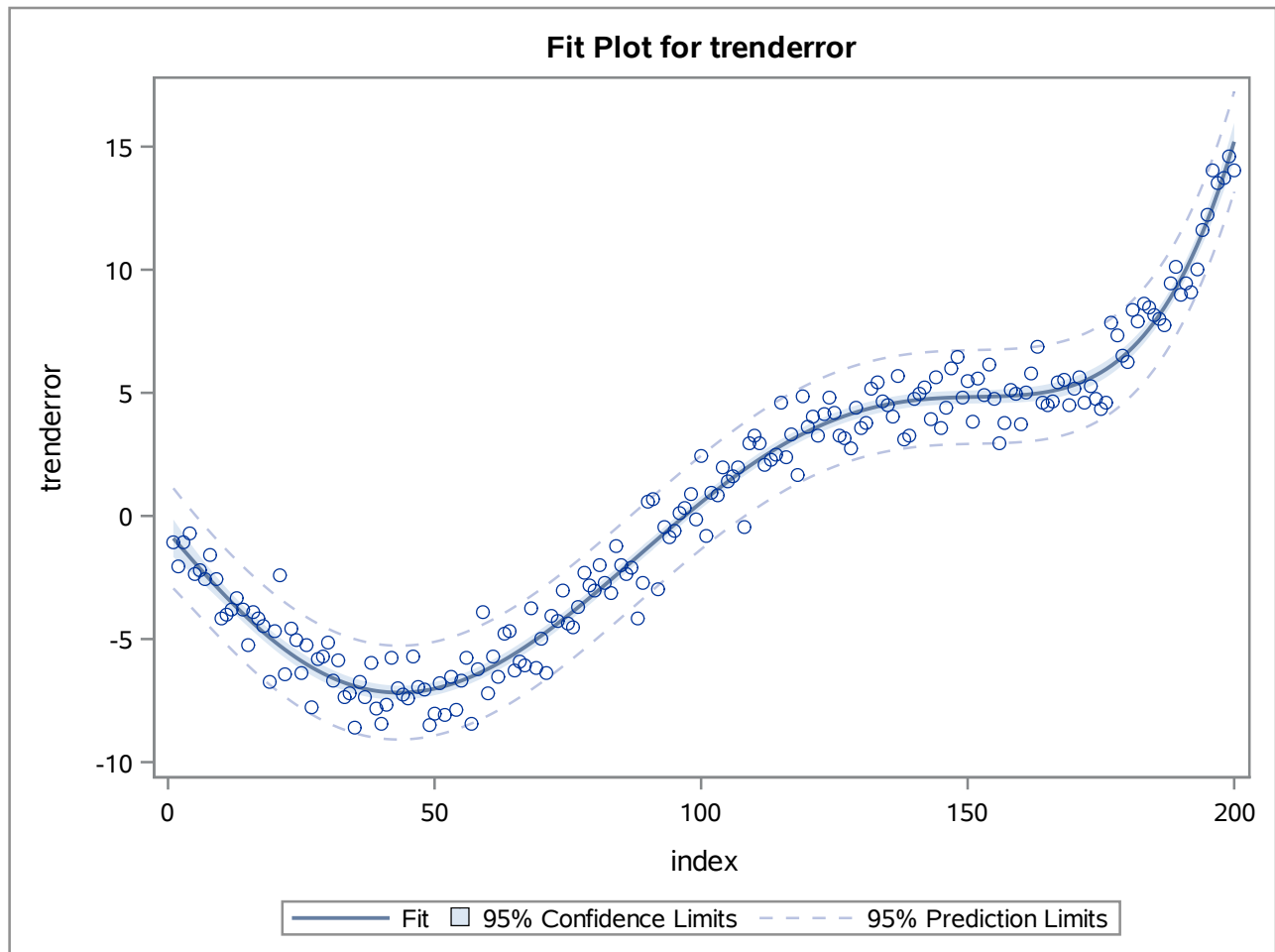
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5240.664326	5240.664326	5741.77	<.0001
index*index	1	308.016184	308.016184	337.47	<.0001
index*index*index	1	243.549833	243.549833	266.84	<.0001
inde*inde*inde*index	1	382.492504	382.492504	419.07	<.0001
ind*ind*ind*ind*inde	1	90.199920	90.199920	98.82	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	32.15644582	32.15644582	35.23	<.0001
index*index	1	0.00879715	0.00879715	0.01	0.9219
index*index*index	1	20.69460688	20.69460688	22.67	<.0001
inde*inde*inde*index	1	56.32127434	56.32127434	61.71	<.0001
ind*ind*ind*ind*inde	1	90.19992023	90.19992023	98.82	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-.6582951009	0.42372635	-1.55	0.1219
index	-.2506356950	0.04222593	-5.94	<.0001
index*index	0.0001270121	0.00129373	0.10	0.9219
index*index*index	0.0000774894	0.00001627	4.76	<.0001
inde*inde*inde*index	-.0000007004	0.00000009	-7.86	<.0001
ind*ind*ind*ind*inde	0.0000000018	0.00000000	9.94	<.0001

The GLM Procedure

Dependent Variable: trenderror



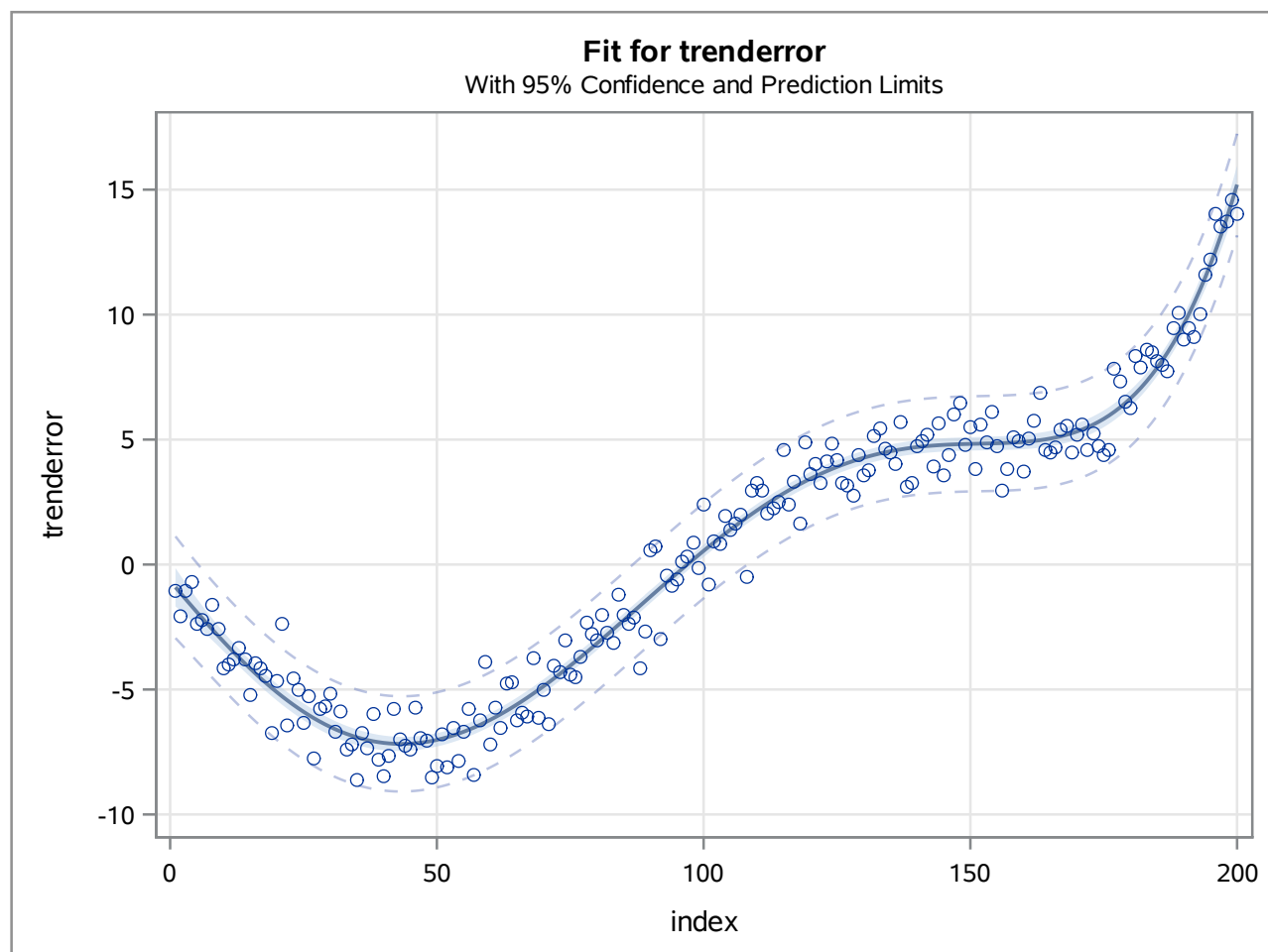
The ORTHOREG Procedure

Dependent Variable: trenderror

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6264.9227679	1252.9845536	1372.79	<.0001
Error	194	177.06896439	0.9127266206		
Corrected Total	199	6441.9917323			

Root MSE	0.95536727
R-Square	0.9725133201

Parameter	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	-0.65829510104559	0.4237263488	-1.55	0.1219
index	1	-0.2506356949253	0.0422259336	-5.94	<.0001
index^2	1	0.00012701210765	0.0012937322	0.10	0.9219
index^3	1	0.00007748938489	0.0000162736	4.76	<.0001
index^4	1	-7.004261606293E-7	8.9165424E-8	-7.86	<.0001
index^5	1	1.755228362042E-9	1.765635E-10	9.94	<.0001



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: randomwalk

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	5033.253114	5033.253114	676.52	<.0001
Error	198	1473.095508	7.439876		
Corrected Total	199	6506.348622			

R-Square	Coeff Var	Root MSE	randomwalk Mean
0.773591	668.7584	2.727614	0.407862

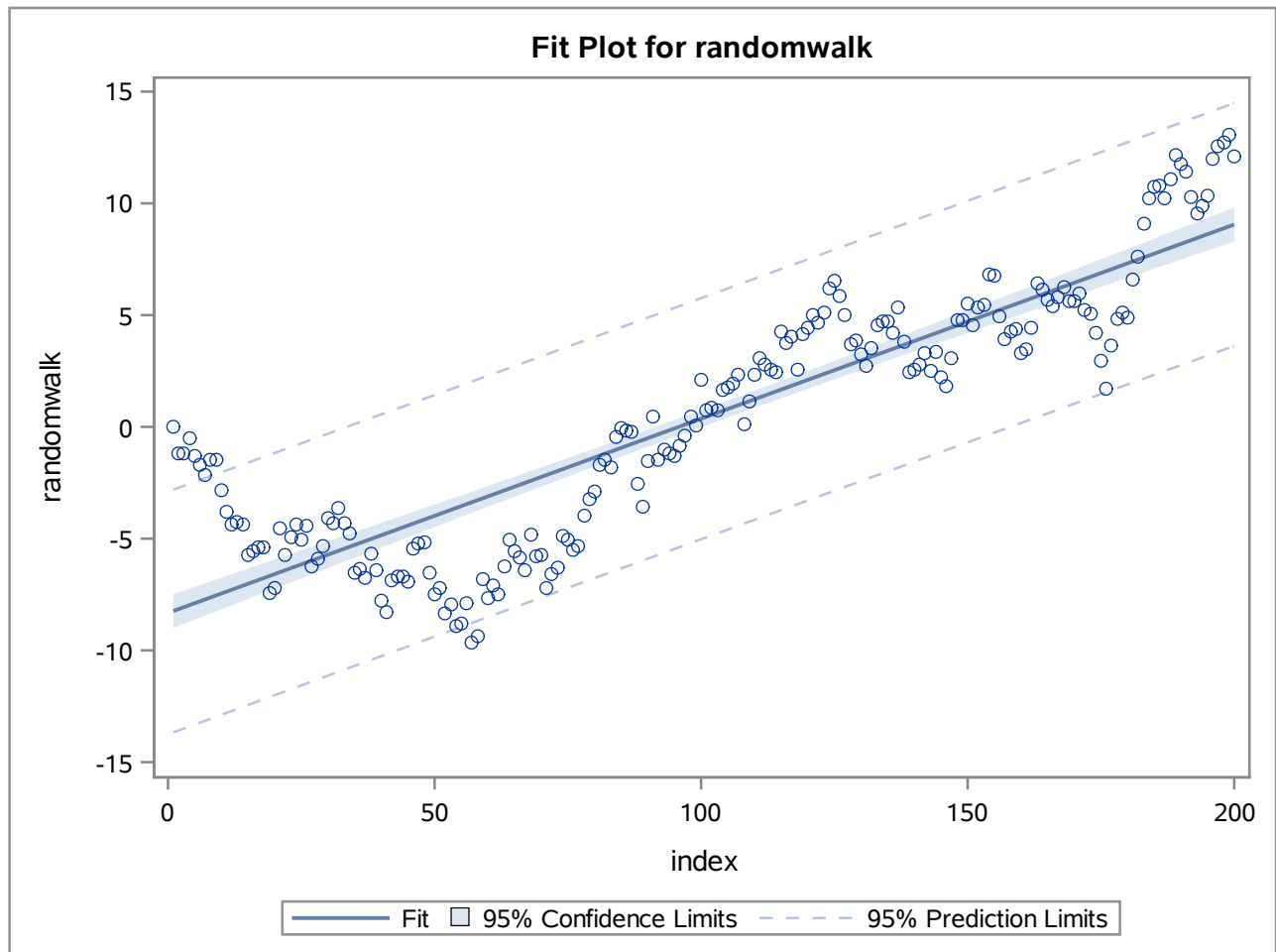
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	676.52	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	676.52	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-8.324696177	0.38719390	-21.50	<.0001
index	0.086891130	0.00334067	26.01	<.0001

The GLM Procedure

Dependent Variable: randomwalk



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: randomwalk

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	5372.671333	2686.335667	466.81	<.0001
Error	197	1133.677289	5.754707		
Corrected Total	199	6506.348622			

R-Square	Coeff Var	Root MSE	randomwalk Mean
0.825758	588.1634	2.398897	0.407862

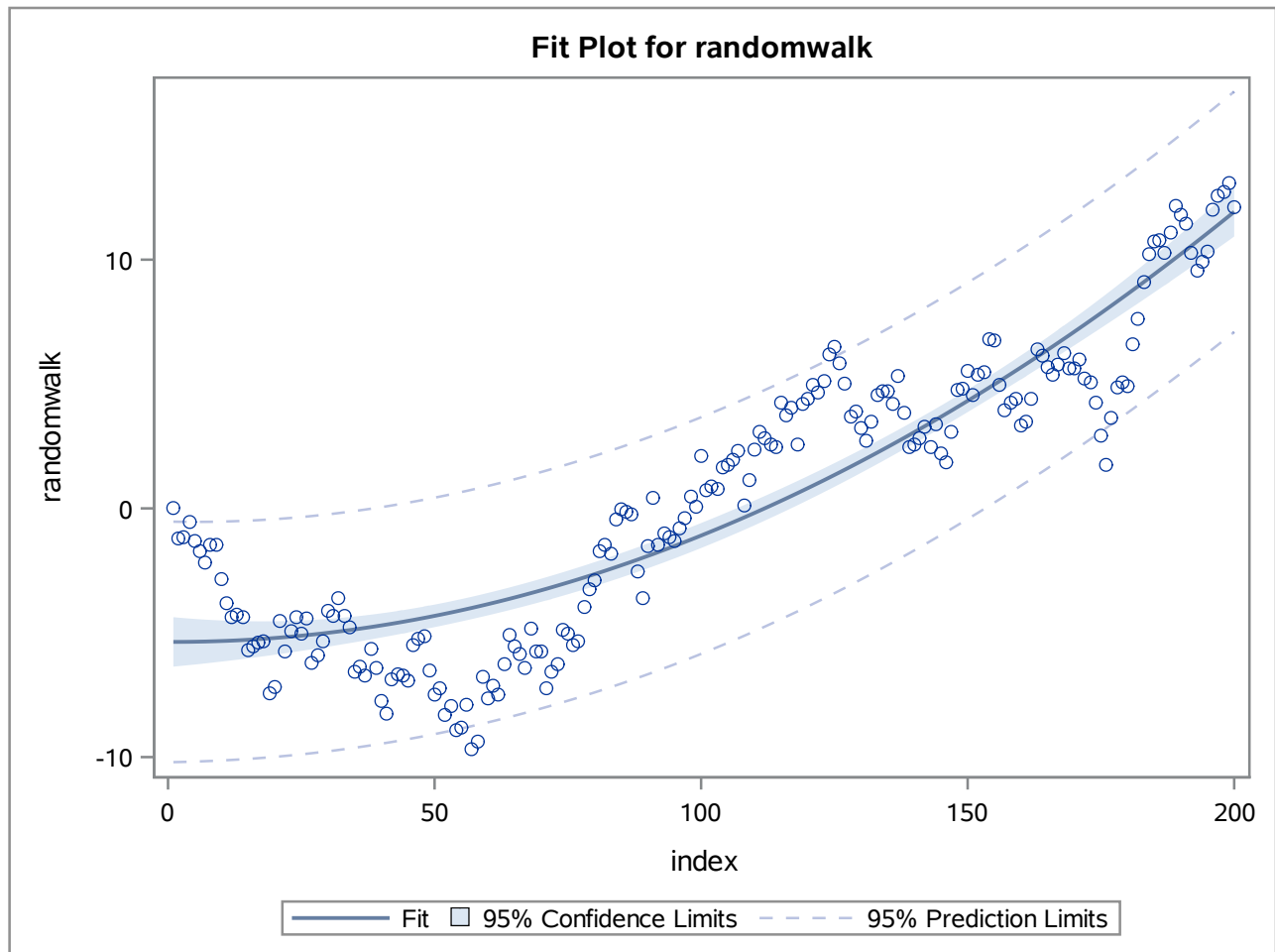
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	874.63	<.0001
index*index	1	339.418219	339.418219	58.98	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	0.0365256	0.0365256	0.01	0.9366
index*index	1	339.4182194	339.4182194	58.98	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-5.367690490	0.51401449	-10.44	<.0001
index	-0.000940722	0.01180795	-0.08	0.9366
index*index	0.000436974	0.00005690	7.68	<.0001

The GLM Procedure

Dependent Variable: randomwalk



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: randomwalk

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	5651.584057	1883.861352	431.97	<.0001
Error	196	854.764565	4.361044		
Corrected Total	199	6506.348622			

R-Square	Coeff Var	Root MSE	randomwalk Mean
0.868626	512.0137	2.088311	0.407862

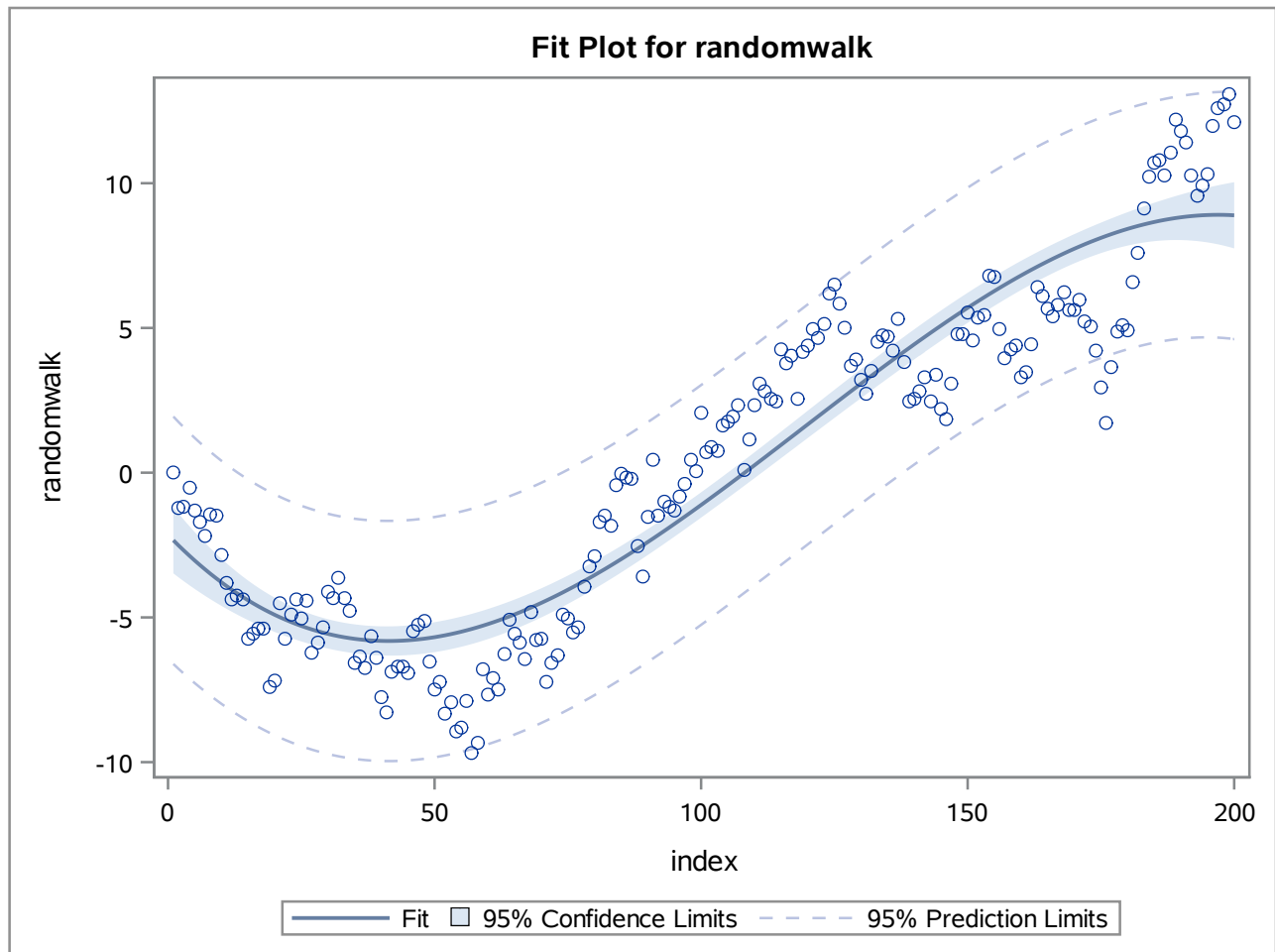
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	1154.14	<.0001
index*index	1	339.418219	339.418219	77.83	<.0001
index*index*index	1	278.912724	278.912724	63.96	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	237.2096736	237.2096736	54.39	<.0001
index*index	1	381.2168787	381.2168787	87.41	<.0001
index*index*index	1	278.9127239	278.9127239	63.96	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-2.148121975	0.60191392	-3.57	0.0005
index	-0.190790519	0.02586937	-7.38	<.0001
index*index	0.002792412	0.00029867	9.35	<.0001
index*index*index	-0.000007812	0.00000098	-8.00	<.0001

The GLM Procedure

Dependent Variable: randomwalk



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: randomwalk

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	6026.369216	1506.592304	612.08	<.0001
Error	195	479.979406	2.461433		
Corrected Total	199	6506.348622			

R-Square	Coeff Var	Root MSE	randomwalk Mean
0.926229	384.6630	1.568895	0.407862

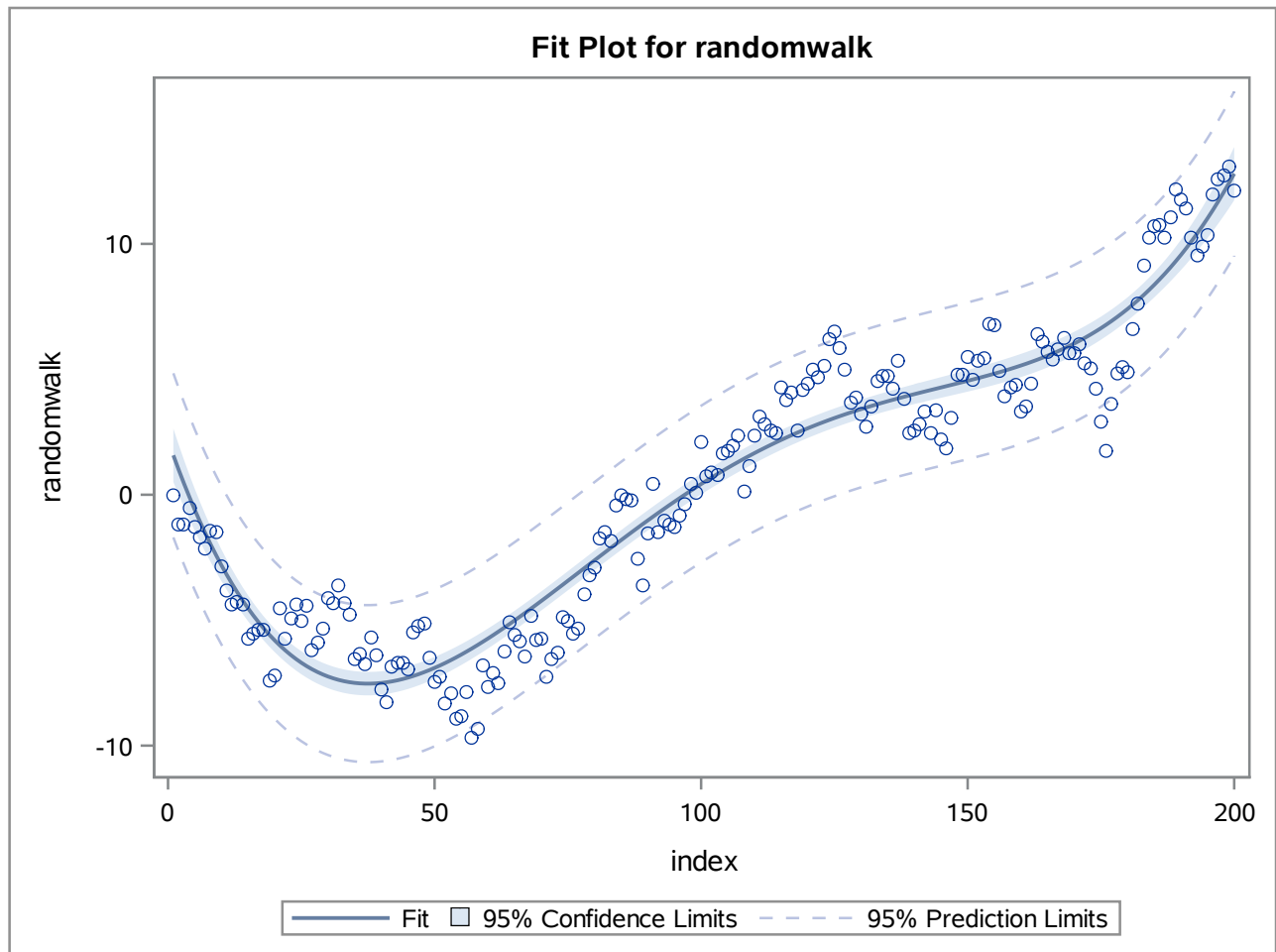
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	2044.85	<.0001
index*index	1	339.418219	339.418219	137.89	<.0001
index*index*index	1	278.912724	278.912724	113.31	<.0001
inde*inde*inde*index	1	374.785159	374.785159	152.26	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	597.7110266	597.7110266	242.83	<.0001
index*index	1	581.0823586	581.0823586	236.07	<.0001
index*index*index	1	453.0950015	453.0950015	184.08	<.0001
inde*inde*inde*index	1	374.7851592	374.7851592	152.26	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	2.169195478	0.57175344	3.79	0.0002
index	-0.610949995	0.03920613	-15.58	<.0001
index*index	0.012144327	0.00079040	15.36	<.0001
index*index*index	-0.000080067	0.00000590	-13.57	<.0001
inde*inde*inde*index	0.000000180	0.00000001	12.34	<.0001

The GLM Procedure

Dependent Variable: randomwalk



The GLM Procedure

Number of Observations Read	200
Number of Observations Used	200

The GLM Procedure

Dependent Variable: randomwalk

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	6127.211756	1225.442351	627.04	<.0001
Error	194	379.136867	1.954314		
Corrected Total	199	6506.348622			

R-Square	Coeff Var	Root MSE	randomwalk Mean
0.941728	342.7548	1.397968	0.407862

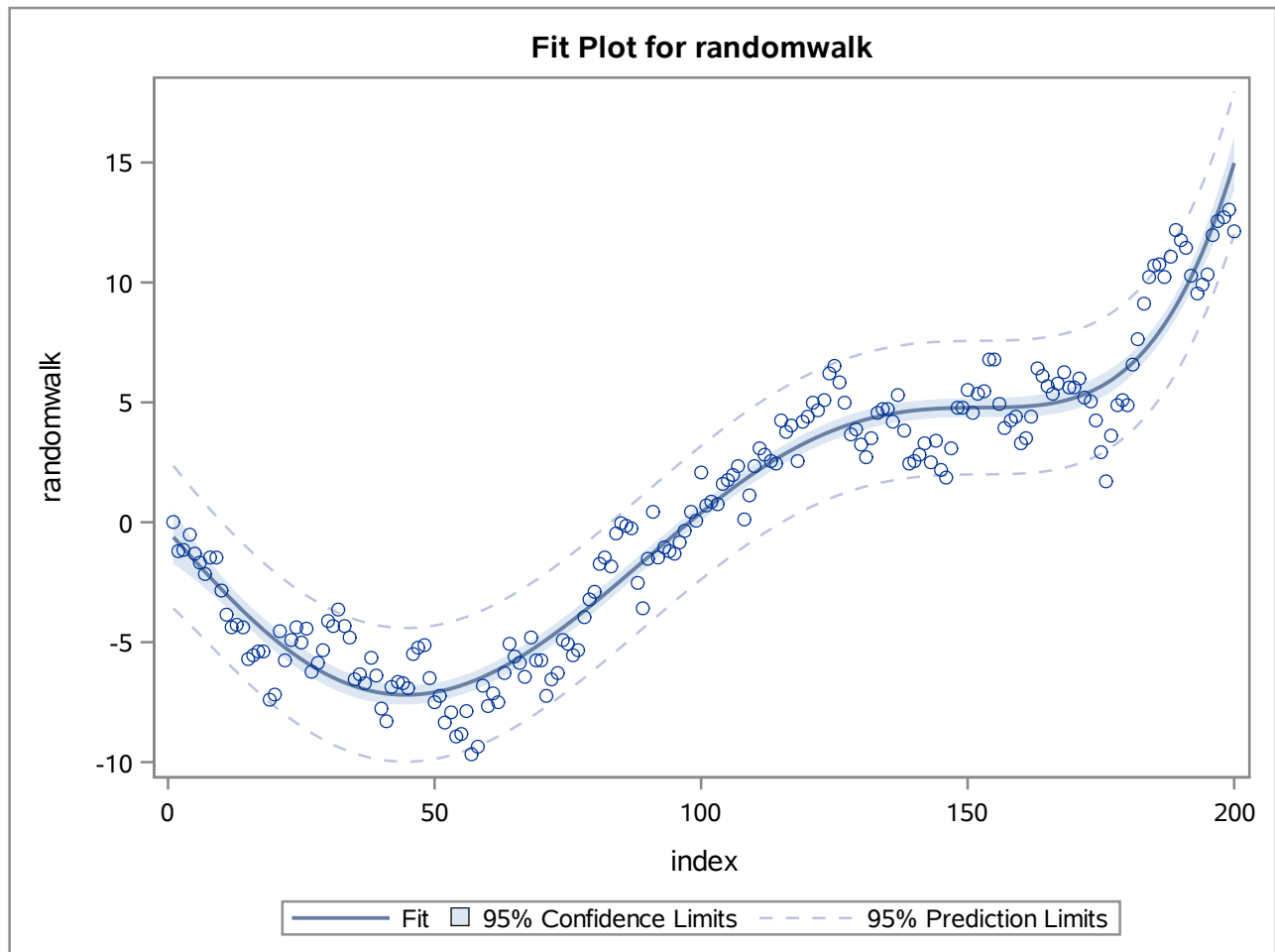
Source	DF	Type I SS	Mean Square	F Value	Pr > F
index	1	5033.253114	5033.253114	2575.46	<.0001
index*index	1	339.418219	339.418219	173.68	<.0001
index*index*index	1	278.912724	278.912724	142.72	<.0001
inde*inde*inde*index	1	374.785159	374.785159	191.77	<.0001
ind*ind*ind*ind*inde	1	100.842539	100.842539	51.60	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
index	1	30.6909240	30.6909240	15.70	0.0001
index*index	1	0.1247083	0.1247083	0.06	0.8008
index*index*index	1	25.9457292	25.9457292	13.28	0.0003
inde*inde*inde*index	1	65.0672002	65.0672002	33.29	<.0001
ind*ind*ind*ind*inde	1	100.8425392	100.8425392	51.60	<.0001

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	-.3693175108	0.62002936	-0.60	0.5521
index	-.2448577664	0.06178827	-3.96	0.0001
index*index	-.0004782134	0.00189309	-0.25	0.8008
index*index*index	0.0000867654	0.00002381	3.64	0.0003
inde*inde*inde*index	-.0000007528	0.00000013	-5.77	<.0001
ind*ind*ind*ind*inde	0.0000000019	0.00000000	7.18	<.0001

The GLM Procedure

Dependent Variable: randomwalk



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	75851.2450	8427.9161	51.30	<.0001
Error	1487	244317.2352	164.3021		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.236910	7.146431	12.81804	179.3628

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	40.11	<.0001
LonM*LonM	1	6562.52710	6562.52710	39.94	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	80.07	<.0001
LonM*LatM	1	37146.21649	37146.21649	226.08	<.0001
LonM*LonM*LatM	1	9.26558	9.26558	0.06	0.8123
LatM	1	2762.24416	2762.24416	16.81	<.0001
LonM*LatM*LatM	1	2291.00151	2291.00151	13.94	0.0002
LatM*LatM	1	6853.61986	6853.61986	41.71	<.0001
LatM*LatM*LatM	1	480.10341	480.10341	2.92	0.0876

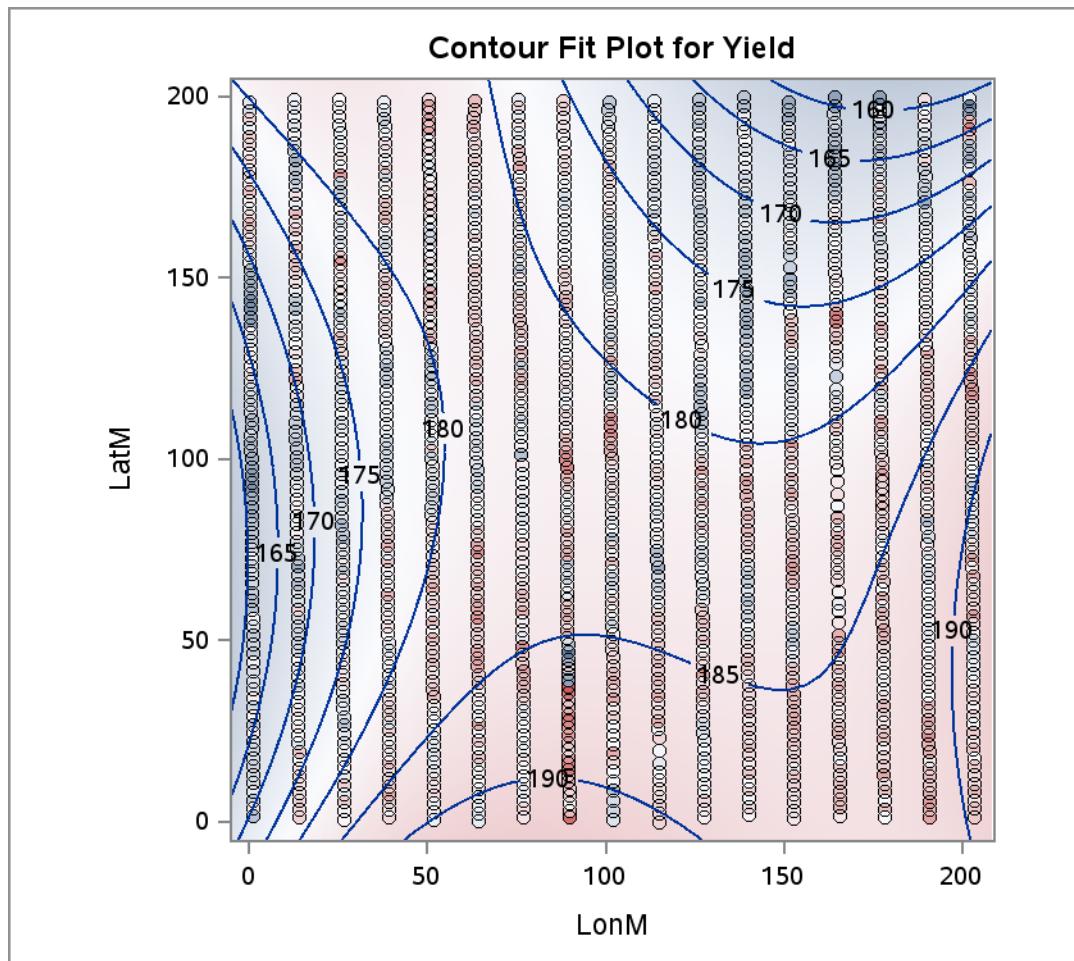
Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	17757.37497	17757.37497	108.08	<.0001
LonM*LonM	1	16714.12376	16714.12376	101.73	<.0001
LonM*LonM*LonM	1	12784.76747	12784.76747	77.81	<.0001
LonM*LatM	1	385.73937	385.73937	2.35	0.1257
LonM*LonM*LatM	1	1208.33313	1208.33313	7.35	0.0068
LatM	1	3109.17732	3109.17732	18.92	<.0001
LonM*LatM*LatM	1	9110.59869	9110.59869	55.45	<.0001
LatM*LatM	1	2161.61614	2161.61614	13.16	0.0003
LatM*LatM*LatM	1	480.10341	480.10341	2.92	0.0876

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	170.5024553	2.58364472	65.99	<.0001
LonM	0.6460353	0.06214246	10.40	<.0001
LonM*LonM	-0.0059476	0.00058968	-10.09	<.0001
LonM*LonM*LonM	0.0000160	0.00000181	8.82	<.0001

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate	Standard Error	t Value	Pr > t
LonM*LatM	0.0007789	0.00050835	1.53	0.1257
LonM*LonM*LatM	0.0000046	0.00000169	2.71	0.0068
LatM	-0.3024353	0.06952345	-4.35	<.0001
LonM*LatM*LatM	-0.0000133	0.00000179	-7.45	<.0001
LatM*LatM	0.0024979	0.00068868	3.63	0.0003
LatM*LatM*LatM	-0.0000037	0.00000218	-1.71	0.0876



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	20	92690.3060	4634.5153	30.07	<.0001
Error	1476	227478.1742	154.1180		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.289505	6.921406	12.41443	179.3628

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	42.76	<.0001
LonM*LonM	1	6562.52710	6562.52710	42.58	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	85.36	<.0001
LonM*LonM*LonM*LonM	1	715.88935	715.88935	4.65	0.0313
Lon*Lon*Lon*Lon*LonM	1	3793.11268	3793.11268	24.61	<.0001
LonM*LatM	1	37673.70203	37673.70203	244.45	<.0001
LonM*LonM*LatM	1	20.20369	20.20369	0.13	0.7174
LonM*LonM*LonM*LatM	1	3817.07843	3817.07843	24.77	<.0001
Lon*Lon*Lon*Lon*LatM	1	682.43260	682.43260	4.43	0.0355
LatM	1	1221.67200	1221.67200	7.93	0.0049
LonM*LatM*LatM	1	2252.22265	2252.22265	14.61	0.0001
LonM*LonM*LatM*LatM	1	1023.29556	1023.29556	6.64	0.0101
Lon*Lon*Lon*Lat*LatM	1	3737.83861	3737.83861	24.25	<.0001
LatM*LatM	1	3703.63696	3703.63696	24.03	<.0001
LonM*LatM*LatM*LatM	1	1124.88109	1124.88109	7.30	0.0070
Lon*Lon*Lat*Lat*LatM	1	2461.94792	2461.94792	15.97	<.0001
LatM*LatM*LatM	1	1001.52376	1001.52376	6.50	0.0109
Lon*Lat*Lat*Lat*LatM	1	46.17436	46.17436	0.30	0.5842
LatM*LatM*LatM*LatM	1	2505.64995	2505.64995	16.26	<.0001
Lat*Lat*Lat*Lat*LatM	1	600.25031	600.25031	3.89	0.0486

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	139.821584	139.821584	0.91	0.3410
LonM*LonM	1	146.998454	146.998454	0.95	0.3289
LonM*LonM*LonM	1	1151.806384	1151.806384	7.47	0.0063
LonM*LonM*LonM*LonM	1	2622.735192	2622.735192	17.02	<.0001
Lon*Lon*Lon*Lon*LonM	1	3865.098690	3865.098690	25.08	<.0001

The GLM Procedure

Dependent Variable: Yield

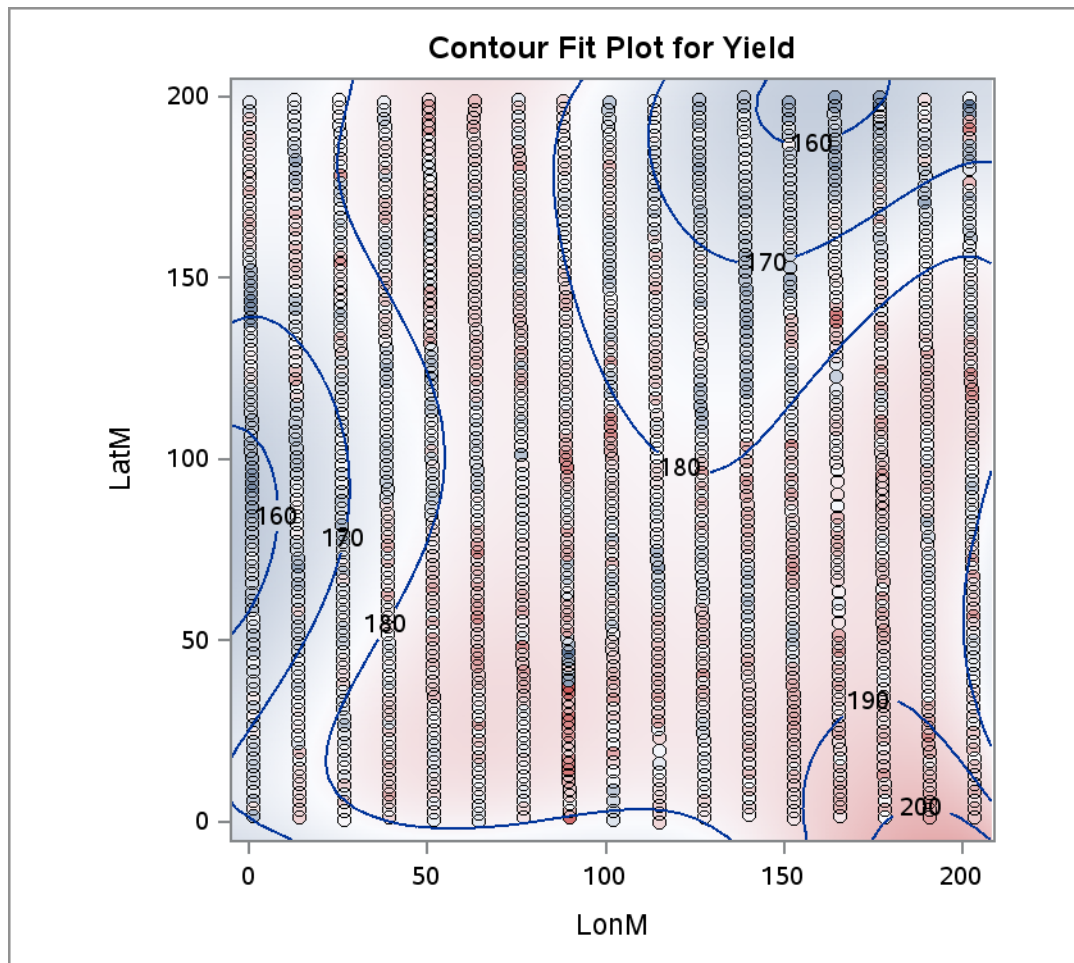
Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM*LatM	1	238.283494	238.283494	1.55	0.2139
LonM*LonM*LatM	1	18.757167	18.757167	0.12	0.7272
LonM*LonM*LonM*LatM	1	1180.538544	1180.538544	7.66	0.0057
Lon*Lon*Lon*Lon*LatM	1	1383.180283	1383.180283	8.97	0.0028
LatM	1	306.609571	306.609571	1.99	0.1586
LonM*LatM*LatM	1	68.211774	68.211774	0.44	0.5060
LonM*LonM*LatM*LatM	1	1248.362377	1248.362377	8.10	0.0045
Lon*Lon*Lon*Lat*LatM	1	193.392772	193.392772	1.25	0.2628
LatM*LatM	1	1396.863859	1396.863859	9.06	0.0027
LonM*LatM*LatM*LatM	1	434.463081	434.463081	2.82	0.0934
Lon*Lon*Lat*Lat*LatM	1	3212.246824	3212.246824	20.84	<.0001
LatM*LatM*LatM	1	1610.224367	1610.224367	10.45	0.0013
Lon*Lat*Lat*Lat*LatM	1	2120.870292	2120.870292	13.76	0.0002
LatM*LatM*LatM*LatM	1	1126.633317	1126.633317	7.31	0.0069
Lat*Lat*Lat*Lat*LatM	1	600.250307	600.250307	3.89	0.0486

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	169.6100670	4.85364249	34.94	<.0001
LonM	0.2376409	0.24949441	0.95	0.3410
LonM*LonM	0.0058069	0.00594590	0.98	0.3289
LonM*LonM*LonM	-0.0001802	0.00006592	-2.73	0.0063
LonM*LonM*LonM*LonM	0.0000014	0.00000034	4.13	<.0001
Lon*Lon*Lon*Lon*LonM	-0.0000000	0.00000000	-5.01	<.0001
LonM*LatM	0.0062858	0.00505525	1.24	0.2139
LonM*LonM*LatM	0.0000179	0.00005129	0.35	0.7272
LonM*LonM*LonM*LatM	-0.0000007	0.00000027	-2.77	0.0057
Lon*Lon*Lon*Lon*LatM	0.0000000	0.00000000	3.00	0.0028
LatM	0.4158530	0.29483138	1.41	0.1586
LonM*LatM*LatM	-0.0000370	0.00005568	-0.67	0.5060
LonM*LonM*LatM*LatM	0.0000007	0.00000026	2.85	0.0045
Lon*Lon*Lon*Lat*LatM	0.0000000	0.00000000	1.12	0.2628
LatM*LatM	-0.0216908	0.00720484	-3.01	0.0027
LonM*LatM*LatM*LatM	-0.0000005	0.00000030	-1.68	0.0934
Lon*Lon*Lat*Lat*LatM	-0.0000000	0.00000000	-4.57	<.0001
LatM*LatM*LatM	0.0002626	0.00008125	3.23	0.0013

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate	Standard Error	t Value	Pr > t
Lon*Lat*Lat*Lat*LatM	0.0000000	0.00000000	3.71	0.0002
LatM*LatM*LatM*LatM	-0.0000012	0.00000043	-2.70	0.0069
Lat*Lat*Lat*Lat*LatM	0.0000000	0.00000000	1.97	0.0486



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	35	99960.5573	2856.0159	18.95	<.0001
Error	1461	220207.9229	150.7241		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.312212	6.844772	12.27697	179.3628

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	43.72	<.0001
LonM*LonM	1	6562.52710	6562.52710	43.54	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	87.29	<.0001
LonM*LonM*LonM*LonM	1	715.88935	715.88935	4.75	0.0295
Lon*Lon*Lon*Lon*LonM	1	3793.11268	3793.11268	25.17	<.0001
Lo*Lo*Lo*Lon*Lon*Lon	1	249.80065	249.80065	1.66	0.1982
Lo*Lo*Lo*Lo*Lo*Lo*Lo	1	2080.27512	2080.27512	13.80	0.0002
LonM*LatM	1	37369.68931	37369.68931	247.93	<.0001
LonM*LonM*LatM	1	19.30090	19.30090	0.13	0.7205
LonM*LonM*LonM*LatM	1	3951.77204	3951.77204	26.22	<.0001
Lon*Lon*Lon*Lon*LatM	1	755.78557	755.78557	5.01	0.0253
Lo*Lo*Lo*Lon*Lon*Lat	1	157.22239	157.22239	1.04	0.3073
Lo*Lo*Lo*Lo*Lo*Lo*La	1	143.38348	143.38348	0.95	0.3296
LatM	1	2062.05367	2062.05367	13.68	0.0002
LonM*LatM*LatM	1	2308.74186	2308.74186	15.32	<.0001
LonM*LonM*LatM*LatM	1	1065.44260	1065.44260	7.07	0.0079
Lon*Lon*Lon*Lat*LatM	1	3744.62957	3744.62957	24.84	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	1	15.26927	15.26927	0.10	0.7503
Lo*Lo*Lo*Lo*Lo*La*La	1	260.80980	260.80980	1.73	0.1886
LatM*LatM	1	4145.69404	4145.69404	27.51	<.0001
LonM*LatM*LatM*LatM	1	1128.17380	1128.17380	7.49	0.0063
Lon*Lon*Lat*Lat*LatM	1	2470.76978	2470.76978	16.39	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	1	75.88597	75.88597	0.50	0.4781
Lo*Lo*Lo*Lo*La*La*La	1	698.05309	698.05309	4.63	0.0316
LatM*LatM*LatM	1	598.91703	598.91703	3.97	0.0464
Lon*Lat*Lat*Lat*LatM	1	52.07779	52.07779	0.35	0.5568
Lo*Lo*La*Lat*Lat*Lat	1	1252.86814	1252.86814	8.31	0.0040

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Lo*Lo*Lo*La*La*La*La	1	51.03279	51.03279	0.34	0.5607
LatM*LatM*LatM*LatM	1	1388.93575	1388.93575	9.22	0.0024
Lo*La*La*Lat*Lat*Lat	1	1062.56625	1062.56625	7.05	0.0080
Lo*Lo*La*La*La*La*La	1	25.48205	25.48205	0.17	0.6810
Lat*Lat*Lat*Lat*LatM	1	8.62583	8.62583	0.06	0.8110
Lo*La*La*La*La*La*La	1	497.37494	497.37494	3.30	0.0695
La*La*La*Lat*Lat*Lat	1	771.75833	771.75833	5.12	0.0238
La*La*La*La*La*La*La	1	730.36938	730.36938	4.85	0.0279

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	616.610370	616.610370	4.09	0.0433
LonM*LonM	1	1022.181825	1022.181825	6.78	0.0093
LonM*LonM*LonM	1	1453.736318	1453.736318	9.65	0.0019
LonM*LonM*LonM*LonM	1	1845.545493	1845.545493	12.24	0.0005
Lon*Lon*Lon*Lon*LonM	1	2103.652072	2103.652072	13.96	0.0002
Lo*Lo*Lo*Lon*Lon*Lon	1	2197.761282	2197.761282	14.58	0.0001
Lo*Lo*Lo*Lo*Lo*Lo*Lo	1	2155.409905	2155.409905	14.30	0.0002
LonM*LatM	1	43.713269	43.713269	0.29	0.5903
LonM*LonM*LatM	1	2.323315	2.323315	0.02	0.9012
LonM*LonM*LonM*LatM	1	0.113638	0.113638	0.00	0.9781
Lon*Lon*Lon*Lon*LatM	1	5.058002	5.058002	0.03	0.8547
Lo*Lo*Lo*Lon*Lon*Lat	1	4.676069	4.676069	0.03	0.8602
Lo*Lo*Lo*Lo*Lo*Lo*La	1	1.218201	1.218201	0.01	0.9284
LatM	1	625.345348	625.345348	4.15	0.0418
LonM*LatM*LatM	1	79.401487	79.401487	0.53	0.4681
LonM*LonM*LatM*LatM	1	65.114946	65.114946	0.43	0.5111
Lon*Lon*Lon*Lat*LatM	1	14.873811	14.873811	0.10	0.7535
Lo*Lo*Lo*Lon*Lat*Lat	1	30.121921	30.121921	0.20	0.6549
Lo*Lo*Lo*Lo*Lo*La*La	1	124.485353	124.485353	0.83	0.3636
LatM*LatM	1	932.054589	932.054589	6.18	0.0130
LonM*LatM*LatM*LatM	1	302.708634	302.708634	2.01	0.1566
Lon*Lon*Lat*Lat*LatM	1	187.637672	187.637672	1.24	0.2647
Lo*Lo*Lo*Lat*Lat*Lat	1	342.398062	342.398062	2.27	0.1320
Lo*Lo*Lo*Lo*La*La*La	1	153.572987	153.572987	1.02	0.3129
LatM*LatM*LatM	1	1245.565628	1245.565628	8.26	0.0041

The GLM Procedure

Dependent Variable: Yield

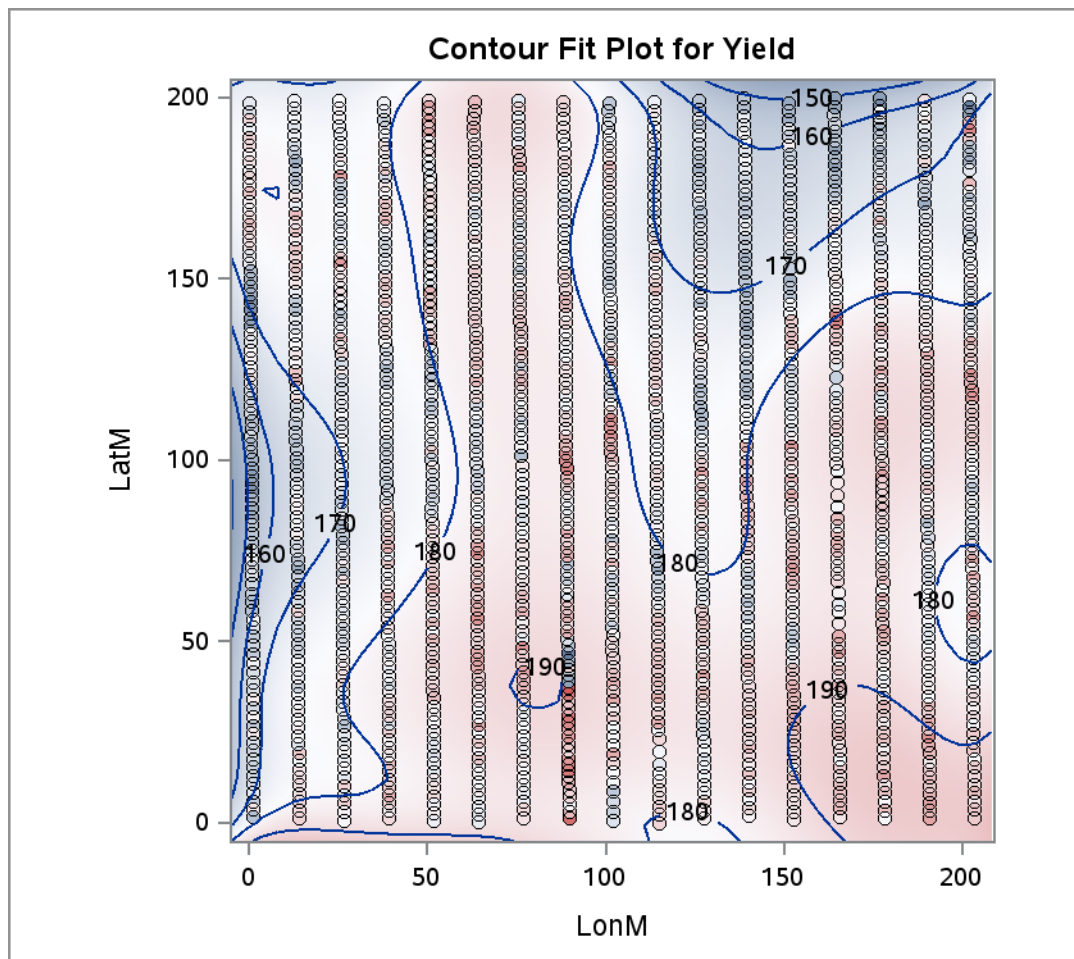
Source	DF	Type III SS	Mean Square	F Value	Pr > F
Lon*Lat*Lat*Lat*LatM	1	792.219209	792.219209	5.26	0.0220
Lo*Lo*La*Lat*Lat*Lat	1	75.721322	75.721322	0.50	0.4786
Lo*Lo*Lo*La*La*La*La	1	245.444538	245.444538	1.63	0.2021
LatM*LatM*LatM*LatM	1	1302.589061	1302.589061	8.64	0.0033
Lo*La*La*Lat*Lat*Lat	1	1194.028362	1194.028362	7.92	0.0049
Lo*Lo*La*La*La*La*La	1	1.556475	1.556475	0.01	0.9191
Lat*Lat*Lat*Lat*LatM	1	1153.292933	1153.292933	7.65	0.0057
Lo*La*La*La*La*La*La	1	1215.989505	1215.989505	8.07	0.0046
La*La*La*Lat*Lat*Lat	1	934.985019	934.985019	6.20	0.0129
La*La*La*La*La*La*La	1	730.369376	730.369376	4.85	0.0279

Parameter	Estimate	Standard Error	t Value	Pr > t
Intercept	177.7659190	7.68361876	23.14	<.0001
LonM	1.4008419	0.69258819	2.02	0.0433
LonM*LonM	-0.0809071	0.03106806	-2.60	0.0093
LonM*LonM*LonM	0.0021462	0.00069106	3.11	0.0019
LonM*LonM*LonM*LonM	-0.0000290	0.00000830	-3.50	0.0005
Lon*Lon*Lon*Lon*LonM	0.0000002	0.00000005	3.74	0.0002
Lo*Lo*Lo*Lon*Lon*Lon	-0.0000000	0.00000000	-3.82	0.0001
Lo*Lo*Lo*Lo*Lo*Lo*Lo	0.0000000	0.00000000	3.78	0.0002
LonM*LatM	0.0137535	0.02553872	0.54	0.5903
LonM*LonM*LatM	0.0000628	0.00050562	0.12	0.9012
LonM*LonM*LonM*LatM	0.0000002	0.00000588	0.03	0.9781
Lon*Lon*Lon*Lon*LatM	-0.0000000	0.00000004	-0.18	0.8547
Lo*Lo*Lo*Lon*Lon*Lat	0.0000000	0.00000000	0.18	0.8602
Lo*Lo*Lo*Lo*Lo*Lo*La	-0.0000000	0.00000000	-0.09	0.9284
LatM	-1.7193075	0.84408260	-2.04	0.0418
LonM*LatM*LatM	-0.0003991	0.00054987	-0.73	0.4681
LonM*LonM*LatM*LatM	-0.0000037	0.00000570	-0.66	0.5111
Lon*Lon*Lon*Lat*LatM	0.0000000	0.00000004	0.31	0.7535
Lo*Lo*Lo*Lon*Lat*Lat	0.0000000	0.00000000	0.45	0.6549
Lo*Lo*Lo*Lo*Lo*La*La	-0.0000000	0.00000000	-0.91	0.3636
LatM*LatM	0.0929246	0.03736812	2.49	0.0130
LonM*LatM*LatM*LatM	0.0000094	0.00000663	1.42	0.1566
Lon*Lon*Lat*Lat*LatM	0.0000000	0.00000004	1.12	0.2647

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate	Standard Error	t Value	Pr > t
Lo*Lo*Lo*Lat*Lat*Lat	-0.0000000	0.00000000	-1.51	0.1320
Lo*Lo*Lo*Lo*La*La*La	0.0000000	0.00000000	1.01	0.3129
LatM*LatM*LatM	-0.0023659	0.00082302	-2.87	0.0041
Lon*Lat*Lat*Lat*LatM	-0.0000001	0.00000005	-2.29	0.0220
Lo*Lo*La*Lat*Lat*Lat	-0.0000000	0.00000000	-0.71	0.4786
Lo*Lo*Lo*La*La*La*La	0.0000000	0.00000000	1.28	0.2021
LatM*LatM*LatM*LatM	0.0000292	0.00000992	2.94	0.0033
Lo*La*La*Lat*Lat*Lat	0.0000000	0.00000000	2.81	0.0049
Lo*Lo*La*La*La*La*La	0.0000000	0.00000000	0.10	0.9191
Lat*Lat*Lat*Lat*LatM	-0.0000002	0.00000007	-2.77	0.0057
Lo*La*La*La*La*La*La	-0.0000000	0.00000000	-2.84	0.0046
La*La*La*Lat*Lat*Lat	0.0000000	0.00000000	2.49	0.0129
La*La*La*La*La*La*La	-0.0000000	0.00000000	-2.20	0.0279



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	52	110841.7818	2131.5727	14.70	<.0001
Error	1444	209326.6985	144.9631		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.346198	6.712686	12.04006	179.3628

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	45.46	<.0001
LonM*LonM	1	6562.52710	6562.52710	45.27	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	90.76	<.0001
LonM*LonM*LonM*LonM	1	715.88935	715.88935	4.94	0.0264
Lon*Lon*Lon*Lon*LonM	1	3793.11268	3793.11268	26.17	<.0001
Lo*Lo*Lo*Lon*Lon*Lon	1	249.80065	249.80065	1.72	0.1895
Lo*Lo*Lo*Lo*Lo*Lo*Lo	1	2080.27513	2080.27513	14.35	0.0002
L*L*L*Lo*Lo*Lo*Lo*Lo	1	358.94453	358.94453	2.48	0.1158
L*L*L*L*L*Lo*Lo*Lo	0	0.00000	.	.	.
LonM*LatM	1	37206.33571	37206.33571	256.66	<.0001
LonM*LonM*LatM	1	15.95481	15.95481	0.11	0.7401
LonM*LonM*LonM*LatM	1	4037.08638	4037.08638	27.85	<.0001
Lon*Lon*Lon*Lon*LatM	1	797.79200	797.79200	5.50	0.0191
Lo*Lo*Lo*Lon*Lon*Lat	1	138.03523	138.03523	0.95	0.3293
Lo*Lo*Lo*Lo*Lo*Lo*La	1	130.31797	130.31797	0.90	0.3432
L*L*L*Lo*Lo*Lo*Lo*La	1	99.61196	99.61196	0.69	0.4073
L*L*L*L*L*Lo*Lo*La	1	5.29759	5.29759	0.04	0.8484
LatM	1	2521.76061	2521.76061	17.40	<.0001
LonM*LatM*LatM	1	2326.65284	2326.65284	16.05	<.0001
LonM*LonM*LatM*LatM	1	1068.02061	1068.02061	7.37	0.0067
Lon*Lon*Lon*Lat*LatM	1	3745.16439	3745.16439	25.84	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	1	16.13940	16.13940	0.11	0.7387
Lo*Lo*Lo*Lo*Lo*La*La	1	273.06737	273.06737	1.88	0.1701
L*L*L*Lo*Lo*Lo*La*La	1	599.78767	599.78767	4.14	0.0421
L*L*L*L*L*Lo*La*La	1	724.42528	724.42528	5.00	0.0255
LatM*LatM	1	4481.92390	4481.92390	30.92	<.0001
LonM*LatM*LatM*LatM	1	1171.43154	1171.43154	8.08	0.0045

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Lon*Lon*Lat*Lat*LatM	1	2557.30913	2557.30913	17.64	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	1	99.04199	99.04199	0.68	0.4086
Lo*Lo*Lo*Lo*La*La*La	1	617.85106	617.85106	4.26	0.0391
L*L*L*Lo*Lo*La*La*La	1	566.03547	566.03547	3.90	0.0483
L*L*L*L*L*La*La*La	1	4922.74271	4922.74271	33.96	<.0001
LatM*LatM*LatM	1	13.78691	13.78691	0.10	0.7578
Lon*Lat*Lat*Lat*LatM	1	57.42893	57.42893	0.40	0.5292
Lo*Lo*La*Lat*Lat*Lat	1	1348.74675	1348.74675	9.30	0.0023
Lo*Lo*Lo*La*La*La*La	1	31.17758	31.17758	0.22	0.6429
L*L*L*Lo*La*La*La*La	1	449.67952	449.67952	3.10	0.0784
L*L*L*L*L*La*La*La	1	62.03139	62.03139	0.43	0.5131
LatM*LatM*LatM*LatM	1	1528.49744	1528.49744	10.54	0.0012
Lo*La*La*Lat*Lat*Lat	1	1113.70625	1113.70625	7.68	0.0056
Lo*Lo*La*La*La*La*La	1	32.94100	32.94100	0.23	0.6337
L*L*L*La*La*La*La*La	1	119.77855	119.77855	0.83	0.3635
L*L*L*L*L*La*La*La	1	282.57935	282.57935	1.95	0.1629
Lat*Lat*Lat*Lat*LatM	1	2.61682	2.61682	0.02	0.8931
Lo*La*La*La*La*La*La	1	487.73878	487.73878	3.36	0.0668
L*L*L*La*La*La*La*La	1	235.46530	235.46530	1.62	0.2027
L*L*L*L*L*La*La*La	1	2382.41203	2382.41203	16.43	<.0001
La*La*La*Lat*Lat*Lat	1	15.82748	15.82748	0.11	0.7411
L*L*L*La*La*La*La*La	1	840.23209	840.23209	5.80	0.0162
L*L*L*L*L*La*La*La	1	3.90776	3.90776	0.03	0.8696
La*La*La*La*La*La*La	1	15.84129	15.84129	0.11	0.7410
L*L*L*L*L*La*La*La	1	110.71886	110.71886	0.76	0.3823
L*L*L*La*La*La*La*La	1	78.06566	78.06566	0.54	0.4632
L*L*L*L*L*La*La*La	0	0.00000	.	.	.

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	1359.702272	1359.702272	9.38	0.0022
LonM*LonM	1	534.532347	534.532347	3.69	0.0550
LonM*LonM*LonM	0	0.000000	.	.	.
LonM*LonM*LonM*LonM	0	0.000000	.	.	.
Lon*Lon*Lon*Lon*LonM	0	0.000000	.	.	.
Lo*Lo*Lo*Lon*Lon*Lon	0	0.000000	.	.	.

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Lo*Lo*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*L*L*Lo*Lo*Lo	0	0.000000	.	.	.
LonM*LatM	1	1713.933704	1713.933704	11.82	0.0006
LonM*LonM*LatM	1	1966.381873	1966.381873	13.56	0.0002
LonM*LonM*LonM*LatM	1	873.346971	873.346971	6.02	0.0142
Lon*Lon*Lon*Lon*LatM	1	158.962863	158.962863	1.10	0.2952
Lo*Lo*Lo*Lon*Lon*Lat	1	0.327616	0.327616	0.00	0.9621
Lo*Lo*Lo*Lo*Lo*Lo*La	1	14.284510	14.284510	0.10	0.7536
L*L*L*Lo*Lo*Lo*Lo*La	1	0.439349	0.439349	0.00	0.9561
L*L*L*L*L*Lo*Lo*La	1	57.468615	57.468615	0.40	0.5290
LatM	1	105.173565	105.173565	0.73	0.3945
LonM*LatM*LatM	1	1121.030539	1121.030539	7.73	0.0055
LonM*LonM*LatM*LatM	1	2746.243391	2746.243391	18.94	<.0001
Lon*Lon*Lon*Lat*LatM	1	2937.257654	2937.257654	20.26	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	1	1903.997331	1903.997331	13.13	0.0003
Lo*Lo*Lo*Lo*Lo*La*La	1	441.428859	441.428859	3.05	0.0812
L*L*L*Lo*Lo*Lo*La*La	1	115.610600	115.610600	0.80	0.3720
L*L*L*L*L*Lo*La*La	1	1698.628762	1698.628762	11.72	0.0006
LatM*LatM	1	62.987524	62.987524	0.43	0.5099
LonM*LatM*LatM*LatM	1	513.945678	513.945678	3.55	0.0599
Lon*Lon*Lat*Lat*LatM	1	1831.051955	1831.051955	12.63	0.0004
Lo*Lo*Lo*Lat*Lat*Lat	1	2674.473520	2674.473520	18.45	<.0001
Lo*Lo*Lo*Lo*La*La*La	1	3557.769791	3557.769791	24.54	<.0001
L*L*L*Lo*Lo*La*La*La	1	5161.181767	5161.181767	35.60	<.0001
L*L*L*L*L*La*La*La	1	5047.768860	5047.768860	34.82	<.0001
LatM*LatM*LatM	1	46.500799	46.500799	0.32	0.5712
Lon*Lat*Lat*Lat*LatM	1	211.903319	211.903319	1.46	0.2268
Lo*Lo*La*Lat*Lat*Lat	1	1083.947416	1083.947416	7.48	0.0063
Lo*Lo*Lo*La*La*La*La	1	1443.132130	1443.132130	9.96	0.0016
L*L*L*Lo*La*La*La*La	1	617.162678	617.162678	4.26	0.0393
L*L*L*L*L*La*La*La	1	533.617703	533.617703	3.68	0.0552
LatM*LatM*LatM*LatM	1	48.207626	48.207626	0.33	0.5643
Lo*La*La*Lat*Lat*Lat	1	71.943243	71.943243	0.50	0.4812
Lo*Lo*La*La*La*La*La	1	600.266648	600.266648	4.14	0.0420

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
L*L*L*La*La*La*La*La	1	1650.611558	1650.611558	11.39	0.0008
L*L*L*L*L*La*La*La	1	163.931917	163.931917	1.13	0.2878
Lat*Lat*Lat*Lat*LatM	0	0.000000	.	.	.
Lo*La*La*La*La*La*La	1	17.201466	17.201466	0.12	0.7305
L*L*L*La*La*La*La*La	1	133.454588	133.454588	0.92	0.3375
L*L*L*L*L*La*La*La	1	1726.366657	1726.366657	11.91	0.0006
La*La*La*Lat*Lat*Lat	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	1	4.137490	4.137490	0.03	0.8659
L*L*L*L*L*La*La*La	1	14.655289	14.655289	0.10	0.7506
La*La*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	1	4.562342	4.562342	0.03	0.8592
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.

Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	156.6597678		10.79776944	14.51	<.0001
LonM	4.6506354		1.51851503	3.06	0.0022
LonM*LonM	-0.1947733		0.10143109	-1.92	0.0550
LonM*LonM*LonM	0.0033326	B	0.00321895	1.04	0.3007
LonM*LonM*LonM*LonM	-0.0000264	B	0.00005500	-0.48	0.6318
Lon*Lon*Lon*Lon*LonM	0.0000001	B	0.00000054	0.16	0.8702
Lo*Lo*Lo*Lon*Lon*Lon	-0.0000000	B	0.00000000	-0.01	0.9895
Lo*Lo*Lo*Lo*Lo*Lo	-0.0000000	B	0.00000000	-0.03	0.9797
L*L*L*Lo*Lo*Lo*Lo	-0.0000000	B	0.00000000	-0.01	0.9931
L*L*L*L*L*Lo*Lo*Lo	0.0000000	B	.	.	.
LonM*LatM	-0.3054755		0.08883991	-3.44	0.0006
LonM*LonM*LatM	0.0107977		0.00293174	3.68	0.0002
LonM*LonM*LonM*LatM	-0.0001462		0.00005956	-2.45	0.0142
Lon*Lon*Lon*Lon*LatM	0.0000008		0.00000075	1.05	0.2952
Lo*Lo*Lo*Lon*Lon*Lat	-0.0000000		0.00000001	-0.05	0.9621
Lo*Lo*Lo*Lo*Lo*La	-0.0000000		0.00000000	-0.31	0.7536
L*L*L*Lo*Lo*Lo*La	0.0000000		0.00000000	0.06	0.9561
L*L*L*L*L*Lo*Lo*La	0.0000000		0.00000000	0.63	0.5290
LatM	1.5376701		1.80525510	0.85	0.3945
LonM*LatM*LatM	0.0086022		0.00309336	2.78	0.0055

The GLM Procedure

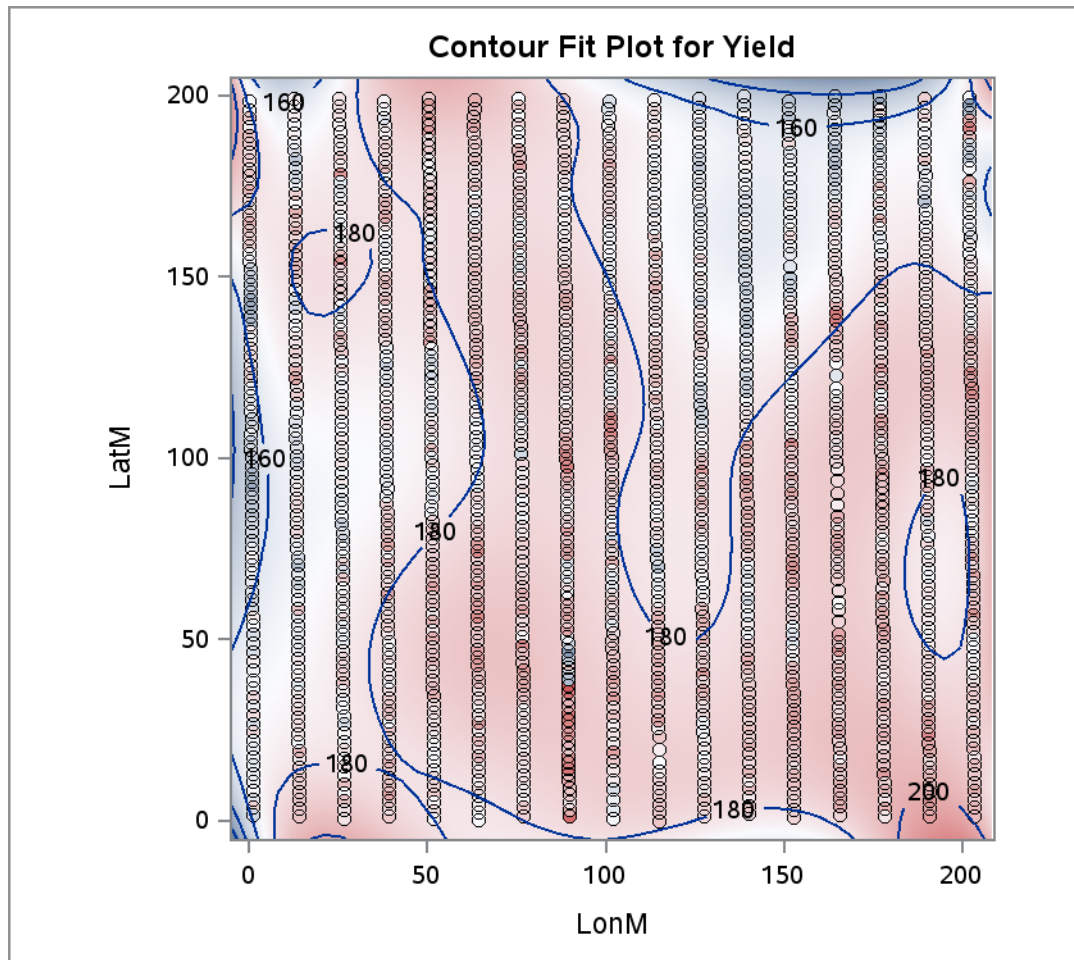
Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
LonM*LonM*LatM*LatM	-0.0002398		0.00005509	-4.35	<.0001
Lon*Lon*Lon*Lat*LatM	0.0000029		0.00000065	4.50	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	-0.0000000		0.00000001	-3.62	0.0003
Lo*Lo*Lo*Lo*Lo*La*La	0.0000000		0.00000000	1.75	0.0812
L*L*L*Lo*Lo*Lo*La*La	0.0000000		0.00000000	0.89	0.3720
L*L*L*L*L*Lo*La*La	-0.0000000		0.00000000	-3.42	0.0006
LatM*LatM	-0.0756843		0.11481723	-0.66	0.5099
LonM*LatM*LatM*LatM	-0.0001195		0.00006346	-1.88	0.0599
Lon*Lon*Lat*Lat*LatM	0.0000024		0.00000067	3.55	0.0004
Lo*Lo*Lo*Lat*Lat*Lat	-0.0000000		0.00000000	-4.30	<.0001
Lo*Lo*Lo*Lo*La*La*La	0.0000000		0.00000000	4.95	<.0001
L*L*L*Lo*Lo*La*La*La	-0.0000000		0.00000000	-5.97	<.0001
L*L*L*L*L*La*La*La	0.0000000		0.00000000	5.90	<.0001
LatM*LatM*LatM	0.0020109		0.00355047	0.57	0.5712
Lon*Lat*Lat*Lat*LatM	0.0000010		0.00000080	1.21	0.2268
Lo*Lo*La*Lat*Lat*Lat	-0.0000000		0.00000001	-2.73	0.0063
Lo*Lo*Lo*La*La*La*La	0.0000000		0.00000000	3.16	0.0016
L*L*L*Lo*La*La*La*La	-0.0000000		0.00000000	-2.06	0.0393
L*L*L*L*L*La*La*La	0.0000000		0.00000000	1.92	0.0552
LatM*LatM*LatM*LatM	-0.0000348		0.00006032	-0.58	0.5643
Lo*La*La*Lat*Lat*Lat	-0.0000000		0.00000001	-0.70	0.4812
Lo*Lo*La*La*La*La*La	0.0000000		0.00000000	2.03	0.0420
L*L*L*La*La*La*La*La	-0.0000000		0.00000000	-3.37	0.0008
L*L*L*L*L*La*La*La	0.0000000		0.00000000	1.06	0.2878
Lat*Lat*Lat*Lat*LatM	0.0000004	B	0.00000059	0.62	0.5352
Lo*La*La*La*La*La*La	0.0000000		0.00000000	0.34	0.7305
L*L*L*La*La*La*La*La	-0.0000000		0.00000000	-0.96	0.3375
L*L*L*L*L*La*La*La	0.0000000		0.00000000	3.45	0.0006
La*La*La*Lat*Lat*Lat	-0.0000000	B	0.00000000	-0.66	0.5065
L*L*L*La*La*La*La*La	-0.0000000		0.00000000	-0.17	0.8659
L*L*L*L*L*La*La*La	-0.0000000		0.00000000	-0.32	0.7506
La*La*La*La*La*La*La	0.0000000	B	0.00000000	0.70	0.4829
L*L*L*L*L*La*La*La	0.0000000		0.00000000	0.18	0.8592
L*L*L*La*La*La*La*La	-0.0000000	B	0.00000000	-0.73	0.4632
L*L*L*L*L*La*La*La	0.0000000	B	.	.	.

The GLM Procedure

Dependent Variable: Yield

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	63	118572.7586	1882.1073	13.38	<.0001
Error	1433	201595.7216	140.6809		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.370345	6.612797	11.86090	179.3628

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	46.84	<.0001
LonM*LonM	1	6562.52710	6562.52710	46.65	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	93.52	<.0001
LonM*LonM*LonM*LonM	1	715.88935	715.88935	5.09	0.0242
Lon*Lon*Lon*Lon*LonM	1	3793.11268	3793.11268	26.96	<.0001
Lo*Lo*Lo*Lon*Lon*Lon	1	249.80065	249.80065	1.78	0.1829
Lo*Lo*Lo*Lo*Lo*Lo*Lo	1	2080.27512	2080.27512	14.79	0.0001
L*L*L*Lo*Lo*Lo*Lo*Lo	1	358.94450	358.94450	2.55	0.1104
L*L*L*L*L*Lo*Lo*Lo	0	0.00000	.	.	.
L*L*L*L*L*L*L*Lo	1	31.76172	31.76172	0.23	0.6347
LONGNAME EFFECT	0	0.00000	.	.	.
LonM*LatM	1	37175.79603	37175.79603	264.26	<.0001
LonM*LonM*LatM	1	16.62538	16.62538	0.12	0.7311
LonM*LonM*LonM*LatM	1	4040.07944	4040.07944	28.72	<.0001
Lon*Lon*Lon*Lon*LatM	1	809.28417	809.28417	5.75	0.0166
Lo*Lo*Lo*Lon*Lon*Lat	1	132.50715	132.50715	0.94	0.3320
Lo*Lo*Lo*Lo*Lo*Lo*La	1	126.35677	126.35677	0.90	0.3434
L*L*L*Lo*Lo*Lo*Lo*La	1	97.78752	97.78752	0.70	0.4046
L*L*L*L*L*Lo*Lo*La	1	5.75879	5.75879	0.04	0.8397
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	316.44481	316.44481	2.25	0.1339
LatM	1	2318.61112	2318.61112	16.48	<.0001
LonM*LatM*LatM	1	2311.94442	2311.94442	16.43	<.0001
LonM*LonM*LatM*LatM	1	1050.80749	1050.80749	7.47	0.0064
Lon*Lon*Lon*Lat*LatM	1	3780.58911	3780.58911	26.87	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	1	12.03227	12.03227	0.09	0.7700
Lo*Lo*Lo*Lo*Lo*La*La	1	289.66259	289.66259	2.06	0.1515

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
L*L*Lo*Lo*Lo*La*La	1	580.72891	580.72891	4.13	0.0424
L*L*L*L*L*Lo*La*La	1	714.01733	714.01733	5.08	0.0244
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	1602.72702	1602.72702	11.39	0.0008
LatM*LatM	1	3639.19340	3639.19340	25.87	<.0001
LonM*LatM*LatM*LatM	1	1221.74016	1221.74016	8.68	0.0033
Lon*Lon*Lat*Lat*LatM	1	2623.82970	2623.82970	18.65	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	1	121.56170	121.56170	0.86	0.3528
Lo*Lo*Lo*Lo*La*La*La	1	569.45478	569.45478	4.05	0.0444
L*L*L*Lo*Lo*La*La*La	1	633.55786	633.55786	4.50	0.0340
L*L*L*L*L*La*La*La	1	4841.31934	4841.31934	34.41	<.0001
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	1081.96753	1081.96753	7.69	0.0056
LatM*LatM*LatM	1	185.31752	185.31752	1.32	0.2513
Lon*Lat*Lat*Lat*LatM	1	50.71667	50.71667	0.36	0.5483
Lo*Lo*La*Lat*Lat*Lat	1	1308.68664	1308.68664	9.30	0.0023
Lo*Lo*Lo*La*La*La*La	1	45.54385	45.54385	0.32	0.5695
L*L*L*Lo*La*La*La*La	1	395.94868	395.94868	2.81	0.0936
L*L*L*L*L*La*La*La	1	55.45175	55.45175	0.39	0.5302
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	114.07539	114.07539	0.81	0.3680
LatM*LatM*LatM*LatM	1	2128.52854	2128.52854	15.13	0.0001
Lo*La*La*Lat*Lat*Lat	1	1107.79029	1107.79029	7.87	0.0051
Lo*Lo*La*La*La*La*La	1	31.26150	31.26150	0.22	0.6374
L*L*L*La*La*La*La*La	1	109.84428	109.84428	0.78	0.3770
L*L*L*L*L*La*La*La	1	259.01366	259.01366	1.84	0.1750
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	356.07715	356.07715	2.53	0.1118
Lat*Lat*Lat*Lat*LatM	1	39.61359	39.61359	0.28	0.5957
Lo*La*La*La*La*La*La	1	466.88572	466.88572	3.32	0.0687
L*L*L*La*La*La*La*La	1	253.47319	253.47319	1.80	0.1797
L*L*L*L*L*La*La*La	1	2393.94526	2393.94526	17.02	<.0001
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	875.07353	875.07353	6.22	0.0127
La*La*La*Lat*Lat*Lat	1	387.84313	387.84313	2.76	0.0971

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
L*L*La*La*La*La*La	1	901.49429	901.49429	6.41	0.0115
L*L*L*L*L*La*La*La	1	1.04299	1.04299	0.01	0.9314
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	395.23134	395.23134	2.81	0.0939
La*La*La*La*La*La*La	1	80.56394	80.56394	0.57	0.4493
L*L*L*L*L*L*La*La*La	1	107.69271	107.69271	0.77	0.3818
L*L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	124.49861	124.49861	0.88	0.3470
L*L*L*La*La*La*La*La	1	19.77050	19.77050	0.14	0.7078
L*L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	2547.77948	2547.77948	18.11	<.0001
L*L*L*L*L*L*La*La*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	176.63155	176.63155	1.26	0.2627

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	3504.790598	3504.790598	24.91	<.0001
LonM*LonM	1	1434.376938	1434.376938	10.20	0.0014
LonM*LonM*LonM	0	0.000000	.	.	.
LonM*LonM*LonM*LonM	0	0.000000	.	.	.
Lon*Lon*Lon*Lon*LonM	0	0.000000	.	.	.
Lo*Lo*Lo*Lon*Lon*Lon	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*L*L*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*L*L*L*L*Lo	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LonM*LatM	1	5893.497377	5893.497377	41.89	<.0001
LonM*LonM*LatM	1	5401.948655	5401.948655	38.40	<.0001
LonM*LonM*LonM*LatM	1	3233.005692	3233.005692	22.98	<.0001
Lon*Lon*Lon*Lon*LatM	1	1588.062610	1588.062610	11.29	0.0008
Lo*Lo*Lo*Lon*Lon*Lat	1	638.644074	638.644074	4.54	0.0333
Lo*Lo*Lo*Lo*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*L*L*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LONGNAME EFFECT	1	45.154115	45.154115	0.32	0.5711
LatM	1	1340.651332	1340.651332	9.53	0.0021
LonM*LatM*LatM	1	4305.414394	4305.414394	30.60	<.0001
LonM*LonM*LatM*LatM	1	5808.756222	5808.756222	41.29	<.0001
Lon*Lon*Lon*Lat*LatM	1	5316.523500	5316.523500	37.79	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*Lo*La*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*La*La	0	0.000000	.	.	.
L*L*L*L*L*Lo*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	99.946602	99.946602	0.71	0.3994
LatM*LatM	1	994.482764	994.482764	7.07	0.0079
LonM*LatM*LatM*LatM	1	2887.089661	2887.089661	20.52	<.0001
Lon*Lon*Lat*Lat*LatM	1	4077.281090	4077.281090	28.98	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*La*La*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	1688.591837	1688.591837	12.00	0.0005
LatM*LatM*LatM	1	808.129856	808.129856	5.74	0.0167
Lon*Lat*Lat*Lat*LatM	1	2143.509026	2143.509026	15.24	<.0001
Lo*Lo*La*Lat*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*La*La*La*La	0	0.000000	.	.	.
L*L*L*Lo*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	950.705972	950.705972	6.76	0.0094
LatM*LatM*LatM*LatM	1	732.969217	732.969217	5.21	0.0226
Lo*La*La*Lat*Lat*Lat	1	1800.531038	1800.531038	12.80	0.0004
Lo*Lo*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	1277.642491	1277.642491	9.08	0.0026

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Lat*Lat*Lat*Lat*LatM	1	707.596107	707.596107	5.03	0.0251
Lo*La*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	1088.831939	1088.831939	7.74	0.0055
La*La*La*Lat*Lat*Lat	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	1632.409541	1632.409541	11.60	0.0007
La*La*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	1236.361498	1236.361498	8.79	0.0031
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
LONGNAME EFFECT	1	176.631554	176.631554	1.26	0.2627

Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	127.6143455		12.09254623	10.55	<.0001
LonM	11.0383283		2.21151468	4.99	<.0001
LonM*LonM	-0.5826647		0.18247551	-3.19	0.0014
LonM*LonM*LonM	0.0140425	B	0.00710120	1.98	0.0482
LonM*LonM*LonM*LonM	-0.0001813	B	0.00015092	-1.20	0.2298
Lon*Lon*Lon*Lon*LonM	0.0000013	B	0.00000188	0.70	0.4855
Lo*Lo*Lo*Lon*Lon*Lon	-0.0000000	B	0.00000001	-0.36	0.7162
Lo*Lo*Lo*Lo*Lo*Lo	0.0000000	B	0.00000000	0.14	0.8911
L*L*L*Lo*Lo*Lo*Lo	0.0000000	B	0.00000000	0.02	0.9834
L*L*L*L*L*Lo*Lo*Lo	0.0000000	B	.	.	.
L*L*L*L*L*L*L*Lo	-0.0000000	B	0.00000000	-0.22	0.8291
LONGNAME EFFECT	0.0000000	B	.	.	.
LonM*LatM	-0.9392113		0.14510899	-6.47	<.0001

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
LonM*LonM*LatM	0.0365497		0.00589829	6.20	<.0001
LonM*LonM*LonM*LatM	-0.0007048		0.00014702	-4.79	<.0001
Lon*Lon*Lon*Lon*LatM	0.0000077		0.00000229	3.36	0.0008
Lo*Lo*Lo*Lon*Lon*Lat	-0.0000000		0.00000002	-2.13	0.0333
Lo*Lo*Lo*Lo*Lo*Lo*La	0.0000000	B	0.00000000	1.14	0.2537
L*L*L*Lo*Lo*Lo*Lo*La	-0.0000000	B	0.00000000	-0.39	0.6954
L*L*L*L*L*Lo*Lo*La	-0.0000000	B	0.00000000	-0.13	0.8957
L*L*L*L*L*L*L*Lo*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000		0.00000000	0.57	0.5711
LatM	6.8562802		2.22099814	3.09	0.0021
LonM*LatM*LatM	0.0328690		0.00594150	5.53	<.0001
LonM*LonM*LatM*LatM	-0.0008400		0.00013073	-6.43	<.0001
Lon*Lon*Lon*Lat*LatM	0.0000119		0.00000193	6.15	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	-0.0000001	B	0.00000002	-5.46	<.0001
Lo*Lo*Lo*Lo*Lo*La*La	0.0000000	B	0.00000000	4.68	<.0001
L*L*L*Lo*Lo*Lo*La*La	-0.0000000	B	0.00000000	-3.73	0.0002
L*L*L*L*L*Lo*La*La	0.0000000	B	0.00000000	2.37	0.0180
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000		0.00000000	0.84	0.3994
LatM*LatM	-0.3972364		0.14940598	-2.66	0.0079
LonM*LatM*LatM*LatM	-0.0006504		0.00014357	-4.53	<.0001
Lon*Lon*Lat*Lat*LatM	0.0000104		0.00000194	5.38	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	-0.0000001	B	0.00000002	-5.46	<.0001
Lo*Lo*Lo*Lo*La*La*La	0.0000000	B	0.00000000	4.98	<.0001
L*L*L*Lo*Lo*La*La*La	-0.0000000	B	0.00000000	-4.72	<.0001
L*L*L*L*L*La*La*La	0.0000000	B	0.00000000	5.09	<.0001
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-3.46	0.0005
LatM*LatM*LatM	0.0114581		0.00478066	2.40	0.0167
Lon*Lat*Lat*Lat*LatM	0.0000082		0.00000211	3.90	<.0001
Lo*Lo*La*Lat*Lat*Lat	-0.0000001	B	0.00000002	-4.38	<.0001
Lo*Lo*Lo*La*La*La*La	0.0000000	B	0.00000000	4.72	<.0001
L*L*L*Lo*La*La*La*La	-0.0000000	B	0.00000000	-3.99	<.0001
L*L*L*L*L*La*La*La	0.0000000	B	0.00000000	0.70	0.4859
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.

The GLM Procedure

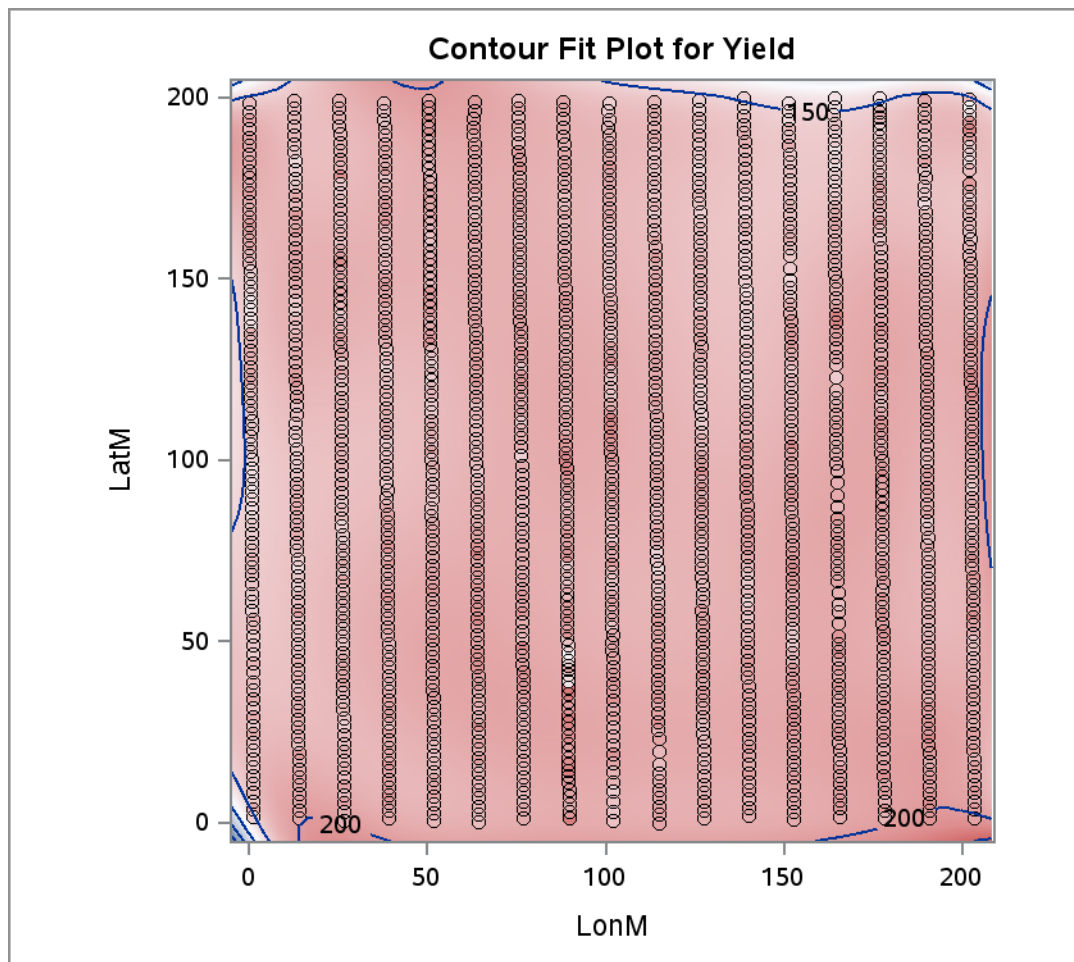
Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
LONGNAME EFFECT	0.0000000		0.00000000	2.60	0.0094
LatM*LatM*LatM*LatM	-0.0001895		0.00008301	-2.28	0.0226
Lo*La*La*Lat*Lat*Lat	-0.0000001		0.00000002	-3.58	0.0004
Lo*Lo*La*La*La*La*La	0.0000000	B	0.00000000	3.44	0.0006
L*L*La*La*La*La*La	-0.0000000	B	0.00000000	-3.94	<.0001
L*L*L*La*La*La*La	0.0000000	B	0.00000000	4.87	<.0001
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-3.01	0.0026
Lat*Lat*Lat*Lat*LatM	0.0000019		0.00000083	2.24	0.0251
Lo*La*La*La*La*La*La	0.0000000	B	0.00000000	3.48	0.0005
L*L*La*La*La*La*La	-0.0000000	B	0.00000000	-2.70	0.0071
L*L*L*La*La*La*La	0.0000000	B	0.00000000	1.31	0.1897
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000		0.00000000	2.78	0.0055
La*La*La*Lat*Lat*Lat	-0.0000000	B	0.00000000	-2.24	0.0253
L*L*La*La*La*La*La	-0.0000000	B	0.00000000	-3.47	0.0005
L*L*L*La*La*La*La	0.0000000	B	0.00000000	2.53	0.0114
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-3.41	0.0007
La*La*La*La*La*La*La	0.0000000	B	0.00000000	2.25	0.0243
L*L*L*La*La*La*La	0.0000000	B	0.00000000	3.26	0.0011
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000		0.00000000	2.96	0.0031
L*L*La*La*La*La*La	-0.0000000	B	0.00000000	-2.28	0.0226
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000	B	0.00000000	-3.36	0.0008
L*L*L*L*La*La*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-1.12	0.2627

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.

The GLM Procedure

Dependent Variable: Yield



The GLM Procedure

Number of Observations Read	1497
Number of Observations Used	1497

The GLM Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	68	123637.6621	1818.2009	13.21	<.0001
Error	1428	196530.8181	137.6266		
Corrected Total	1496	320168.4802			

R-Square	Coeff Var	Root MSE	Yield Mean
0.386164	6.540619	11.73144	179.3628

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LonM	1	6590.00045	6590.00045	47.88	<.0001
LonM*LonM	1	6562.52710	6562.52710	47.68	<.0001
LonM*LonM*LonM	1	13156.26649	13156.26649	95.59	<.0001
LonM*LonM*LonM*LonM	1	715.88935	715.88935	5.20	0.0227
Lon*Lon*Lon*Lon*LonM	1	3793.11268	3793.11268	27.56	<.0001
Lo*Lo*Lo*Lon*Lon*Lon	1	249.80065	249.80065	1.82	0.1781
Lo*Lo*Lo*Lo*Lo*Lo*Lo	1	2080.27516	2080.27516	15.12	0.0001
L*L*L*Lo*Lo*Lo*Lo*Lo	1	358.94453	358.94453	2.61	0.1065
L*L*L*L*L*Lo*Lo*Lo	0	0.00000	.	.	.
L*L*L*L*L*L*L*Lo	1	31.76175	31.76175	0.23	0.6310
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	1	8.88685	8.88685	0.06	0.7994
LONGNAME EFFECT	0	0.00000	.	.	.
LonM*LatM	1	37545.51038	37545.51038	272.81	<.0001
LonM*LonM*LatM	1	35.48293	35.48293	0.26	0.6117
LonM*LonM*LonM*LatM	1	3800.46872	3800.46872	27.61	<.0001
Lon*Lon*Lon*Lon*LatM	1	743.73890	743.73890	5.40	0.0202
Lo*Lo*Lo*Lon*Lon*Lat	1	157.69580	157.69580	1.15	0.2846
Lo*Lo*Lo*Lo*Lo*Lo*La	1	149.54287	149.54287	1.09	0.2974
L*L*L*Lo*Lo*Lo*Lo*La	1	116.25770	116.25770	0.84	0.3582
L*L*L*L*L*Lo*Lo*La	1	2.99345	2.99345	0.02	0.8828
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	289.33544	289.33544	2.10	0.1473
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
LatM	1	2623.47908	2623.47908	19.06	<.0001
LonM*LatM*LatM	1	2328.90142	2328.90142	16.92	<.0001
LonM*LonM*LatM*LatM	1	1064.20728	1064.20728	7.73	0.0055
Lon*Lon*Lon*Lat*LatM	1	3750.42678	3750.42678	27.25	<.0001
Lo*Lo*Lo*Lon*Lat*Lat	1	12.86362	12.86362	0.09	0.7599
Lo*Lo*Lo*Lo*Lo*La*La	1	282.88814	282.88814	2.06	0.1519
L*L*L*Lo*Lo*Lo*La*La	1	594.47565	594.47565	4.32	0.0379
L*L*L*L*L*Lo*La*La	1	720.22171	720.22171	5.23	0.0223
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	1605.24165	1605.24165	11.66	0.0007

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
LatM*LatM	1	3588.05705	3588.05705	26.07	<.0001
LonM*LatM*LatM*LatM	1	1204.44330	1204.44330	8.75	0.0031
Lon*Lon*Lat*Lat*LatM	1	2609.65495	2609.65495	18.96	<.0001
Lo*Lo*Lo*Lat*Lat*Lat	1	122.89157	122.89157	0.89	0.3448
Lo*Lo*Lo*Lo*La*La*La	1	563.28898	563.28898	4.09	0.0433
L*L*L*Lo*Lo*La*La*La	1	640.44549	640.44549	4.65	0.0312
L*L*L*L*L*La*La*La	1	4836.23228	4836.23228	35.14	<.0001
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	1077.46624	1077.46624	7.83	0.0052
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
LatM*LatM*LatM	1	180.77504	180.77504	1.31	0.2520
Lon*Lat*Lat*Lat*LatM	1	54.22995	54.22995	0.39	0.5303
Lo*Lo*La*Lat*Lat*Lat	1	1326.73277	1326.73277	9.64	0.0019
Lo*Lo*Lo*La*La*La*La	1	44.44849	44.44849	0.32	0.5699
L*L*L*Lo*La*La*La*La	1	395.27509	395.27509	2.87	0.0903
L*L*L*L*L*La*La*La	1	54.69483	54.69483	0.40	0.5285
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	113.55611	113.55611	0.83	0.3638
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	1	1032.27426	1032.27426	7.50	0.0062
LatM*LatM*LatM*LatM	1	1567.11182	1567.11182	11.39	0.0008
Lo*La*La*Lat*Lat*Lat	1	1111.29457	1111.29457	8.07	0.0046
Lo*Lo*La*La*La*La*La	1	29.13731	29.13731	0.21	0.6455
L*L*L*La*La*La*La*La	1	98.90355	98.90355	0.72	0.3967
L*L*L*L*L*La*La*La	1	239.86858	239.86858	1.74	0.1870
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	377.58566	377.58566	2.74	0.0979
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
Lat*Lat*Lat*Lat*LatM	1	29.49164	29.49164	0.21	0.6435
Lo*La*La*La*La*La*La	1	460.94980	460.94980	3.35	0.0674
L*L*L*La*La*La*La*La	1	243.85625	243.85625	1.77	0.1834

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type I SS	Mean Square	F Value	Pr > F
L*L*L*L*L*La*La*La	1	2421.75849	2421.75849	17.60	<.0001
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	852.71983	852.71983	6.20	0.0129
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	1	2265.79174	2265.79174	16.46	<.0001
La*La*La*Lat*Lat*Lat	1	135.09135	135.09135	0.98	0.3220
L*L*L*La*La*La*La*La	1	884.72175	884.72175	6.43	0.0113
L*L*L*L*L*La*La*La	1	3.30936	3.30936	0.02	0.8768
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	350.90874	350.90874	2.55	0.1105
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
La*La*La*La*La*La*La	1	59.48975	59.48975	0.43	0.5110
L*L*L*L*L*L*La*La*La	1	100.68544	100.68544	0.73	0.3925
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	102.08393	102.08393	0.74	0.3892
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	1	2148.52653	2148.52653	15.61	<.0001
L*L*L*La*La*La*La*La	0	0.00000	.	.	.
L*L*L*L*L*L*L*La	0	0.00000	.	.	.
LONGNAME EFFECT	1	1775.97525	1775.97525	12.90	0.0003
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	0	0.00000	.	.	.
L*L*L*L*L*L*La*La*La	1	635.05940	635.05940	4.61	0.0319
LONGNAME EFFECT	1	116.38383	116.38383	0.85	0.3579
LONGNAME EFFECT	0	0.00000	.	.	.
LONGNAME EFFECT	1	411.29463	411.29463	2.99	0.0841

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LonM	1	389.854385	389.854385	2.83	0.0926
LonM*LonM	1	209.486091	209.486091	1.52	0.2175
LonM*LonM*LonM	0	0.000000	.	.	.
LonM*LonM*LonM*LonM	0	0.000000	.	.	.
Lon*Lon*Lon*Lon*LonM	0	0.000000	.	.	.
Lo*Lo*Lo*Lon*Lon*Lon	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*L*L*Lo*Lo*Lo	0	0.000000	.	.	.
L*L*L*L*L*L*L*Lo	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LonM*LatM	1	25.119333	25.119333	0.18	0.6693
LonM*LonM*LatM	0	0.000000	.	.	.
LonM*LonM*LonM*LatM	0	0.000000	.	.	.
Lon*Lon*Lon*Lon*LatM	0	0.000000	.	.	.
Lo*Lo*Lo*Lon*Lon*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*L*L*Lo*Lo*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LatM	1	0.030847	0.030847	0.00	0.9881
LonM*LatM*LatM	1	309.657834	309.657834	2.25	0.1338
LonM*LonM*LatM*LatM	0	0.000000	.	.	.
Lon*Lon*Lon*Lat*LatM	0	0.000000	.	.	.
Lo*Lo*Lo*Lon*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*Lo*La*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*Lo*La*La	0	0.000000	.	.	.
L*L*L*L*L*Lo*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LatM*LatM	0	0.000000	.	.	.
LonM*LatM*LatM*LatM	1	454.964737	454.964737	3.31	0.0692
Lon*Lon*Lat*Lat*LatM	0	0.000000	.	.	.
Lo*Lo*Lo*Lat*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*Lo*La*La*La	0	0.000000	.	.	.
L*L*L*Lo*Lo*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LatM*LatM*LatM	0	0.000000	.	.	.
Lon*Lat*Lat*Lat*LatM	1	403.144282	403.144282	2.93	0.0872
Lo*Lo*La*Lat*Lat*Lat	0	0.000000	.	.	.
Lo*Lo*Lo*La*La*La*La	0	0.000000	.	.	.
L*L*L*Lo*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	1	695.020736	695.020736	5.05	0.0248
LatM*LatM*LatM*LatM	0	0.000000	.	.	.
Lo*La*La*Lat*Lat*Lat	1	279.137934	279.137934	2.03	0.1546
Lo*Lo*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
Lat*Lat*Lat*Lat*LatM	0	0.000000	.	.	.
Lo*La*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.

The GLM Procedure

Dependent Variable: Yield

Source	DF	Type III SS	Mean Square	F Value	Pr > F
L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	1	725.762952	725.762952	5.27	0.0218
La*La*La*Lat*Lat*Lat	0	0.000000	.	.	.
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
La*La*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	1	1976.023967	1976.023967	14.36	0.0002
L*L*L*La*La*La*La*La	0	0.000000	.	.	.
L*L*L*L*L*L*L*L*L*La	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
L*L*L*L*L*L*La*La*La	1	65.177927	65.177927	0.47	0.4915
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	0	0.000000	.	.	.
LONGNAME EFFECT	1	411.294629	411.294629	2.99	0.0841

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
Intercept	158.9563268		13.14957534	12.09	<.0001
LonM	4.7778515		2.83878608	1.68	0.0926
LonM*LonM	-0.2993713		0.24265198	-1.23	0.2175
LonM*LonM*LonM	0.0102424	B	0.00997000	1.03	0.3044
LonM*LonM*LonM*LonM	-0.0002297	B	0.00023253	-0.99	0.3234
Lon*Lon*Lon*Lon*LonM	0.0000034	B	0.00000330	1.04	0.2988
Lo*Lo*Lo*Lon*Lon*Lon	-0.0000000	B	0.00000003	-1.13	0.2590
Lo*Lo*Lo*Lo*Lo*Lo*Lo	0.0000000	B	0.00000000	1.23	0.2201
L*L*L*Lo*Lo*Lo*Lo*Lo	-0.0000000	B	0.00000000	-1.32	0.1878
L*L*L*L*L*Lo*Lo*Lo	0.0000000	B	.	.	.
L*L*L*L*L*L*L*Lo	0.0000000	B	0.00000000	1.46	0.1443
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000	B	0.00000000	-1.55	0.1211
LONGNAME EFFECT	0.0000000	B	.	.	.
LonM*LatM	0.0989358		0.23157981	0.43	0.6693
LonM*LonM*LatM	-0.0072511	B	0.01105533	-0.66	0.5120
LonM*LonM*LonM*LatM	0.0002360	B	0.00029113	0.81	0.4177
Lon*Lon*Lon*Lon*LatM	-0.0000042	B	0.00000439	-0.95	0.3406
Lo*Lo*Lo*Lon*Lon*Lat	0.0000000	B	0.00000004	1.08	0.2818
Lo*Lo*Lo*Lo*Lo*Lo*La	-0.0000000	B	0.00000000	-1.17	0.2425
L*L*L*Lo*Lo*Lo*Lo*La	0.0000000	B	0.00000000	1.20	0.2313
L*L*L*L*L*Lo*Lo*La	-0.0000000	B	0.00000000	-1.11	0.2686
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	0.59	0.5581
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
LatM	0.0367225		2.45289039	0.01	0.9881
LonM*LatM*LatM	-0.0155969		0.01039795	-1.50	0.1338
LonM*LonM*LatM*LatM	0.0006175	B	0.00029043	2.13	0.0337
Lon*Lon*Lon*Lat*LatM	-0.0000107	B	0.00000522	-2.05	0.0410
Lo*Lo*Lo*Lon*Lat*Lat	0.0000001	B	0.00000006	1.84	0.0659
Lo*Lo*Lo*Lo*Lo*La*La	-0.0000000	B	0.00000000	-1.68	0.0938
L*L*L*Lo*Lo*Lo*La*La	0.0000000	B	0.00000000	1.59	0.1110
L*L*L*L*L*Lo*La*La	-0.0000000	B	0.00000000	-1.64	0.1015
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.

The GLM Procedure

Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
LONGNAME EFFECT	0.0000000	B	0.00000000	2.29	0.0224
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
LatM*LatM	0.0287214	B	0.16208076	0.18	0.8594
LonM*LatM*LatM*LatM	0.0004949		0.00027221	1.82	0.0692
Lon*Lon*Lat*Lat*LatM	-0.0000150	B	0.00000487	-3.09	0.0020
Lo*Lo*Lo*Lat*Lat*Lat	0.0000002	B	0.00000005	3.32	0.0009
Lo*Lo*Lo*Lo*La*La*La	-0.0000000	B	0.00000000	-3.04	0.0024
L*L*L*Lo*Lo*La*La*La	0.0000000	B	0.00000000	2.62	0.0088
L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-2.07	0.0389
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	0.38	0.7072
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
LatM*LatM*LatM	-0.0008835	B	0.00500775	-0.18	0.8600
Lon*Lat*Lat*Lat*LatM	-0.0000073		0.00000429	-1.71	0.0872
Lo*Lo*La*Lat*Lat*Lat	0.0000002	B	0.00000005	3.34	0.0009
Lo*Lo*Lo*La*La*La*La	-0.0000000	B	0.00000000	-3.97	<.0001
L*L*L*Lo*La*La*La*La	0.0000000	B	0.00000000	3.89	0.0001
L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-3.85	0.0001
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	3.98	<.0001
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-2.25	0.0248
LatM*LatM*LatM*LatM	0.0000053	B	0.00008263	0.06	0.9492
Lo*La*La*Lat*Lat*Lat	0.0000001		0.00000004	1.42	0.1546
Lo*Lo*La*La*La*La*La	-0.0000000	B	0.00000000	-3.18	0.0015
L*L*L*La*La*La*La*La	0.0000000	B	0.00000000	4.13	<.0001
L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-3.70	0.0002
L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000	B	0.00000000	-1.00	0.3156
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
Lat*Lat*Lat*Lat*LatM	0.0000001	B	0.00000076	0.09	0.9296
Lo*La*La*La*La*La*La	-0.0000000	B	0.00000000	-1.06	0.2876

The GLM Procedure

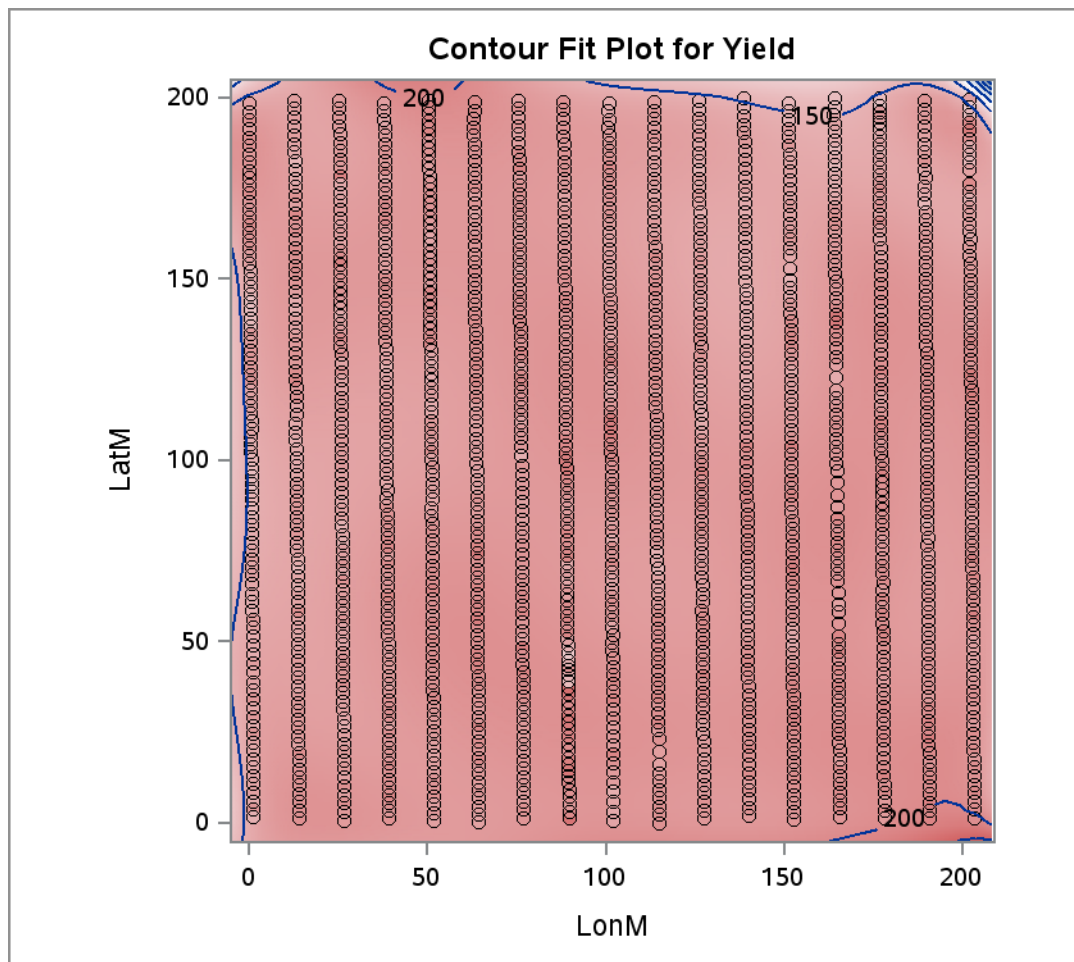
Dependent Variable: Yield

Parameter	Estimate		Standard Error	t Value	Pr > t
L*L*L*La*La*La*La*La	0.0000000	B	0.00000000	2.76	0.0059
L*L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-4.27	<.0001
L*L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	5.56	<.0001
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-2.30	0.0218
La*La*La*Lat*Lat*Lat	-0.0000000	B	0.00000000	-0.25	0.8049
L*L*L*La*La*La*La*La	0.0000000	B	0.00000000	0.69	0.4911
L*L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-2.12	0.0338
L*L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	0.21	0.8363
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
La*La*La*La*La*La*La	0.0000000	B	0.00000000	0.40	0.6881
L*L*L*L*L*L*La*La*La	-0.0000000	B	0.00000000	-0.35	0.7229
L*L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	3.80	0.0002
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-3.79	0.0002
L*L*L*La*La*La*La*La	0.0000000	B	.	.	.
L*L*L*L*L*L*L*L*La	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	0.00000000	0.54	0.5892
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	0.0000000	B	.	.	.
L*L*L*L*L*L*La*La*La	-0.0000000		0.00000000	-0.69	0.4915
LONGNAME EFFECT	0.0000000	B	0.00000000	0.25	0.8014
LONGNAME EFFECT	0.0000000	B	.	.	.
LONGNAME EFFECT	-0.0000000		0.00000000	-1.73	0.0841

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.

The GLM Procedure

Dependent Variable: Yield



The ORTHOREG Procedure

Dependent Variable: Yield

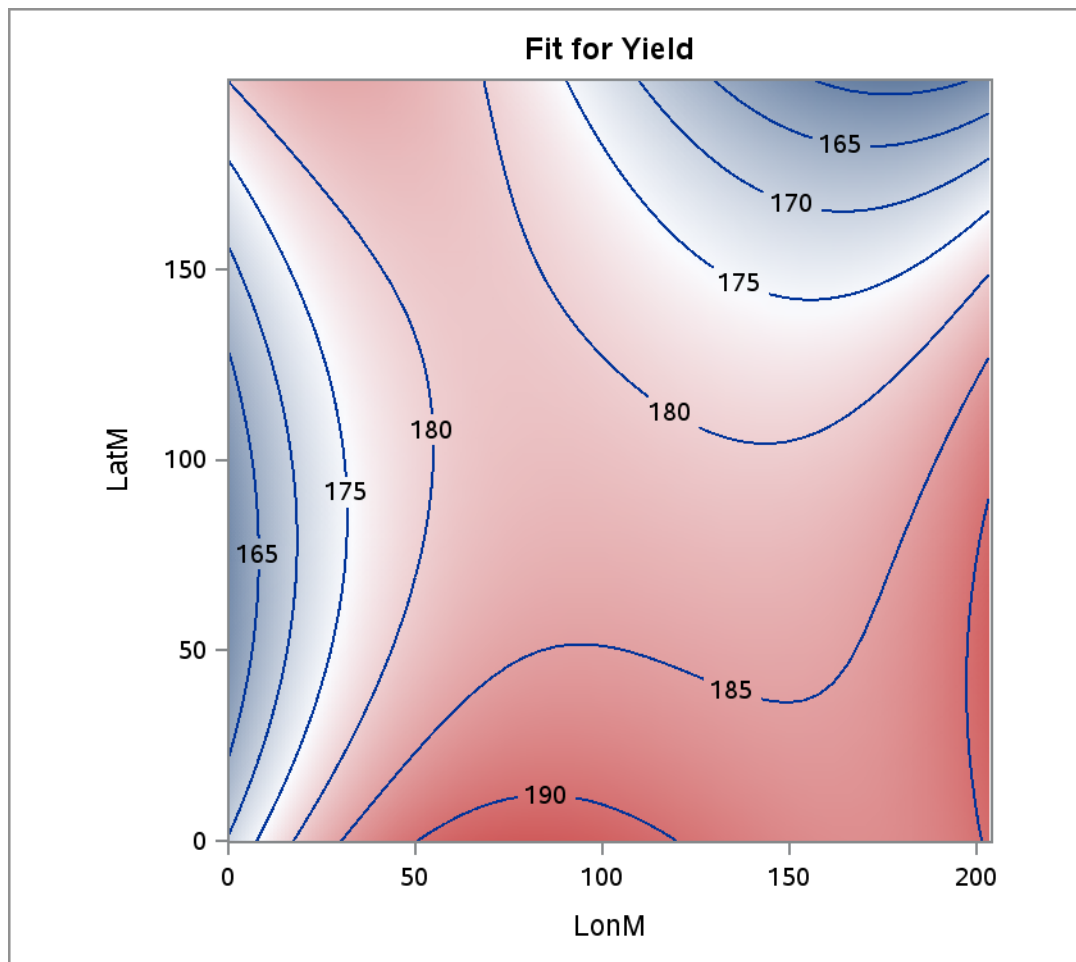
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	75851.245042	8427.9161158	51.30	<.0001
Error	1487	244317.23518	164.30210839		
Corrected Total	1496	320168.48022			

Root MSE	12.818038399
R-Square	0.2369104073

Parameter	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	170.502455323765	2.5836447193	65.99	<.0001
LonM	1	0.64603530438825	0.0621424594	10.40	<.0001
LatM	1	-0.30243529079705	0.069523446	-4.35	<.0001
LonM^2	1	-0.00594756637571	0.0005896836	-10.09	<.0001
LonM*LatM	1	0.00077891069938	0.0005083493	1.53	0.1257
LatM^2	1	0.00249794060174	0.0006886751	3.63	0.0003
LonM^3	1	0.00001598303029	1.8119002E-6	8.82	<.0001
LonM^2*LatM	1	4.5791894460999E-6	1.6885613E-6	2.71	0.0068
LonM*LatM^2	1	-0.0000133469178	1.7923759E-6	-7.45	<.0001
LatM^3	1	-3.73038400844E-6	2.1822661E-6	-1.71	0.0876

The ORTHOREG Procedure

Dependent Variable: Yield



The ORTHOREG Procedure

Dependent Variable: Yield

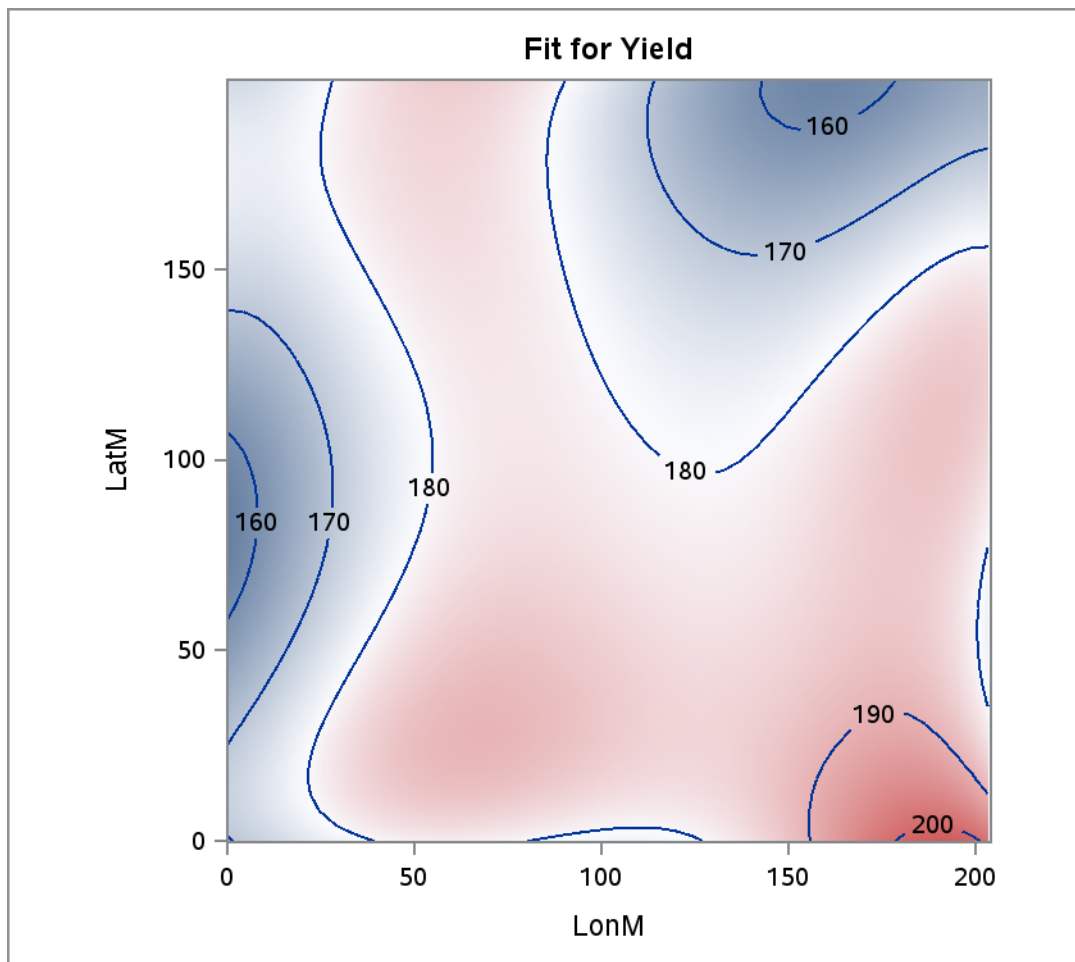
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	20	92690.30599	4634.5152995	30.07	<.0001
Error	1476	227478.17423	154.11800422		
Corrected Total	1496	320168.48022			

Root MSE	12.414427261
R-Square	0.2895047818

Parameter	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	169.610067029777	4.8536424929	34.94	<.0001
LonM	1	0.23764093237882	0.2494944141	0.95	0.3410
LatM	1	0.41585303332095	0.2948313825	1.41	0.1586
LonM^2	1	0.00580693891737	0.0059458995	0.98	0.3289
LonM*LatM	1	0.00628583869384	0.0050552535	1.24	0.2139
LatM^2	1	-0.02169075057848	0.0072048381	-3.01	0.0027
LonM^3	1	-0.00018021150457	0.0000659203	-2.73	0.0063
LonM^2*LatM	1	0.00001789277769	0.0000512886	0.35	0.7272
LonM*LatM^2	1	-0.00003704450084	0.0000556828	-0.67	0.5060
LatM^3	1	0.0002626265514	0.0000812498	3.23	0.0013
LonM^4	1	1.3949099599561E-6	3.3813929E-7	4.13	<.0001
LonM^3*LatM	1	-7.384129701184E-7	2.6680006E-7	-2.77	0.0057
LonM^2*LatM^2	1	7.4782419930753E-7	2.6275795E-7	2.85	0.0045
LonM*LatM^3	1	-5.093784179138E-7	3.0338268E-7	-1.68	0.0934
LatM^4	1	-1.150187027143E-6	4.2540624E-7	-2.70	0.0069
LonM^5	1	-3.246366793533E-9	6.482522E-10	-5.01	<.0001
LonM^4*LatM	1	1.7299004151409E-9	5.77442E-10	3.00	0.0028
LonM^3*LatM^2	1	6.590919312939E-10	5.883728E-10	1.12	0.2628
LonM^2*LatM^3	1	-2.841916217665E-9	6.224916E-10	-4.57	<.0001
LonM*LatM^4	1	2.5197133266606E-9	6.792361E-10	3.71	0.0002
LatM^5	1	1.6488399768016E-9	8.354857E-10	1.97	0.0486

The ORTHOREG Procedure

Dependent Variable: Yield



The ORTHOREG Procedure

Dependent Variable: Yield

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	52	111241.60082	2139.2615542	14.79	<.0001
Error	1444	208926.8794	144.68620457		
Corrected Total	1496	320168.48022			

Root MSE	12.028557876
R-Square	0.3474470714

Parameter	DF	Parameter Estimate	Standard Error	t Value	Pr > t
Intercept	1	160.083036628668	10.858967769	14.74	<.0001
LonM	1	4.2286603620241	1.370209394	3.09	0.0021
LatM	1	0.39336066096061	1.9135741968	0.21	0.8372
LonM^2	1	-0.1560070021374	0.0800193863	-1.95	0.0514
LonM*LatM	1	-0.29883558814091	0.0884445158	-3.38	0.0007
LatM^2	1	0.04569708328933	0.1335029899	0.34	0.7322
LonM^3	1	0.0018935595898	0.0022295218	0.85	0.3958
LonM^2*LatM	1	0.01035627588237	0.0028506596	3.63	0.0003
LonM*LatM^2	1	0.00852333127668	0.0030898131	2.76	0.0059
LatM^3	1	-0.00359011278277	0.0047445873	-0.76	0.4494
LonM^4	1	4.9935256410061E-7	0.000033916	0.01	0.9883
LonM^3*LatM	1	-0.00013092163647	0.0000542791	-2.41	0.0160
LonM^2*LatM^2	1	-0.00023860590127	0.0000550169	-4.34	<.0001
LonM*LatM^3	1	-0.00011843767753	0.0000633937	-1.87	0.0619
LatM^4	1	0.00010109775161	0.0000973305	1.04	0.2991
LonM^5	1	-1.883038607725E-7	3.0097029E-7	-0.63	0.5316
LonM^4*LatM	1	5.0867762705556E-7	6.029891E-7	0.84	0.3990
LonM^3*LatM^2	1	2.9302791096934E-6	6.52458E-7	4.49	<.0001
LonM^2*LatM^3	1	2.3714979201575E-6	6.705432E-7	3.54	0.0004
LonM*LatM^4	1	9.6541606155355E-7	8.0064711E-7	1.21	0.2281
LatM^5	1	-1.531624546586E-6	1.2206318E-6	-1.25	0.2098
LonM^6	1	1.5441163678026E-9	1.5674028E-9	0.99	0.3247
LonM^5*LatM	1	2.5349899731054E-9	3.8278917E-9	0.66	0.5079
LonM^4*LatM^2	1	-1.802620719329E-8	4.9930932E-9	-3.61	0.0003
LonM^3*LatM^3	1	-2.075495311982E-8	4.83583E-9	-4.29	<.0001
LonM^2*LatM^4	1	-1.415759632236E-8	5.2214282E-9	-2.71	0.0068

The ORTHOREG Procedure

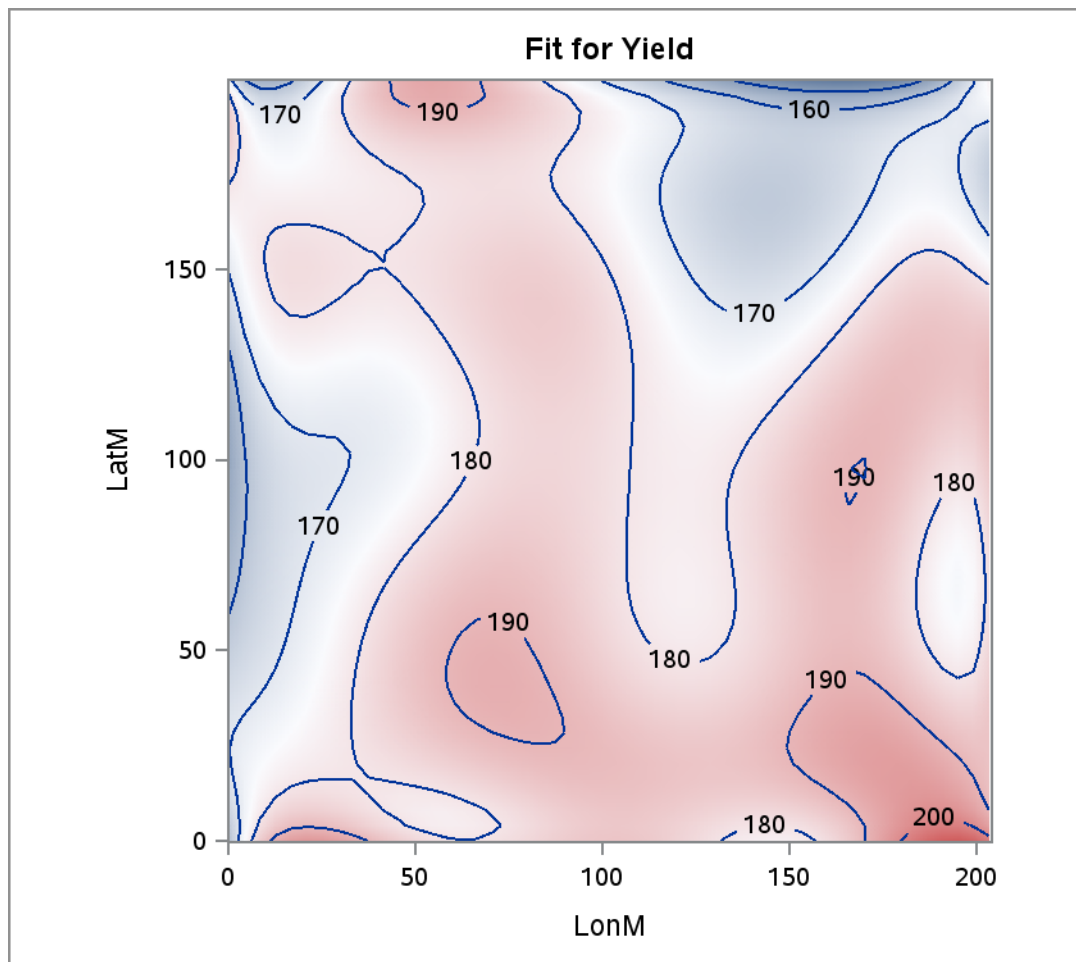
Dependent Variable: Yield

Parameter	DF	Parameter Estimate	Standard Error	t Value	Pr > t
LonM*LatM^5	1	-4.54253021637E-9	6.3485158E-9	-0.72	0.4744
LatM^6	1	1.3596251897242E-8	9.4985704E-9	1.43	0.1525
LonM^7	1	-4.97840809608E-12	4.460813E-12	-1.12	0.2646
LonM^6*LatM	1	-2.50657406499E-11	1.283616E-11	-1.95	0.0510
LonM^5*LatM^2	1	4.134240273672E-11	2.394972E-11	1.73	0.0845
LonM^4*LatM^3	1	1.104957217015E-10	2.231605E-11	4.95	<.0001
LonM^3*LatM^4	1	7.185259905159E-11	2.2802E-11	3.15	0.0017
LonM^2*LatM^5	1	5.102740393448E-11	2.54109E-11	2.01	0.0448
LonM*LatM^6	1	1.14894757206E-11	3.105787E-11	0.37	0.7115
LatM^7	1	-7.04268335975E-11	4.470837E-11	-1.58	0.1154
LonM^8	1	5.72342806969E-15	5.360789E-15	1.07	0.2859
LonM^7*LatM	1	5.225260612446E-14	1.761236E-14	2.97	0.0031
LonM^6*LatM^2	1	6.124274178647E-14	6.680572E-14	0.92	0.3594
LonM^5*LatM^3	1	-3.64270428109E-13	6.109841E-14	-5.96	<.0001
LonM^4*LatM^4	1	-1.24202405569E-13	6.018423E-14	-2.06	0.0392
LonM^3*LatM^5	1	-2.15157663272E-13	6.388273E-14	-3.37	0.0008
LonM^2*LatM^6	1	-6.73866876785E-14	7.224383E-14	-0.93	0.3511
LonM*LatM^7	1	-1.78155878611E-14	8.630339E-14	-0.21	0.8365
LatM^8	1	1.967782434616E-13	1.164604E-13	1.69	0.0913
LonM^9	0	0	.	.	.
LonM^8*LatM	0	0	.	.	.
LonM^7*LatM^2	1	-2.9431055549E-16	8.52949E-17	-3.45	0.0006
LonM^6*LatM^3	1	4.847403357011E-16	8.222601E-17	5.90	<.0001
LonM^5*LatM^4	1	1.576933814938E-16	8.217894E-17	1.92	0.0552
LonM^4*LatM^5	1	8.96229897218E-17	8.443004E-17	1.06	0.2886
LonM^3*LatM^6	1	3.060114458711E-16	8.880998E-17	3.45	0.0006
LonM^2*LatM^7	1	-3.24533645302E-17	9.506962E-17	-0.34	0.7329
LonM*LatM^8	1	2.335185197329E-17	1.046601E-16	0.22	0.8235
LatM^9	1	-2.2902175864E-16	1.287595E-16	-1.78	0.0755

Note: Model is not full rank. Least-squares solutions for the parameters are not unique. Some statistics will be misleading. A reported DF of 0 means that the estimate is biased.

The ORTHOREG Procedure

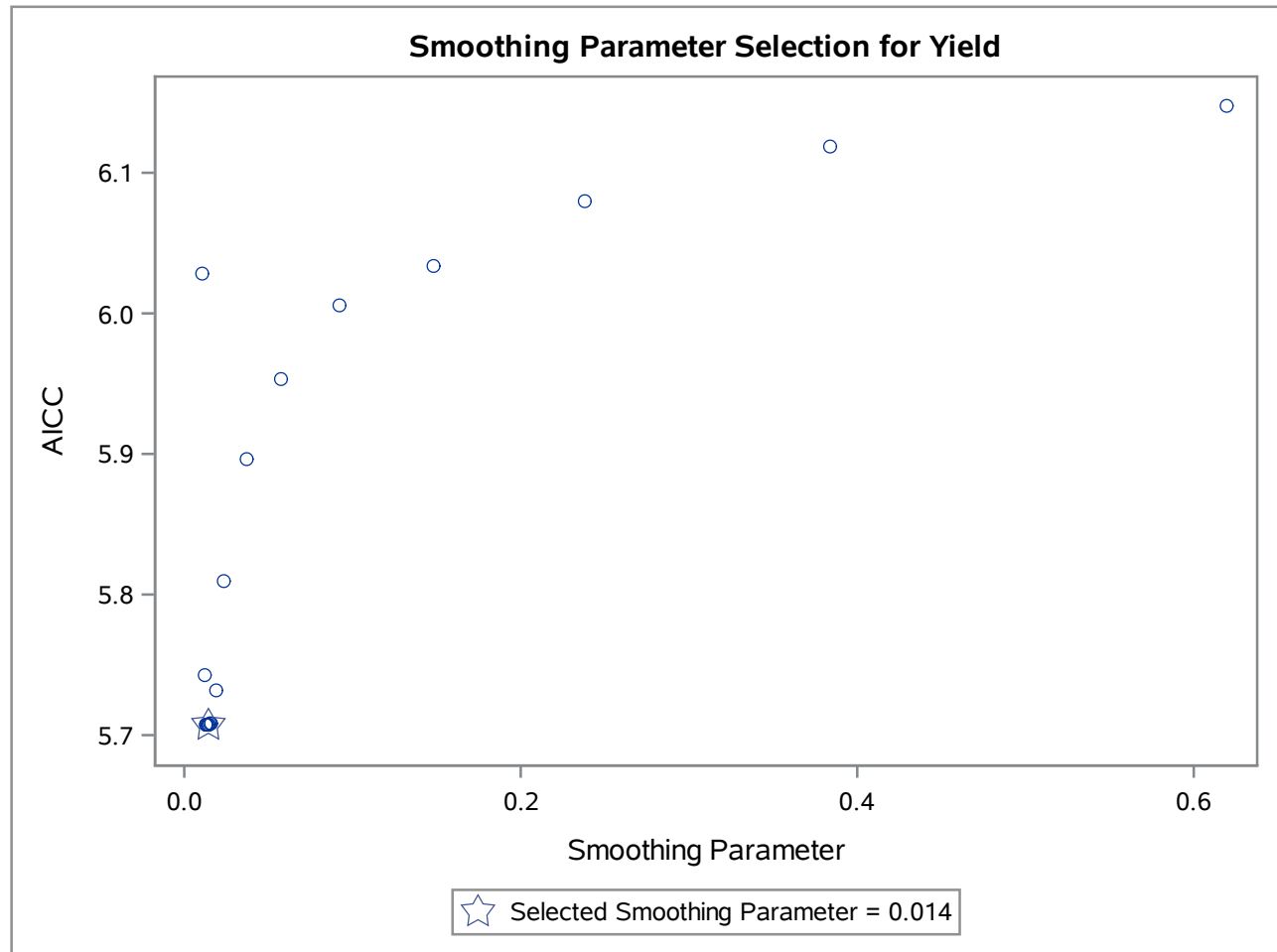
Dependent Variable: Yield



The LOESS Procedure

Independent Variable Scaling		
Scaling applied: None		
Statistic	LonM	LatM
Minimum Value	0	0
Maximum Value	203.54114547	199.86497893

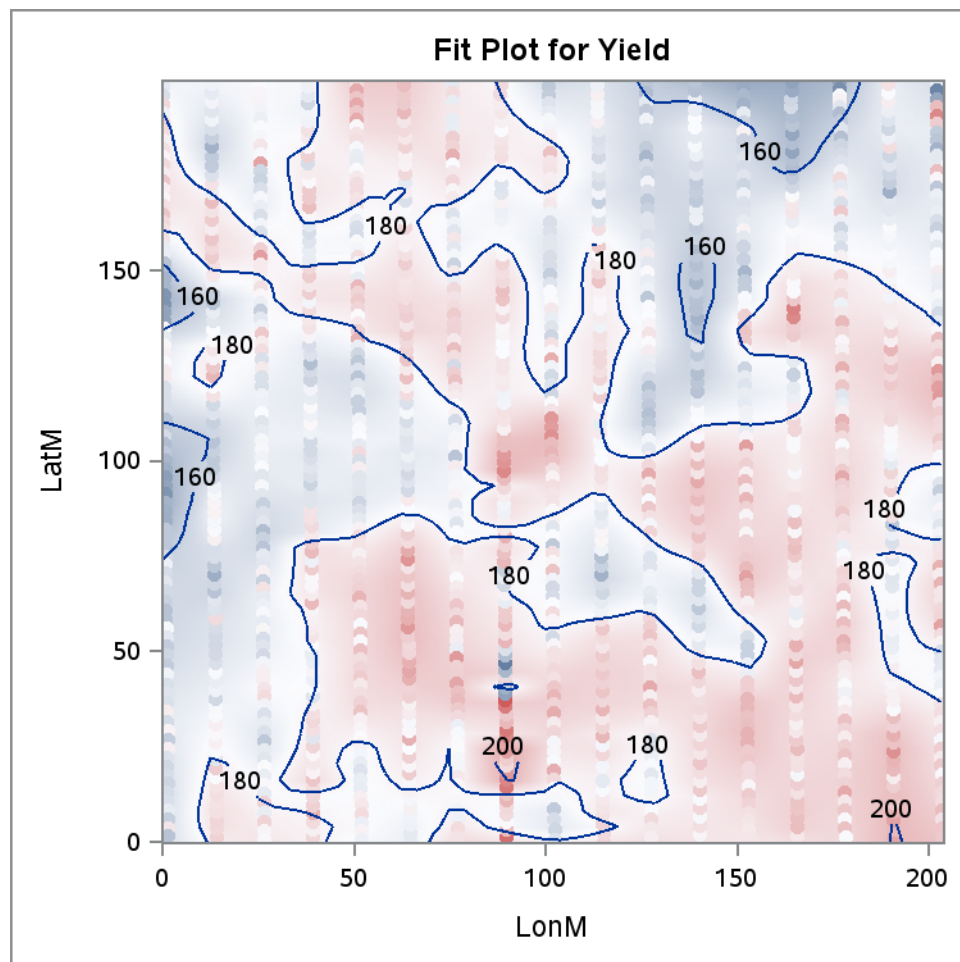
The LOESS Procedure
Dependent Variable: Yield



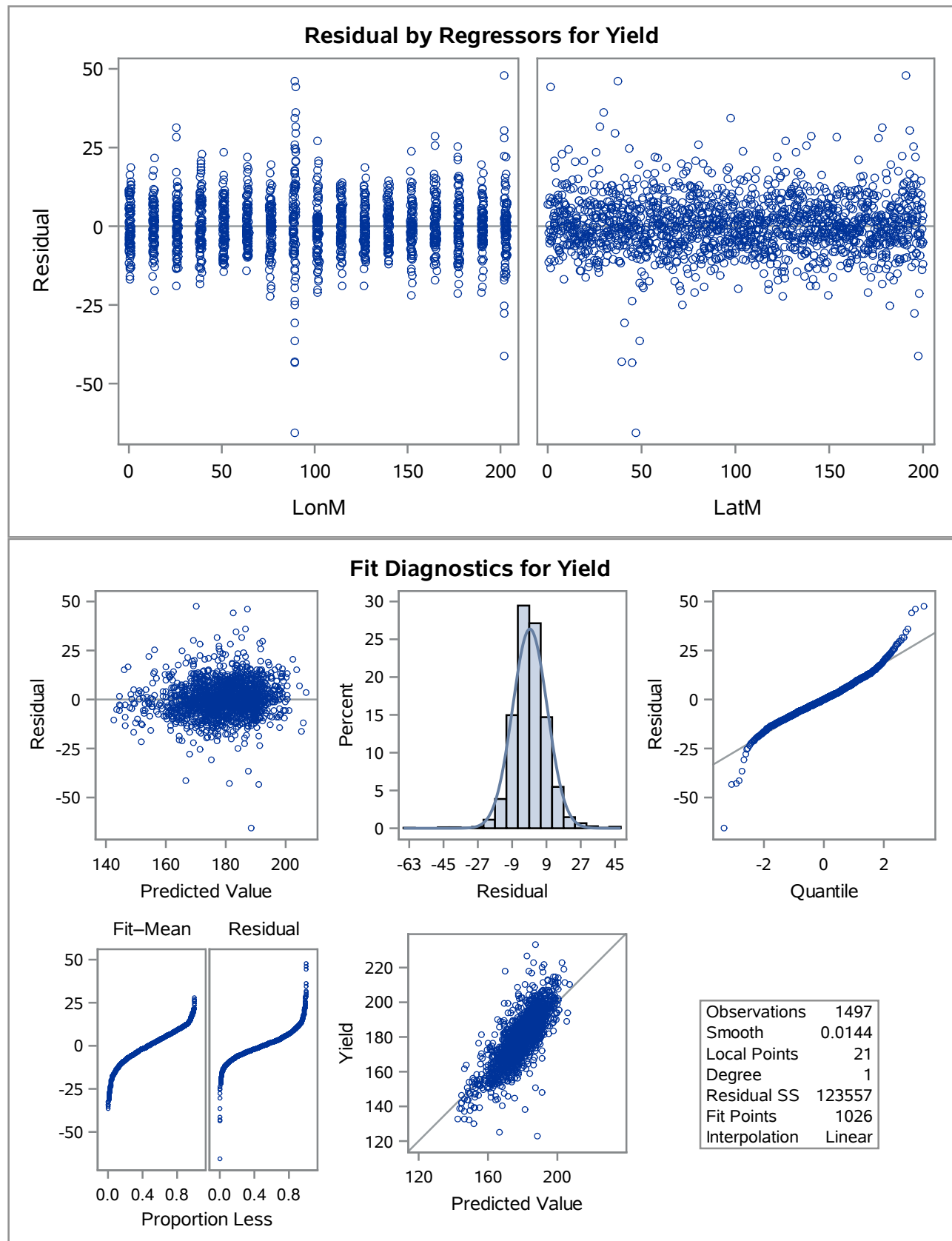
Optimal Smoothing Criterion	
AICC	Smoothing Parameter
5.70721	0.01436

The LOESS Procedure
Selected Smoothing Parameter: 0.014
Dependent Variable: Yield

Fit Summary	
Fit Method	kd Tree
Blending	Linear
Number of Observations	1497
Number of Fitting Points	1026
kd Tree Bucket Size	4
Degree of Local Polynomials	1
Smoothing Parameter	0.01436
Points in Local Neighborhood	21
Residual Sum of Squares	123557
Trace[L]	190.71303
GCV	0.07241
AICC	5.70721



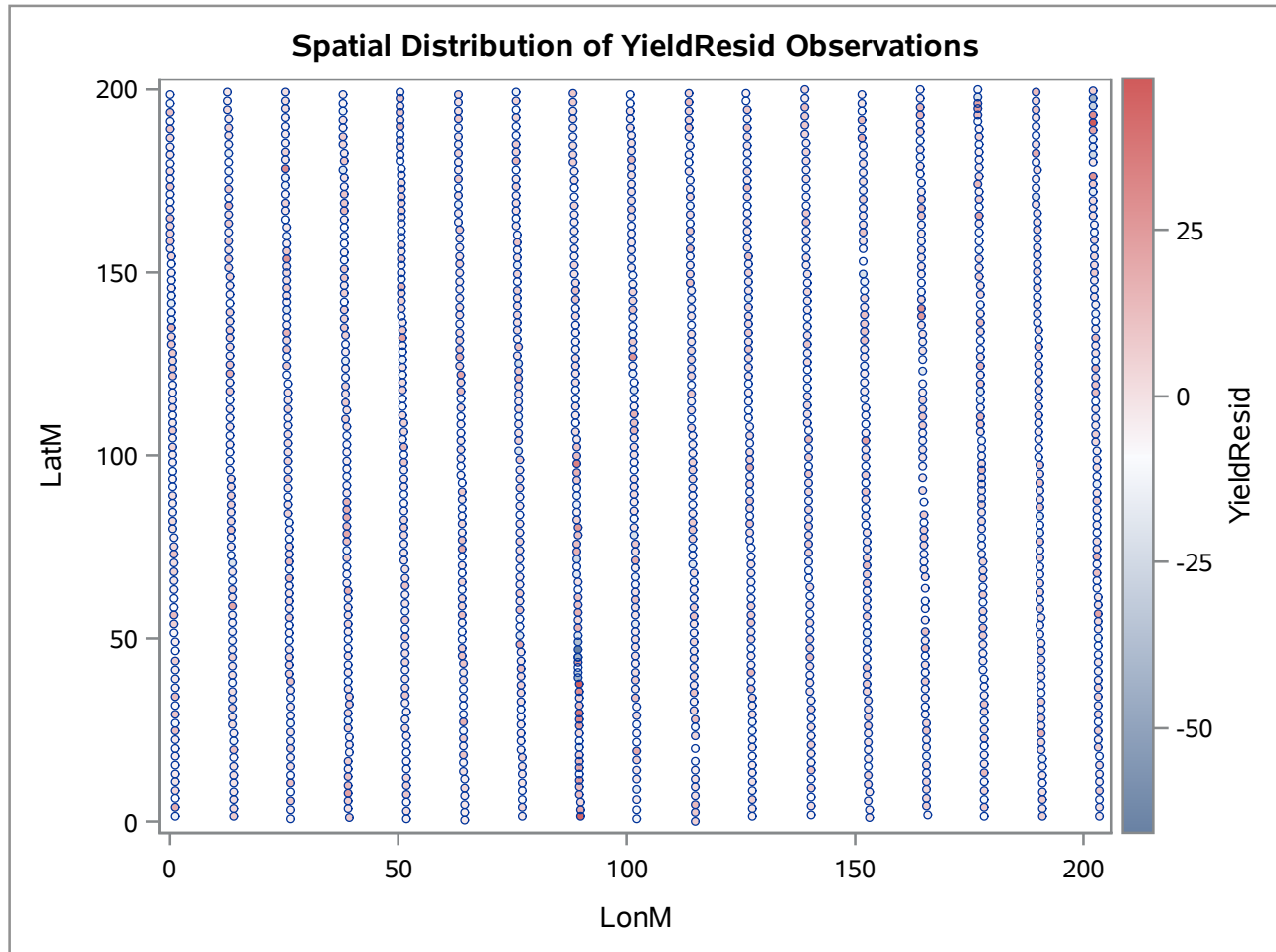
The LOESS Procedure
 Selected Smoothing Parameter: 0.014
 Dependent Variable: Yield



The VARIOGRAM Procedure

Dependent Variable: YieldResid

Number of Observations Read	1497
Number of Observations Used	1497



Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.00236	-0.000668	0.00116	2.606	0.0092
Randomization	Geary's c	1.00191	1.000000	0.00821	0.233	0.8159

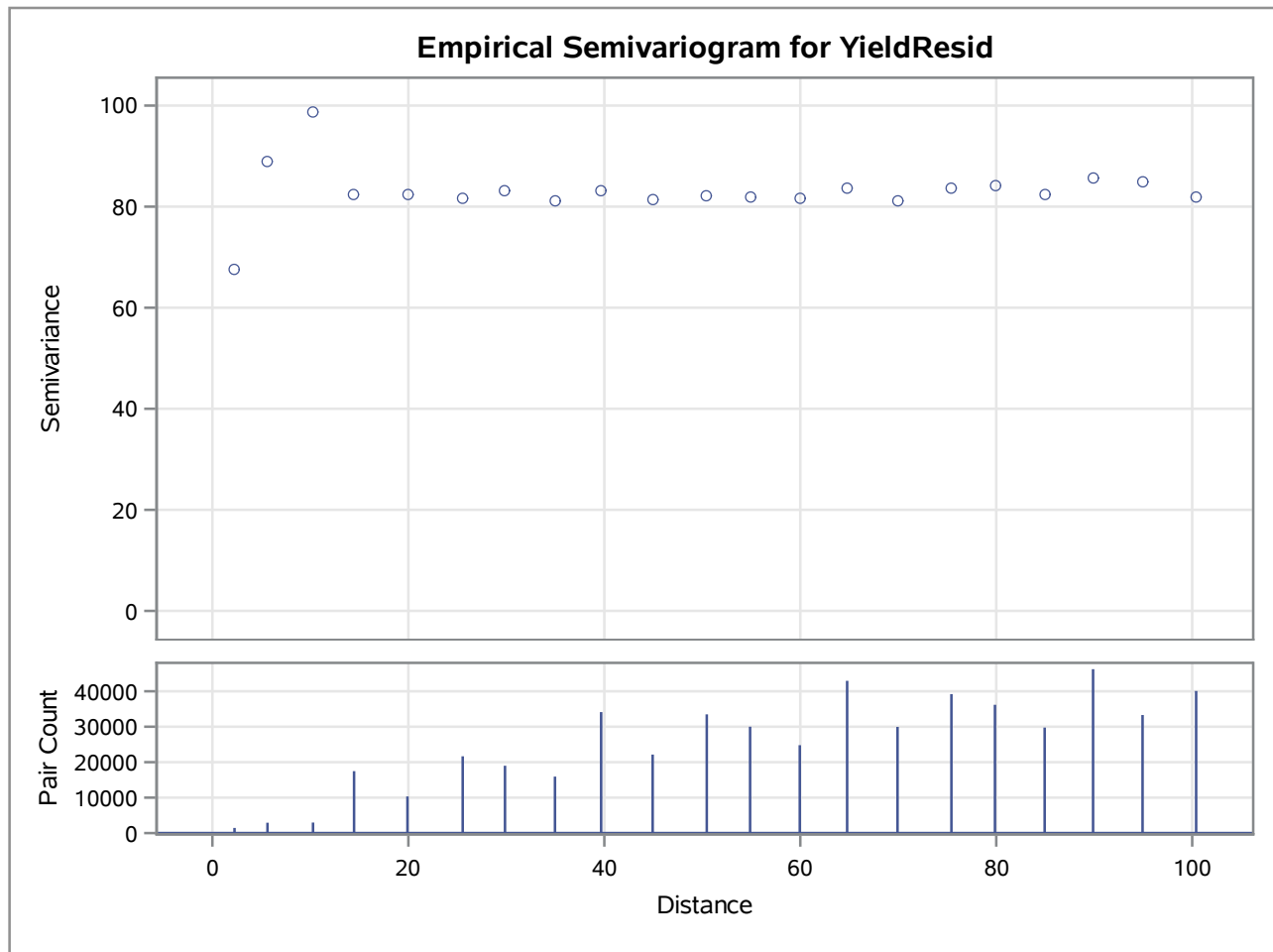
The VARIOGRAM Procedure

Dependent Variable: YieldResid

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	1449	2.26	67.584
1	2925	5.62	88.828
2	2977	10.27	98.758
3	17462	14.46	82.467
4	10332	19.91	82.337
5	21658	25.55	81.661
6	18993	29.86	83.172
7	15928	34.96	81.158
8	34130	39.67	83.143
9	22142	44.93	81.436
10	33484	50.46	82.234
11	30001	54.88	81.808
12	24788	59.95	81.639
13	42941	64.78	83.620
14	29953	69.92	81.081
15	39197	75.42	83.569
16	36185	79.87	84.083
17	29754	84.94	82.370
18	46228	89.88	85.673
19	33301	94.93	84.874
20	40076	100.40	81.889

The VARIOGRAM Procedure

Dependent Variable: YieldResid



The VARIOGRAM Procedure**Dependent Variable: YieldResid****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	53.3206
Scale	30.8245
Range	50.2004

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: YieldResid****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	8	Function Calls	33
Gradient Calls	0	Active Constraints	1
Objective Function	155.20406312	Max Abs Gradient Element	5.9307156E-8
Slope of Search Direction	-2.832551E-8		

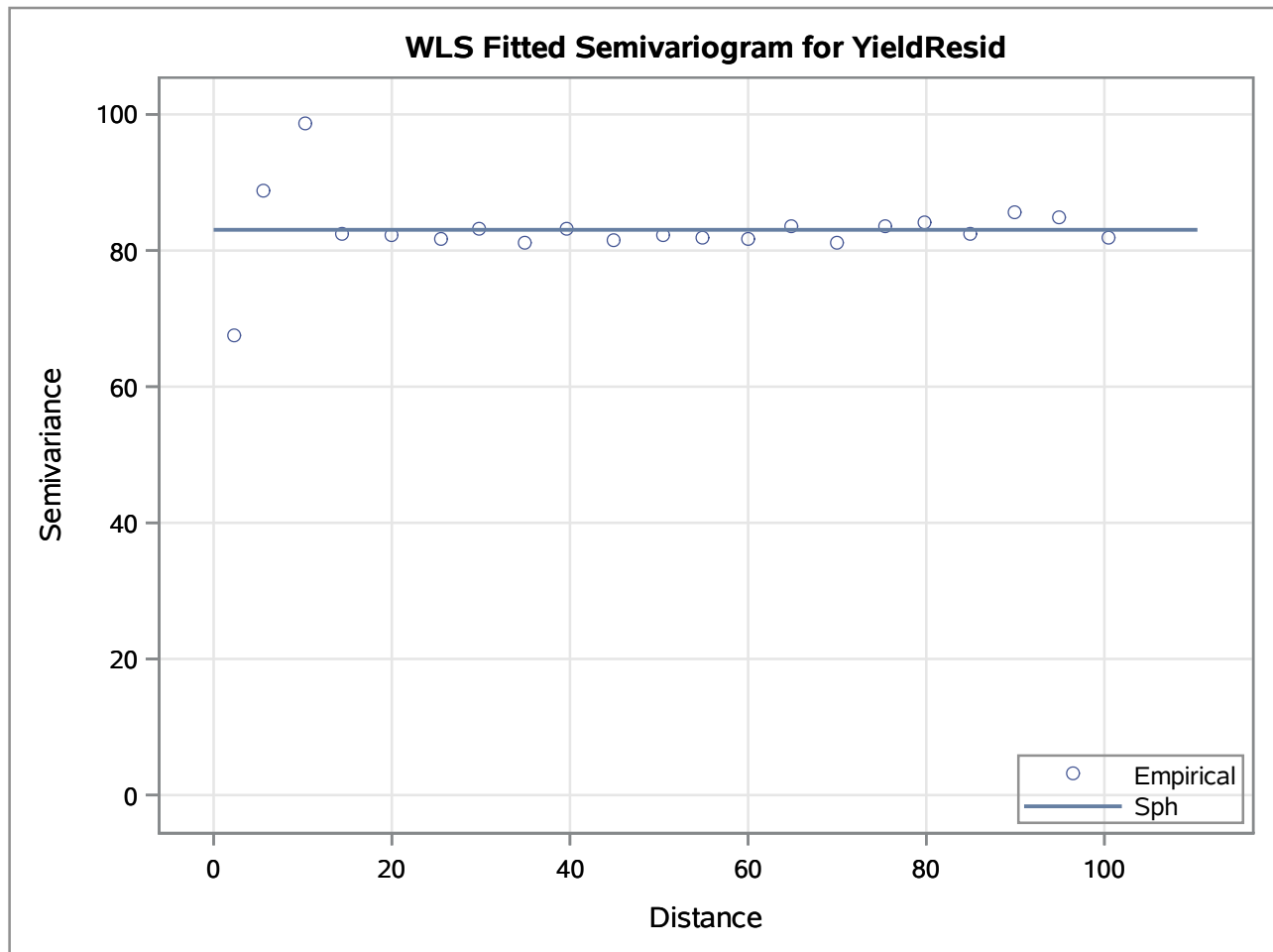
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	83.0460	1.1475	18	72.37	<.0001
Scale	1E-6	1.1694	18	0.00	1.0000
Range	28.5419	0	18	.	.

Fit Summary		
Model	Weighted SSE	AIC
Sph	155.20406	48.00459

The VARIOGRAM Procedure

Dependent Variable: YieldResid



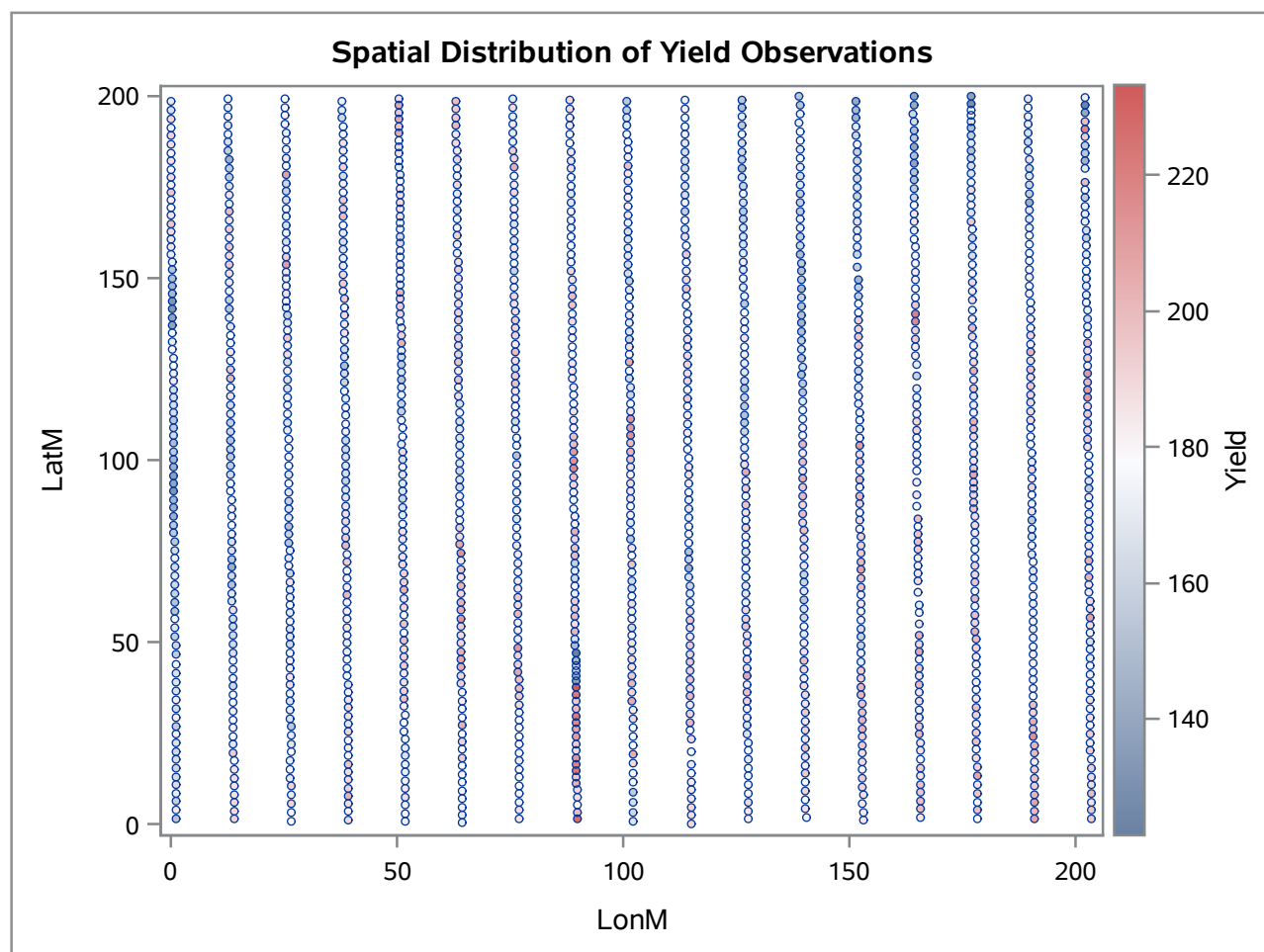
The KRIGE2D Procedure

Correlation Model Item Store Information	
Input Item Store	WORK.YIELDVGM
Item Store Label	Yield Variogram
Data Set Created From	WORK.SAMPLE
By-group Information	No By-groups Present
Created By	PROC VARIOGRAM
Date Created	20OCT17:09:29:23

The KRIGE2D Procedure

Dependent Variable: Yield

Number of Observations Read	1497
Number of Observations Used	1497

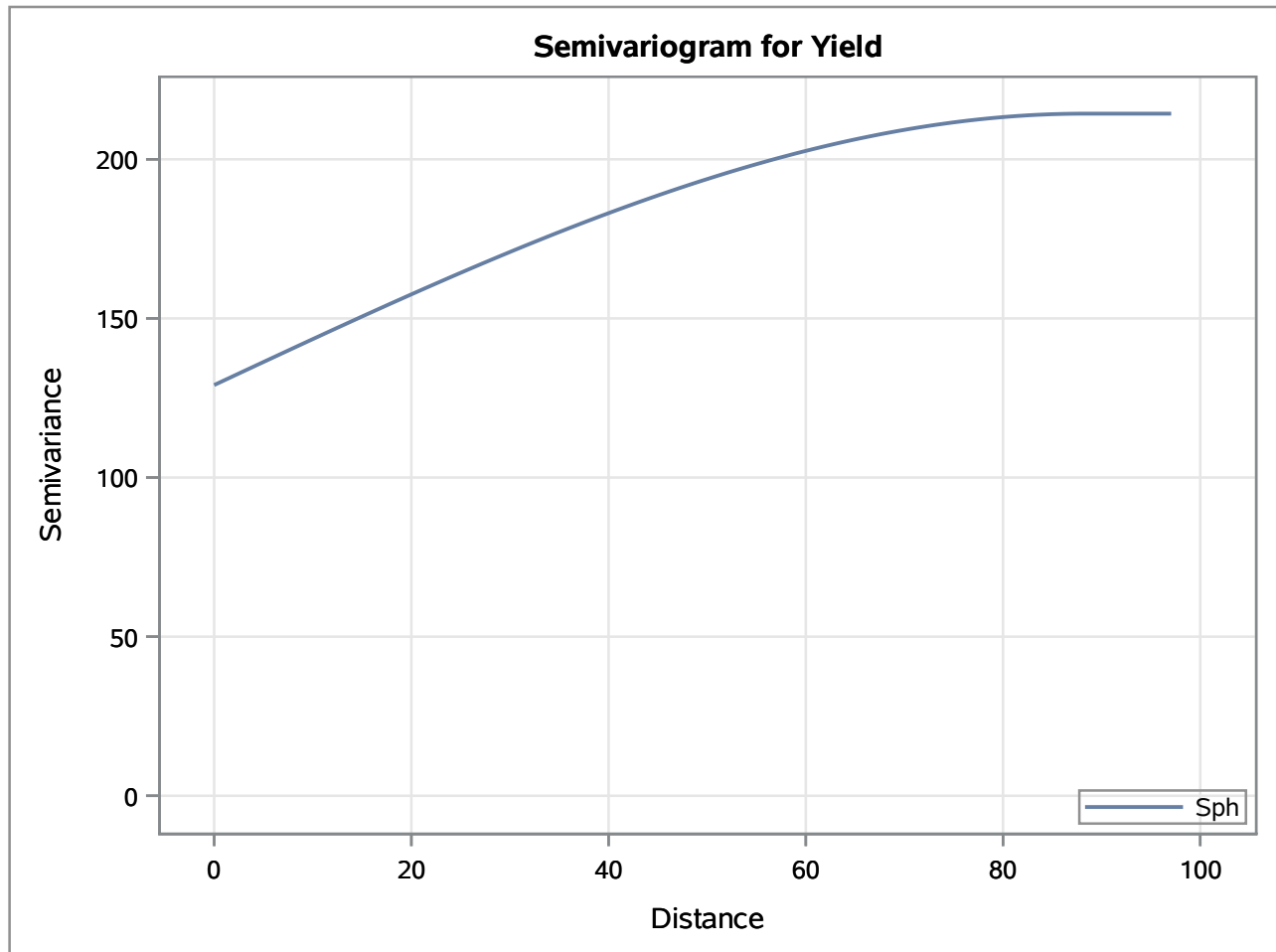


Kriging Information	
Prediction Grid Points	400
Type of Analysis	Local
Neighborhood Search Radius	100
Minimum Neighbors	20
Maximum Neighbors	All Within Radius

The KRIGE2D Procedure

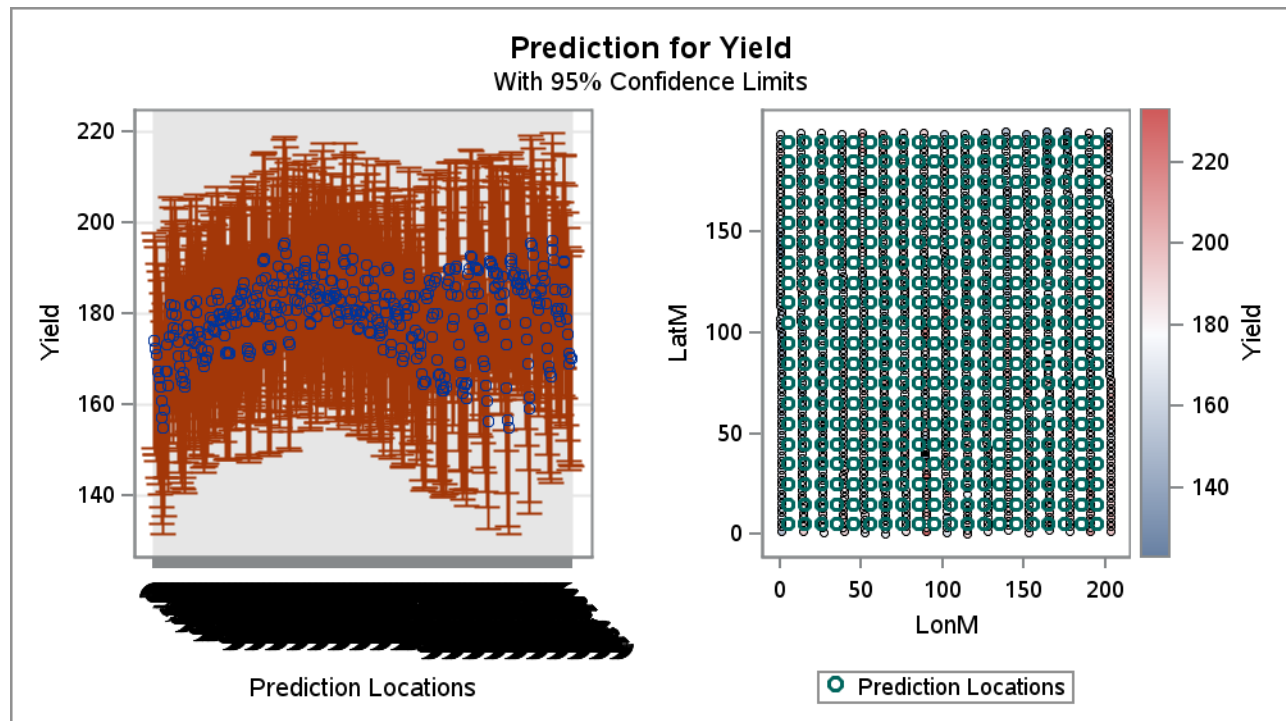
Dependent Variable: Yield
Prediction: Pred1, Model: Model1

Covariance Model Information	
Type	Spherical
Sill	85.282046
Range	88.232175
Nugget Effect	129.06288



The KRIGE2D Procedure

Dependent Variable: Yield
Prediction: Pred1, Model: Model1

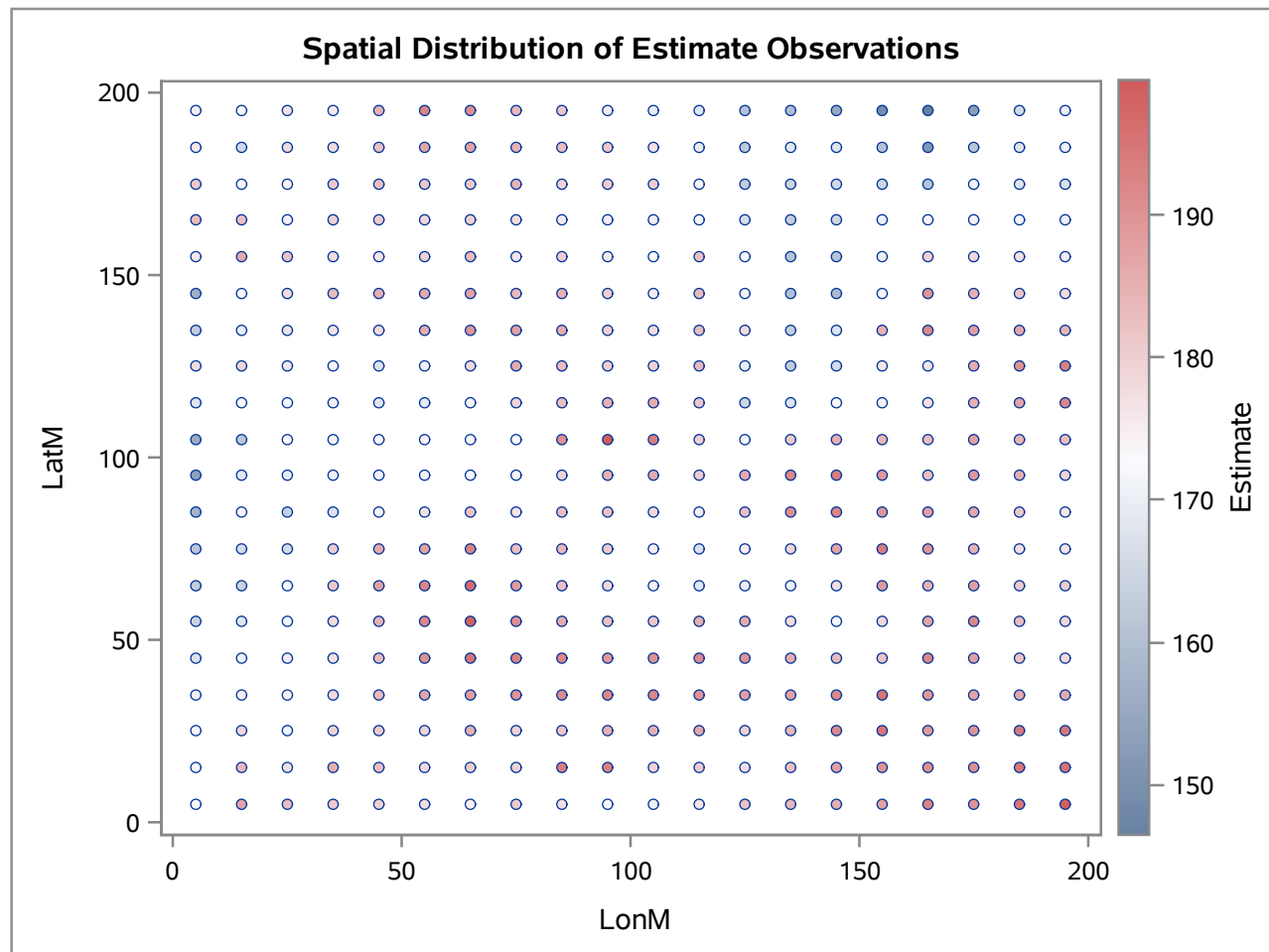


Variogram, LOESS Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: Estimate

Number of Observations Read	400
Number of Observations Used	400



Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.145	-0.00251	0.00312	47.3	<.0001
Randomization	Geary's c	0.817	1.00000	0.00993	-18.4	<.0001

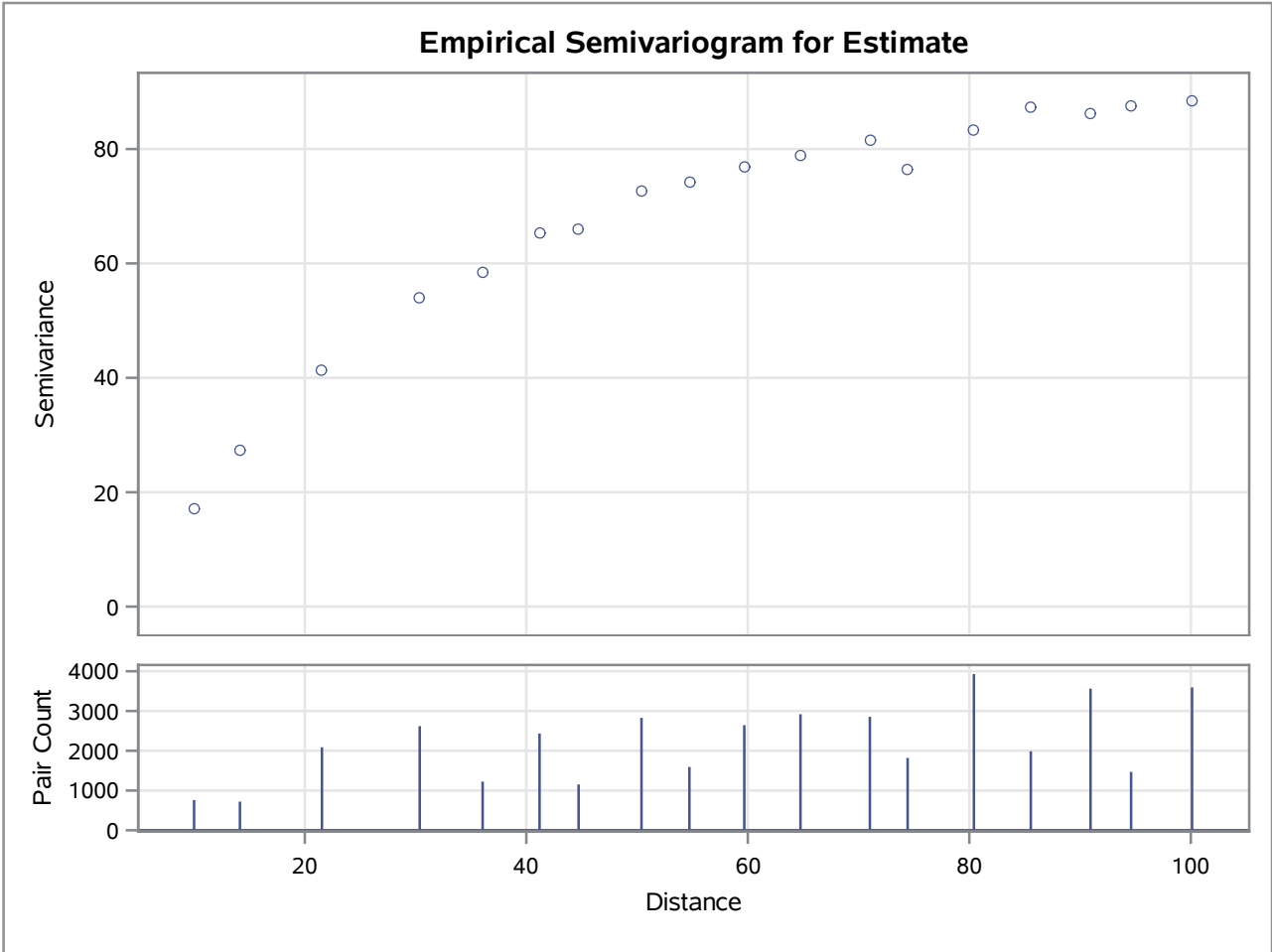
Variogram, LOESS Estimates at Grid Points**The VARIOGRAM Procedure****Dependent Variable: Estimate**

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	760	10.0	17.138
3	722	14.1	27.434
4	2088	21.5	41.283
5	0	.	.
6	2620	30.4	53.914
7	1224	36.1	58.395
8	2434	41.2	65.313
9	1152	44.7	65.985
10	2828	50.4	72.598
11	1592	54.7	74.103
12	2644	59.7	76.915
13	2920	64.8	78.914
14	2854	71.0	81.588
15	1820	74.4	76.343
16	3928	80.4	83.257
17	1988	85.6	87.298
18	3564	90.9	86.122
19	1468	94.6	87.562
20	3594	100.1	88.437

Variogram, LOESS Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: Estimate



Variogram, LOESS Estimates at Grid Points**The VARIOGRAM Procedure****Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0
Scale	87.3734
Range	50.0558

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

Variogram, LOESS Estimates at Grid Points**The VARIOGRAM Procedure**

Dependent Variable: Estimate
Angle: Omnidirectional
Current Model: Spherical

Dual Quasi-Newton Optimization**Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	12	Function Calls	41
Gradient Calls	0	Active Constraints	0
Objective Function	44.152385344	Max Abs Gradient Element	0.0000256099
Slope of Search Direction	-5.590634E-8		

Convergence criterion (GCONV=1E-8) satisfied.

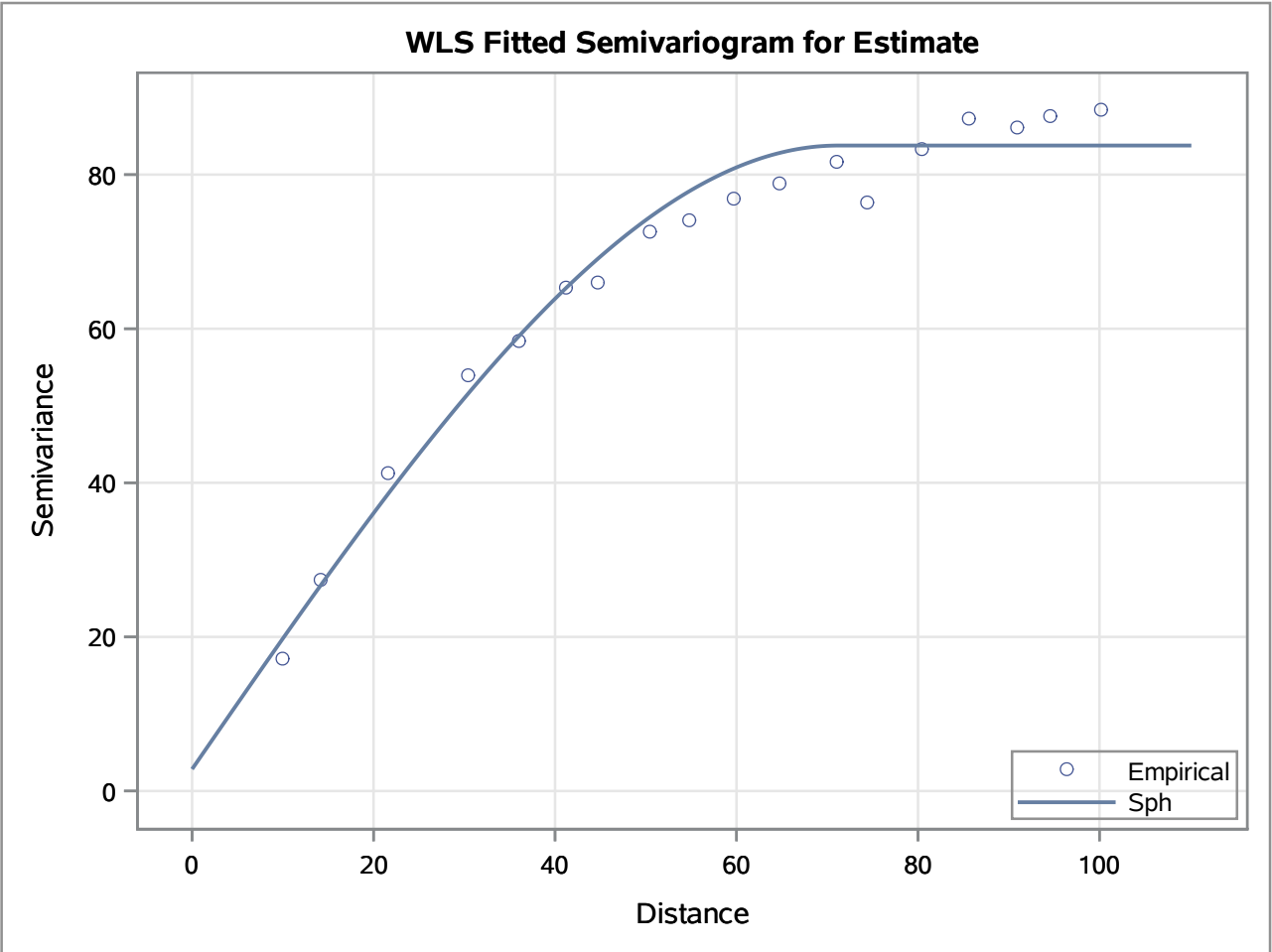
Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	2.8378	1.2008	15	2.36	0.0320
Scale	80.9355	1.1755	15	68.85	<.0001
Range	71.1707	1.7038	15	41.77	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	44.15239	22.15095

Variogram, LOESS Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: Estimate

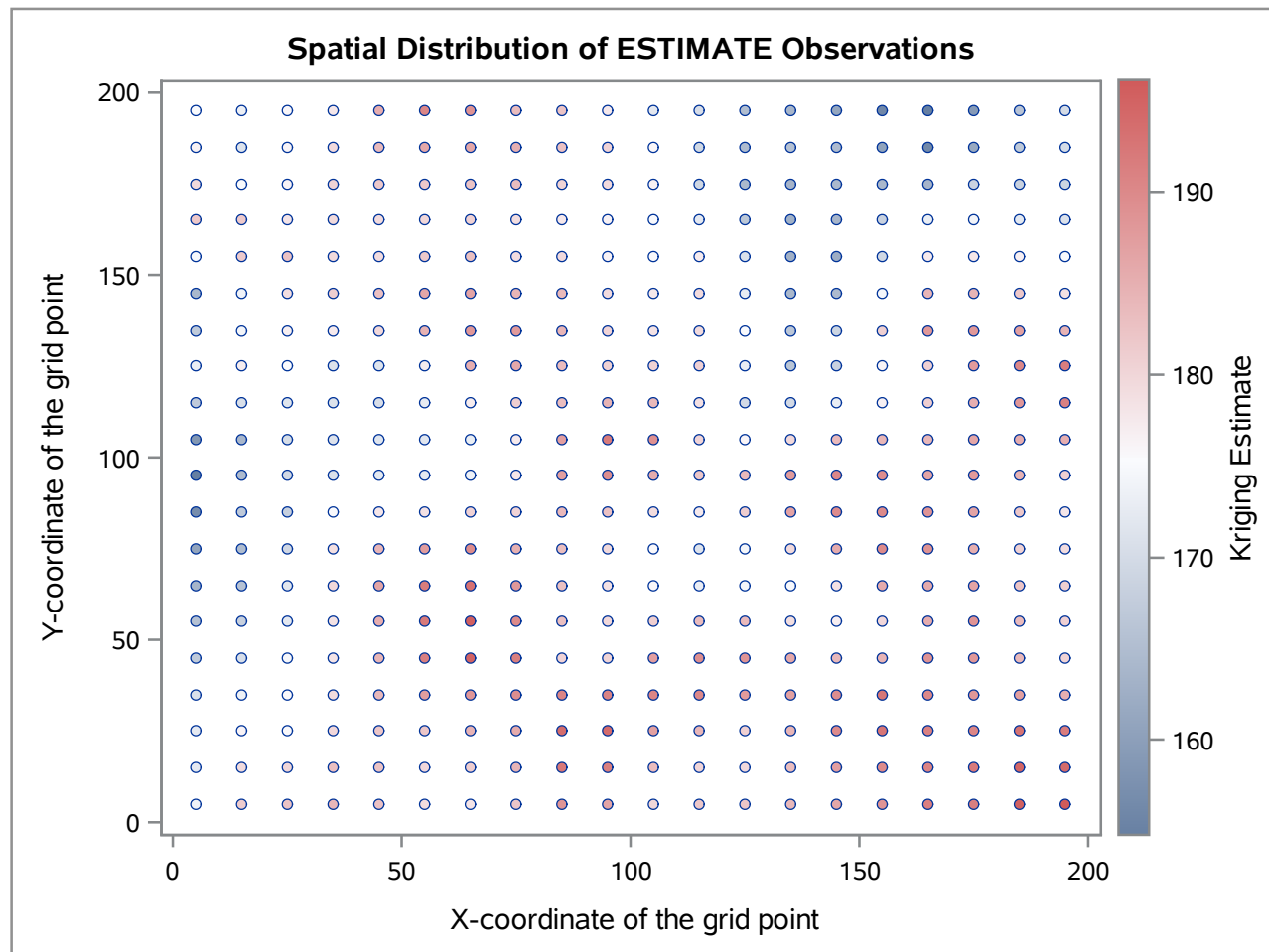


Variogram, Krig Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: ESTIMATE

Number of Observations Read	400
Number of Observations Used	400



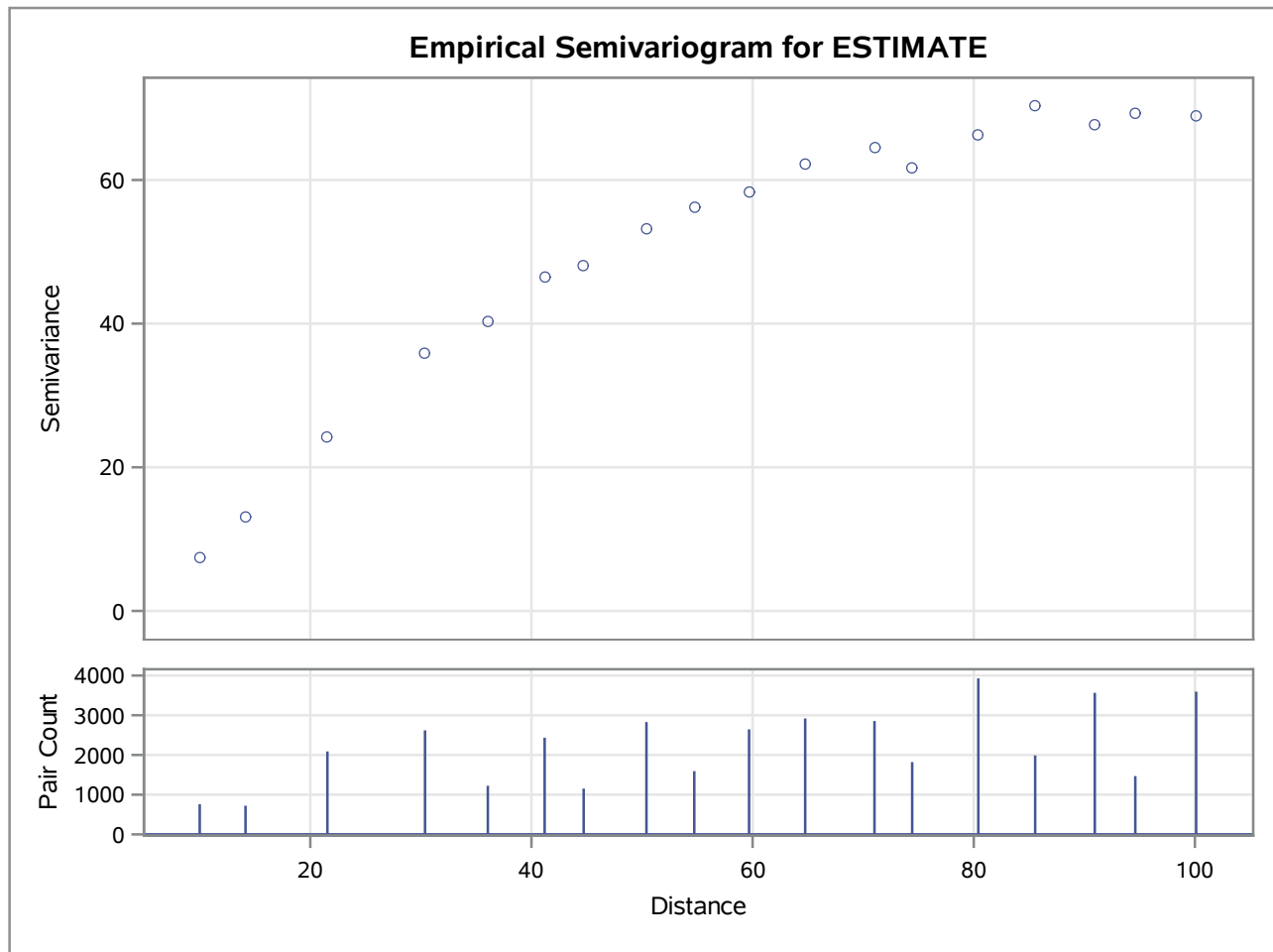
Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.176	-0.00251	0.00312	57.2	<.0001
Randomization	Geary's c	0.779	1.00000	0.00927	-23.8	<.0001

Variogram, Krig Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: ESTIMATE

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	0	.	.
2	760	10.0	7.520
3	722	14.1	13.089
4	2088	21.5	24.261
5	0	.	.
6	2620	30.4	35.828
7	1224	36.1	40.378
8	2434	41.2	46.496
9	1152	44.7	48.148
10	2828	50.4	53.257
11	1592	54.7	56.248
12	2644	59.7	58.306
13	2920	64.8	62.263
14	2854	71.0	64.444
15	1820	74.4	61.654
16	3928	80.4	66.318
17	1988	85.6	70.353
18	3564	90.9	67.721
19	1468	94.6	69.352
20	3594	100.1	68.867

Variogram, Krig Estimates at Grid Points**The VARIOGRAM Procedure****Dependent Variable: ESTIMATE**

Variogram, Krig Estimates at Grid Points**The VARIOGRAM Procedure****Dependent Variable: ESTIMATE****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	0
Scale	68.6468
Range	50.0558

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

Variogram, Krig Estimates at Grid Points**The VARIOGRAM Procedure****Dependent Variable: ESTIMATE****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	10	Function Calls	41
Gradient Calls	0	Active Constraints	1
Objective Function	74.875168249	Max Abs Gradient Element	0.0000123618
Slope of Search Direction	-3.075305E-7		

Convergence criterion (GCONV=1E-8) satisfied.

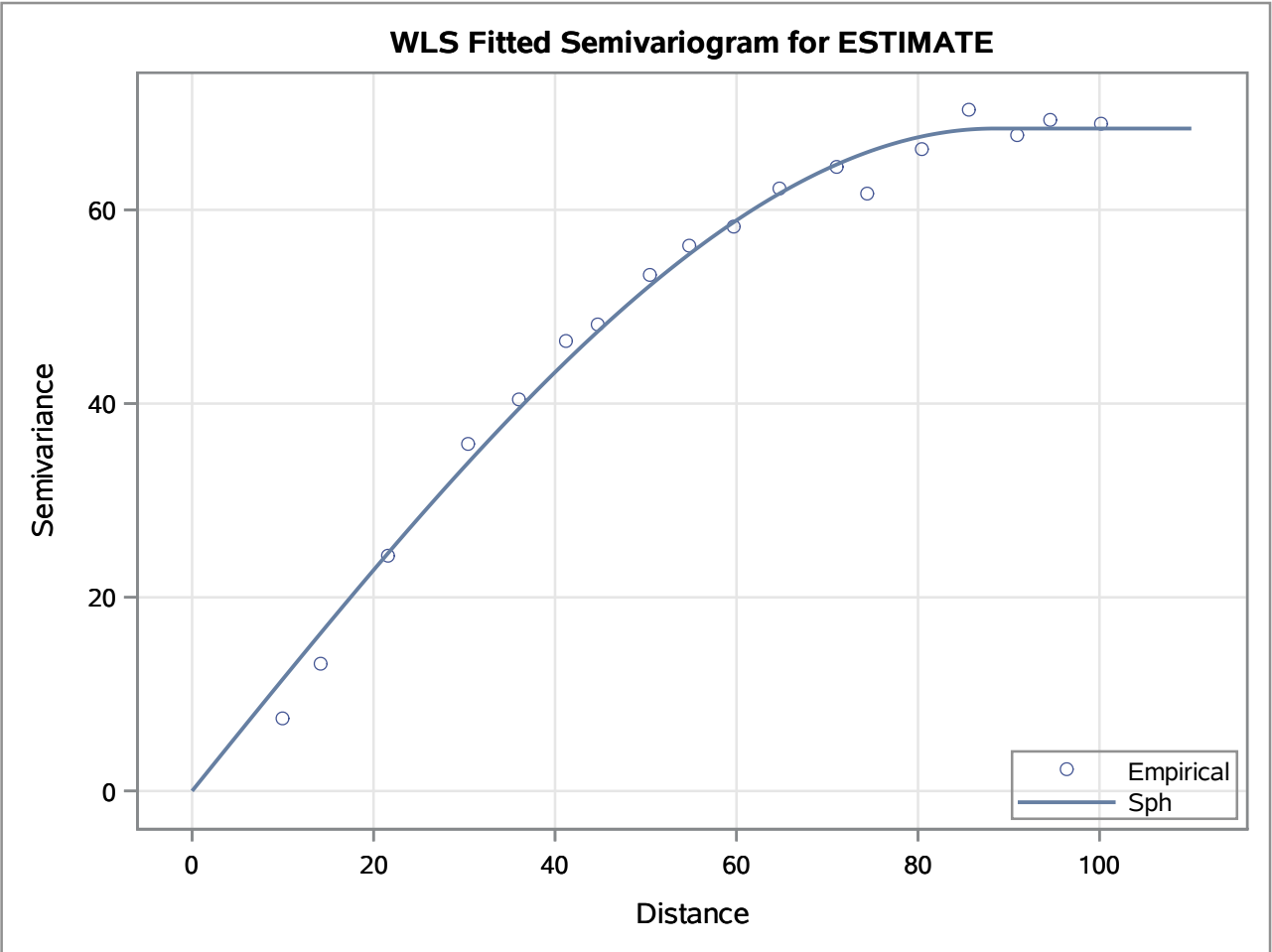
Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	0	0	15	.	.
Scale	68.4000	0.5898	15	115.98	<.0001
Range	88.4474	1.2742	15	69.41	<.0001

Fit Summary		
Model	Weighted SSE	AIC
Sph	74.87517	31.65811

Variogram, Krig Estimates at Grid Points

The VARIOGRAM Procedure

Dependent Variable: ESTIMATE



The MEANS Procedure

Analysis Variable : Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
1	4	4	179.1275412	7.8009687	172.0504583	187.4644236
2	4	4	181.8498132	3.1697035	177.7818216	185.3104423
3	4	4	179.8834987	2.3282367	177.9941144	183.1015313
4	4	4	178.9876579	2.8253630	174.8674953	180.9007084
5	4	4	184.3462738	10.7381383	172.5403371	193.7728376
6	4	4	176.9635438	4.5460554	170.7603990	181.0132886
7	4	4	181.7751320	2.8410482	177.7338024	184.3538772
8	4	4	187.8506035	1.9458121	185.4697038	190.2236738
9	4	4	191.2581845	1.1431229	190.0772155	192.8057678
10	4	4	196.1244181	1.6116344	195.0762664	198.4905525
11	4	4	174.5501320	3.3571079	171.4453087	179.0778916
12	4	4	175.9115666	4.0585060	170.9575385	179.7795932
13	4	4	182.9705872	3.3317415	179.6382388	187.2823454
14	4	4	185.9748412	4.5377302	179.8340558	190.1226159
15	4	4	187.5926613	4.9840884	181.7048283	192.1353640
16	4	4	188.7973327	3.0817494	185.7037036	192.3485584
17	4	4	185.1840521	3.8786528	180.0092604	188.3113206
18	4	4	193.5518299	1.8670612	191.8061059	195.1833111
19	4	4	189.0163878	1.1816065	187.3142175	189.9687661
20	4	4	190.5340495	4.7305189	186.3008730	194.9509439
21	4	4	167.8670192	2.7091506	164.4474671	171.0419226
22	4	4	175.8391956	2.6805762	172.1872947	178.0718754
23	4	4	187.7913804	4.0107096	183.8899223	191.9520405
24	4	4	194.5168334	3.1892274	191.0622639	198.5648268
25	4	4	187.6734271	4.3180739	182.3790631	192.4947279
26	4	4	187.5281076	4.5183088	181.8814168	191.9910483
27	4	4	185.2500259	5.0734362	178.1296730	190.1494046
28	4	4	179.4088802	4.6787269	173.2230095	183.6424681
29	4	4	189.9511373	2.6081742	187.3822909	192.2102908
30	4	4	180.9790917	2.5002872	178.5592836	183.6258529
31	4	4	163.8120216	1.9522444	161.7271665	166.3520139
32	4	4	175.3269252	7.3675493	166.2118522	181.6539507
33	4	4	188.7113320	2.6053581	186.5150873	192.4889317
34	4	4	190.3402905	6.0310778	182.7734237	196.9073909
35	4	4	181.6794629	2.3307203	178.7636717	184.1055277

The MEANS Procedure

Analysis Variable : Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
36	4	4	171.4436168	3.8445486	167.4110310	174.8207907
37	4	4	175.0035571	3.7357012	170.4694466	179.6134735
38	4	4	186.9484608	6.8549692	177.5401522	193.8804510
39	4	4	187.1834199	2.3387406	185.0505926	189.9231668
40	4	4	179.1773254	2.1547321	176.9054556	181.3449246
41	4	4	163.5105183	9.4284749	153.7053470	173.8064702
42	4	4	168.1374999	3.1600500	163.9506721	171.1968315
43	4	4	173.0260756	2.6427853	171.4357156	176.9581652
44	4	4	176.4144667	4.2465899	172.5863034	182.2384340
45	4	4	182.7152418	2.3836019	179.5479056	185.3106046
46	4	4	180.2522741	4.8001623	175.2604862	186.6251903
47	4	4	188.0763918	4.1203268	183.0519747	192.1380227
48	4	4	191.3998866	2.0952616	189.5220912	193.7486135
49	4	4	186.9059966	2.8143102	182.9133534	189.4001208
50	4	4	180.5883861	4.1285703	175.8274655	185.6986328
51	4	4	164.7901746	7.6494404	155.7405561	173.1674695
52	4	4	172.4910739	1.3523292	170.7128010	174.0032194
53	4	4	171.7355348	3.1234822	168.6745514	174.5080128
54	4	4	175.2525284	2.8397919	173.2495723	179.4501818
55	4	4	189.6039591	7.4041134	182.8460010	199.4701592
56	4	4	185.4850177	6.1765291	180.2224081	193.9404829
57	4	4	171.9612226	7.2227669	165.0182270	181.4164523
58	4	4	179.5164405	6.5700380	173.2281844	185.7556111
59	4	4	183.6445402	4.5315801	177.5203168	188.2330919
60	4	4	186.9778529	3.9177623	183.4446890	192.2324487
61	4	4	172.7336548	7.6433340	163.1192888	179.5577412
62	4	4	175.6486308	2.2296895	172.3588305	177.0928492
63	4	4	175.7698708	8.2629004	167.5310289	186.2215801
64	4	4	185.8743897	4.9489087	178.7956784	190.1247868
65	4	4	182.4250623	2.8548124	180.1224596	186.0443150
66	4	4	181.3126728	2.7772770	178.2478895	183.9106743
67	4	4	168.6487465	7.3514328	162.7650511	178.3109765
68	4	4	174.0336111	8.8616397	166.1493747	185.4787022
69	4	4	185.9128832	6.4311029	177.0399522	192.2525497
70	4	4	188.7878205	3.7251343	184.7132185	193.1826166

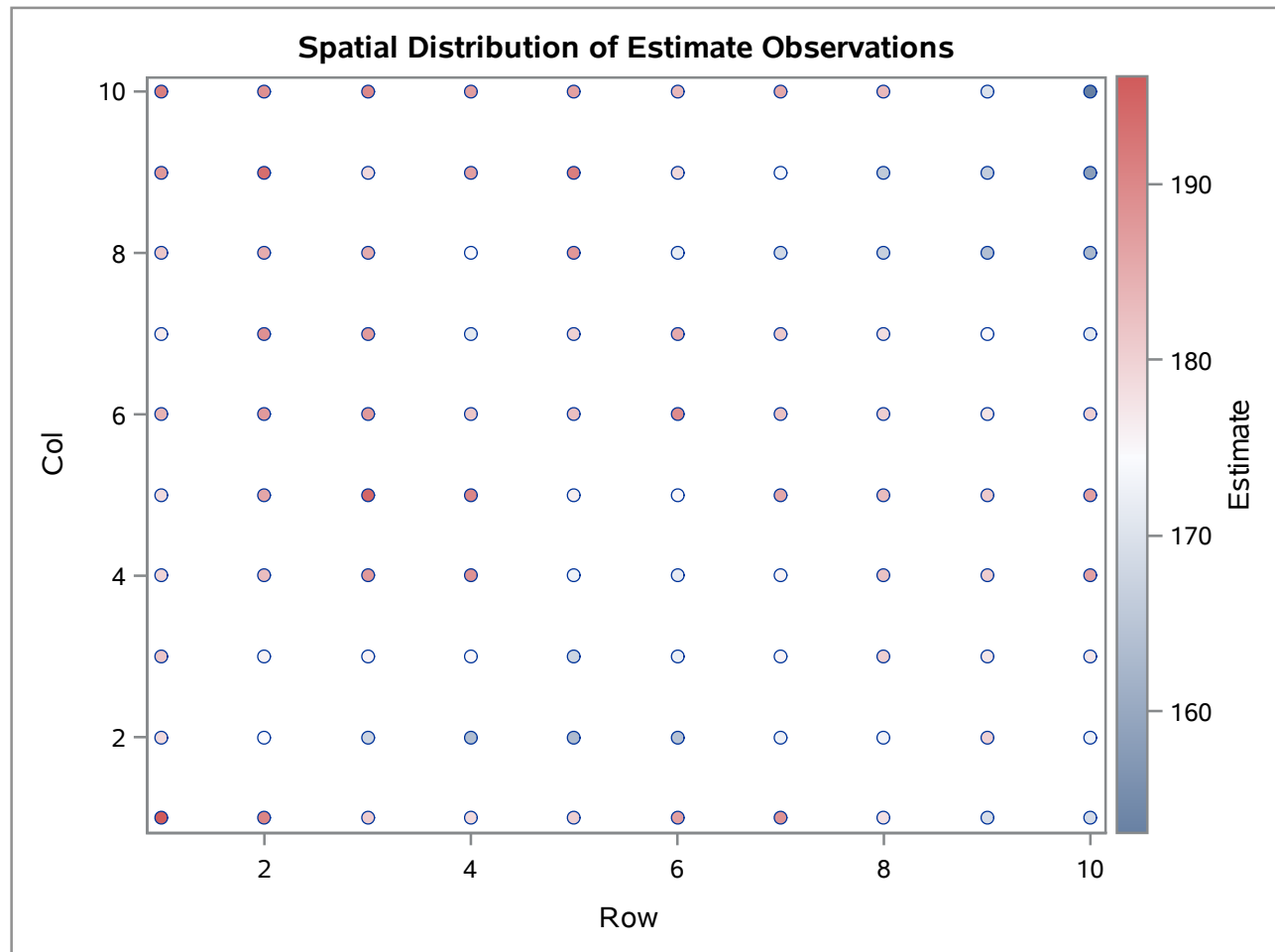
The MEANS Procedure

Analysis Variable : Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
71	4	4	173.3059142	12.2784398	156.9358339	186.5700573
72	4	4	180.5359105	2.7913281	178.1118080	183.4923148
73	4	4	182.3022461	4.6639614	176.9226680	186.5579657
74	4	4	183.0642664	4.6389440	176.6816475	187.8046763
75	4	4	180.5123342	3.8978509	175.6996773	185.2375133
76	4	4	178.5097376	5.5182908	172.5247297	183.6852337
77	4	4	167.2050892	7.5256407	160.2378761	174.6100554
78	4	4	166.0524818	6.5299090	159.3774839	172.2033285
79	4	4	183.4638612	5.1641598	178.7183174	189.9714488
80	4	4	178.1972737	2.8130339	175.1002604	181.8826783
81	4	4	180.3116577	4.7911415	173.2420996	183.4306658
82	4	4	177.6172034	3.7061868	174.1821926	181.5076503
83	4	4	180.8433992	1.6757296	178.8733492	182.8856994
84	4	4	181.1553634	2.7933054	178.0599667	184.8102767
85	4	4	177.8960167	2.6294596	175.3004003	180.6335228
86	4	4	175.1356983	3.8478549	171.7705369	180.6151497
87	4	4	164.2399060	1.7148245	162.9259241	166.6147519
88	4	4	166.6475298	2.7592194	164.8164425	170.7207549
89	4	4	170.2557198	6.2529549	161.0836994	174.2495708
90	4	4	169.3983490	2.1267894	167.3948795	171.7302076
91	4	4	172.6572726	4.8778093	165.5842775	176.2414079
92	4	4	177.5218034	1.2813910	175.7600603	178.5019690
93	4	4	186.7864695	4.1207674	182.6640972	192.4069226
94	4	4	187.0176735	3.1609545	184.2911595	191.2482666
95	4	4	180.4605493	3.5425772	175.2925594	183.3165723
96	4	4	171.3039653	4.1094423	168.2250181	177.3624379
97	4	4	162.9097778	4.0931118	159.5722887	168.7695032
98	4	4	158.4712759	8.0058051	149.3503083	168.1919093
99	4	4	153.0936310	6.2660928	146.4953693	161.5256438
100	4	4	168.9584298	2.3119656	166.0654041	171.1231363

The VARIOGRAM Procedure

Dependent Variable: Estimate

Number of Observations Read	100
Number of Observations Used	100



Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.0628	-0.0101	0.00676	10.79	<.0001
Randomization	Geary's c	0.8819	1.0000	0.01710	-6.91	<.0001

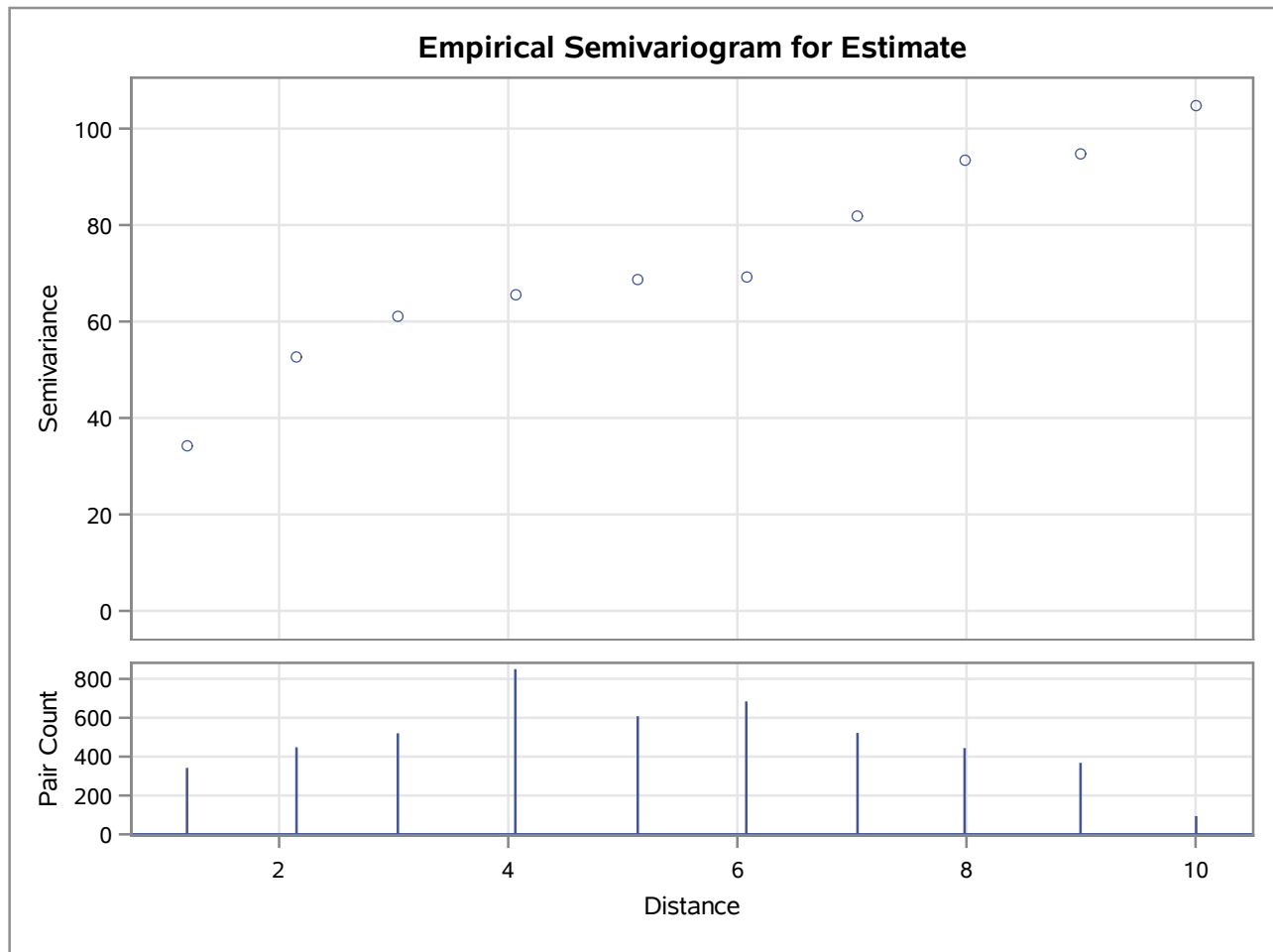
The VARIOGRAM Procedure

Dependent Variable: Estimate

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	342	1.20	34.285
2	448	2.15	52.675
3	520	3.04	61.086
4	850	4.06	65.440
5	608	5.13	68.735
6	684	6.08	69.359
7	522	7.05	81.779
8	444	7.98	93.398
9	368	9.00	94.821
10	94	10.01	104.770

The VARIOGRAM Procedure

Dependent Variable: Estimate



The VARIOGRAM Procedure**Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	11.2638
Scale	86.3989
Range	5.0025

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	17	Function Calls	63
Gradient Calls	0	Active Constraints	0
Objective Function	14.091796174	Max Abs Gradient Element	9.3365857E-7
Slope of Search Direction	-2.049177E-9		

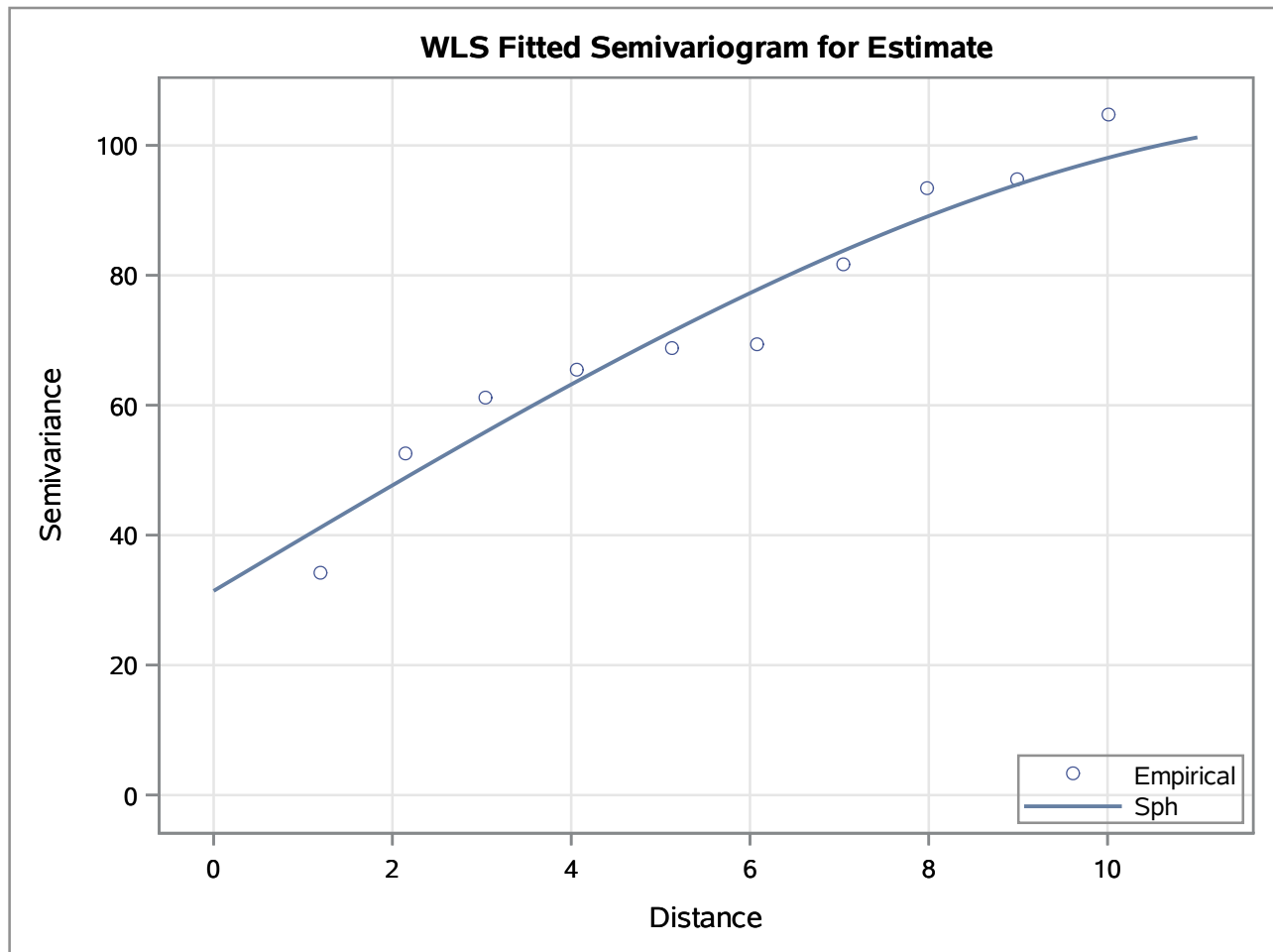
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	31.4287	3.3059	7	9.51	<.0001
Scale	73.0730	16.0219	7	4.56	0.0026
Range	13.3881	4.4433	7	3.01	0.0196

Fit Summary		
Model	Weighted SSE	AIC
Sph	14.09180	9.43008

The VARIOGRAM Procedure

Dependent Variable: Estimate



The MEANS Procedure

Analysis Variable : ESTIMATE Kriging Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
1	4	4	176.9273160	4.3603764	172.4706691	181.5598843
2	4	4	182.6172547	1.7065419	180.2857115	184.3538151
3	4	4	181.2428743	1.8006059	179.4794142	182.8907810
4	4	4	181.6493517	2.5449403	178.3879064	184.5503637
5	4	4	189.7340428	2.6715687	186.5423606	192.3557107
6	4	4	181.5517867	1.6082900	180.1577147	183.5241160
7	4	4	182.3772971	1.8769980	179.8036380	184.0800600
8	4	4	188.0985182	1.5633724	186.3385054	189.9436971
9	4	4	191.4458232	0.4802706	190.8813986	192.0537114
10	4	4	195.1243787	0.8610501	194.0836663	196.0840029
11	4	4	173.4248877	2.2977350	171.0345752	176.4431978
12	4	4	177.8456799	2.2721623	175.8773212	180.0695506
13	4	4	184.0180377	2.4175058	182.2584805	187.4226067
14	4	4	187.1244455	2.2171737	184.7540589	189.5205976
15	4	4	192.3786439	1.8259251	190.6616237	193.9732006
16	4	4	188.1042468	2.9765217	184.2977075	190.6893851
17	4	4	185.1322984	3.1048775	180.9967155	187.7954621
18	4	4	191.1978172	1.6176707	189.6870375	192.7055283
19	4	4	190.1440080	1.2238786	188.3803813	191.1679502
20	4	4	189.3381917	3.6783981	185.2336497	192.9857452
21	4	4	168.0733960	1.9968354	165.8699453	170.6368083
22	4	4	176.0927565	3.0424905	172.3622133	178.7222145
23	4	4	188.3750892	3.9403592	184.5228025	192.1047705
24	4	4	193.0172011	2.6565985	190.0737341	195.5083841
25	4	4	181.0553402	1.4577029	179.9518820	183.2022652
26	4	4	185.4738808	3.7073778	181.2315839	189.5293972
27	4	4	184.4983225	4.0169694	179.2227607	188.6816122
28	4	4	181.4362211	3.5308747	177.0778298	184.5477804
29	4	4	187.9811077	1.6020583	185.6110048	189.0407712
30	4	4	182.3694182	1.8500952	180.5907054	184.0684548
31	4	4	163.9218981	2.2063466	160.9175298	166.0445995
32	4	4	175.1412352	5.1852186	169.5332730	179.9922419
33	4	4	187.6385579	3.0332808	184.5025172	191.7242958
34	4	4	189.1522171	3.3811867	185.1857816	193.3174006
35	4	4	181.2649312	2.2640950	178.7952151	183.3720768

The MEANS Procedure

Analysis Variable : ESTIMATE Kriging Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
36	4	4	174.1068343	2.1491376	171.5064877	175.9089624
37	4	4	176.0887123	2.5367446	174.6332147	179.8876195
38	4	4	185.1023166	4.6593101	178.7911509	190.0364167
39	4	4	186.7567984	1.5805059	185.4310557	188.9995584
40	4	4	180.9885840	1.2733122	179.4030699	182.5084339
41	4	4	160.9324505	5.8817162	154.8250875	167.1096597
42	4	4	171.0701592	2.9695954	168.3155680	175.1877479
43	4	4	175.4760072	3.4679575	172.3919937	178.7959911
44	4	4	178.2814910	3.2266673	173.7775572	180.6860229
45	4	4	185.9596782	2.9985528	182.9728956	189.4792611
46	4	4	181.2851137	3.4530572	177.7590918	185.6561367
47	4	4	185.0749354	2.9522128	181.4460169	187.9846358
48	4	4	189.9671722	0.2904842	189.6477314	190.3513071
49	4	4	187.5193621	1.0382423	186.6618888	188.7774903
50	4	4	181.5671638	2.7857089	178.1669789	184.9042118
51	4	4	165.1926008	5.1103337	158.7477727	170.7398569
52	4	4	171.2249620	0.6176277	170.3935339	171.8814171
53	4	4	171.8008510	0.8774044	170.6675687	172.7967113
54	4	4	177.3315154	3.3310392	173.0798287	181.2218751
55	4	4	186.8817952	3.7871471	183.4745713	191.9970420
56	4	4	183.1569961	4.5880015	178.9296947	189.2503293
57	4	4	174.0079106	4.9351802	169.8637842	179.9506424
58	4	4	179.6073368	5.4517548	173.2647992	184.3914912
59	4	4	184.3127110	2.2621980	181.2067054	186.4553234
60	4	4	187.6254669	2.7188465	185.3290623	191.1284131
61	4	4	173.0808215	4.2159720	167.2817027	177.3073670
62	4	4	175.3510874	2.8649620	171.2903728	177.6397969
63	4	4	178.4772572	5.5543757	171.5545213	184.8925805
64	4	4	186.9440226	1.4428539	185.3598925	188.3660780
65	4	4	182.3106878	1.9635981	180.4278295	184.4203248
66	4	4	180.0152371	1.0573090	178.6504542	180.9577198
67	4	4	170.3676024	4.5404572	166.4226746	175.3251097
68	4	4	173.8313562	6.0110306	168.7120167	181.1343716
69	4	4	186.3151397	3.5916172	180.9353868	188.2759818
70	4	4	188.4872158	3.1083429	184.7302589	191.5683419

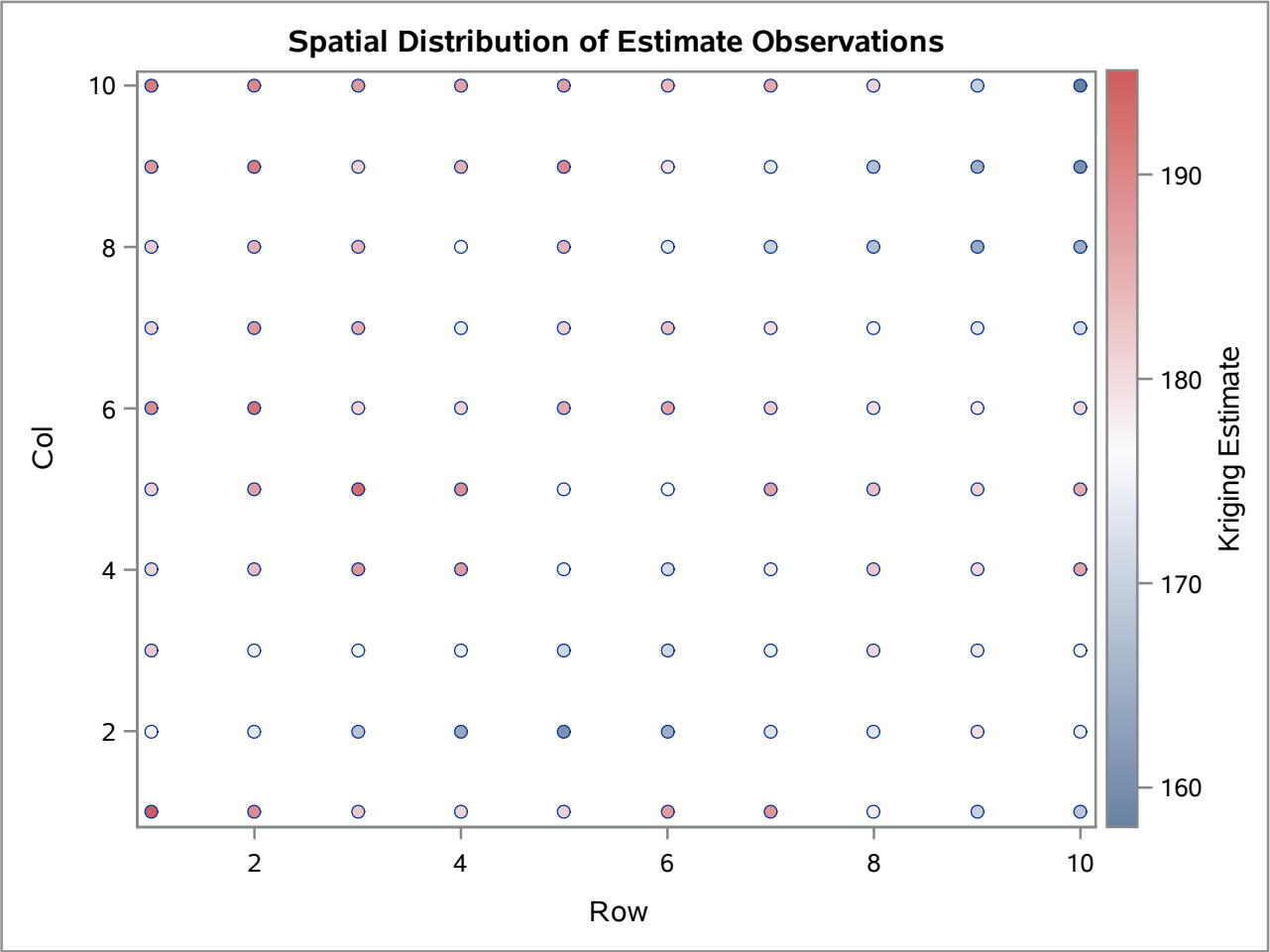
The MEANS Procedure

Analysis Variable : ESTIMATE Kriging Estimate						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
71	4	4	173.7807803	7.2124155	164.2911980	181.8153906
72	4	4	180.7020896	1.6217219	179.1369237	182.7452629
73	4	4	182.6939718	2.8911945	179.4108035	186.3765455
74	4	4	183.4230846	3.1263677	179.3066502	186.7553690
75	4	4	179.9578708	3.0558161	176.5875610	184.0095006
76	4	4	177.6626823	1.5871618	175.7041486	179.5715697
77	4	4	167.8475042	4.9147585	162.9925871	172.9180328
78	4	4	167.9242625	5.4673122	162.5278002	174.8043032
79	4	4	181.1799712	3.8530832	177.6165335	184.5581539
80	4	4	178.3082471	2.8816221	175.3548110	182.0767151
81	4	4	179.7911410	3.1532059	175.3013060	182.0501825
82	4	4	178.8076111	1.7813024	176.4947701	180.6000692
83	4	4	180.9047313	1.2247192	179.6130166	182.0157261
84	4	4	181.5780982	1.8801929	179.2701508	183.4653827
85	4	4	178.7661780	1.6874016	176.7675720	180.4833347
86	4	4	173.4180309	3.2420422	169.4157159	176.7810676
87	4	4	164.4741987	1.6127069	163.1040916	166.7248169
88	4	4	165.2543785	2.1926370	163.8359383	168.5239206
89	4	4	170.0283470	4.8159488	163.7143706	174.2845843
90	4	4	170.2146626	1.7802374	168.4267042	172.2618073
91	4	4	174.2525833	2.3255917	171.4067396	176.8047796
92	4	4	177.5293482	1.6684405	176.0523610	179.6876162
93	4	4	186.5176852	2.8412215	183.8676722	190.5226470
94	4	4	186.0428291	2.2760284	183.6168867	189.0240038
95	4	4	181.0042334	2.3299150	177.8927666	182.9565040
96	4	4	172.1021928	2.8540571	169.6141721	176.0714690
97	4	4	164.9291402	0.8041056	163.8881271	165.8331870
98	4	4	160.7658217	3.5614599	156.1852805	164.8670955
99	4	4	158.0717036	3.0282348	154.8716204	161.7318176
100	4	4	168.4193873	2.0681854	166.2013073	170.2667629

The VARIOGRAM Procedure

Dependent Variable: Estimate

Number of Observations Read	100
Number of Observations Used	100



Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.0705	-0.0101	0.00677	11.91	<.0001
Randomization	Geary's c	0.8742	1.0000	0.01631	-7.71	<.0001

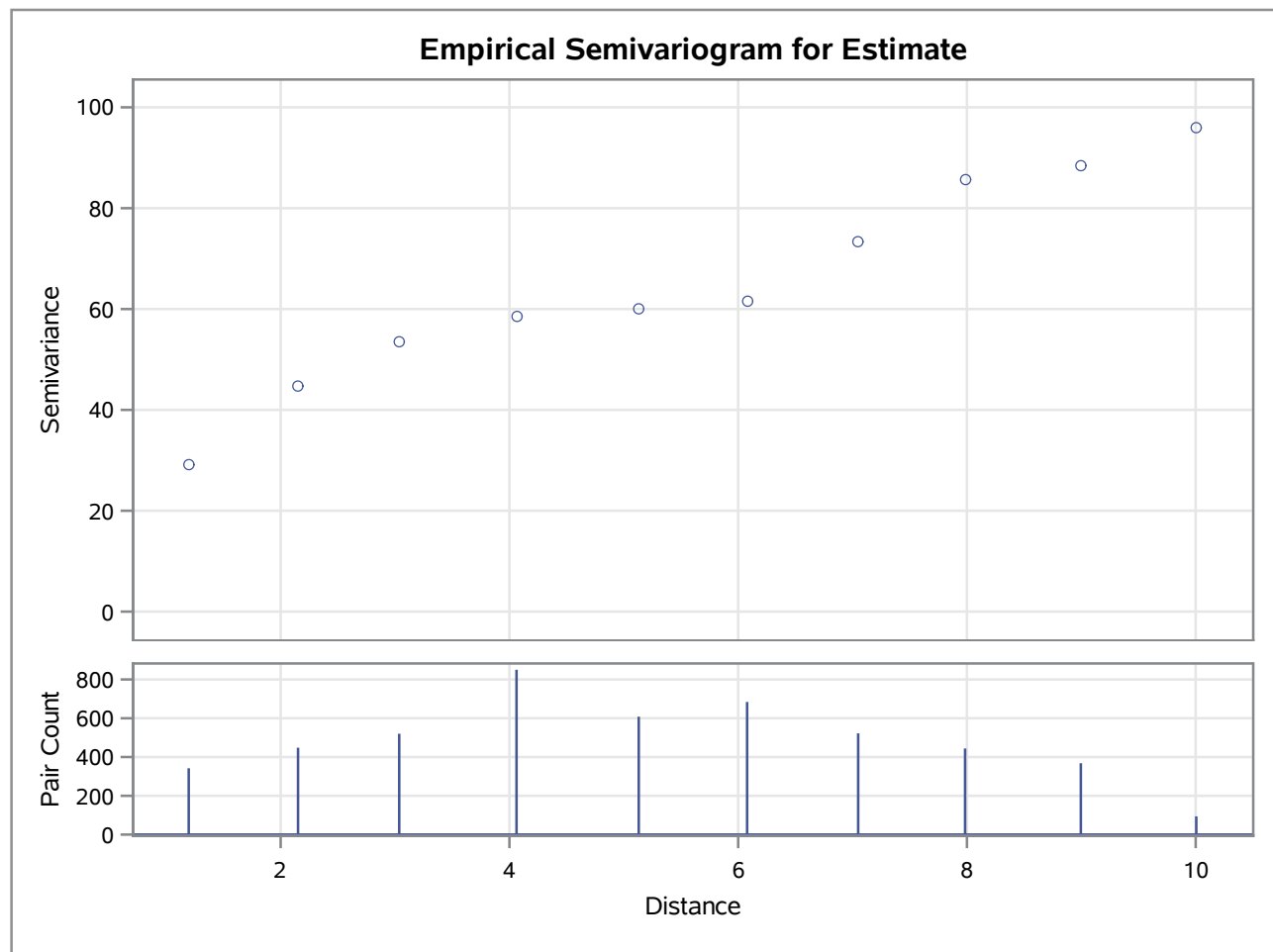
The VARIOGRAM Procedure

Dependent Variable: Estimate

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	342	1.20	29.118
2	448	2.15	44.602
3	520	3.04	53.572
4	850	4.06	58.634
5	608	5.13	60.003
6	684	6.08	61.586
7	522	7.05	73.404
8	444	7.98	85.586
9	368	9.00	88.418
10	94	10.01	96.008

The VARIOGRAM Procedure

Dependent Variable: Estimate



The VARIOGRAM Procedure**Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	9.7344
Scale	80.2697
Range	5.0025

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure

Dependent Variable: Estimate

Angle: Omnidirectional

Current Model: Spherical

Dual Quasi-Newton Optimization

Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)

Hessian Computed by Finite Differences (Using Analytic Gradient)

Optimization Results			
Iterations	18	Function Calls	64
Gradient Calls	0	Active Constraints	0
Objective Function	15.721534217	Max Abs Gradient Element	5.4995722E-6
Slope of Search Direction	-4.980011E-8		

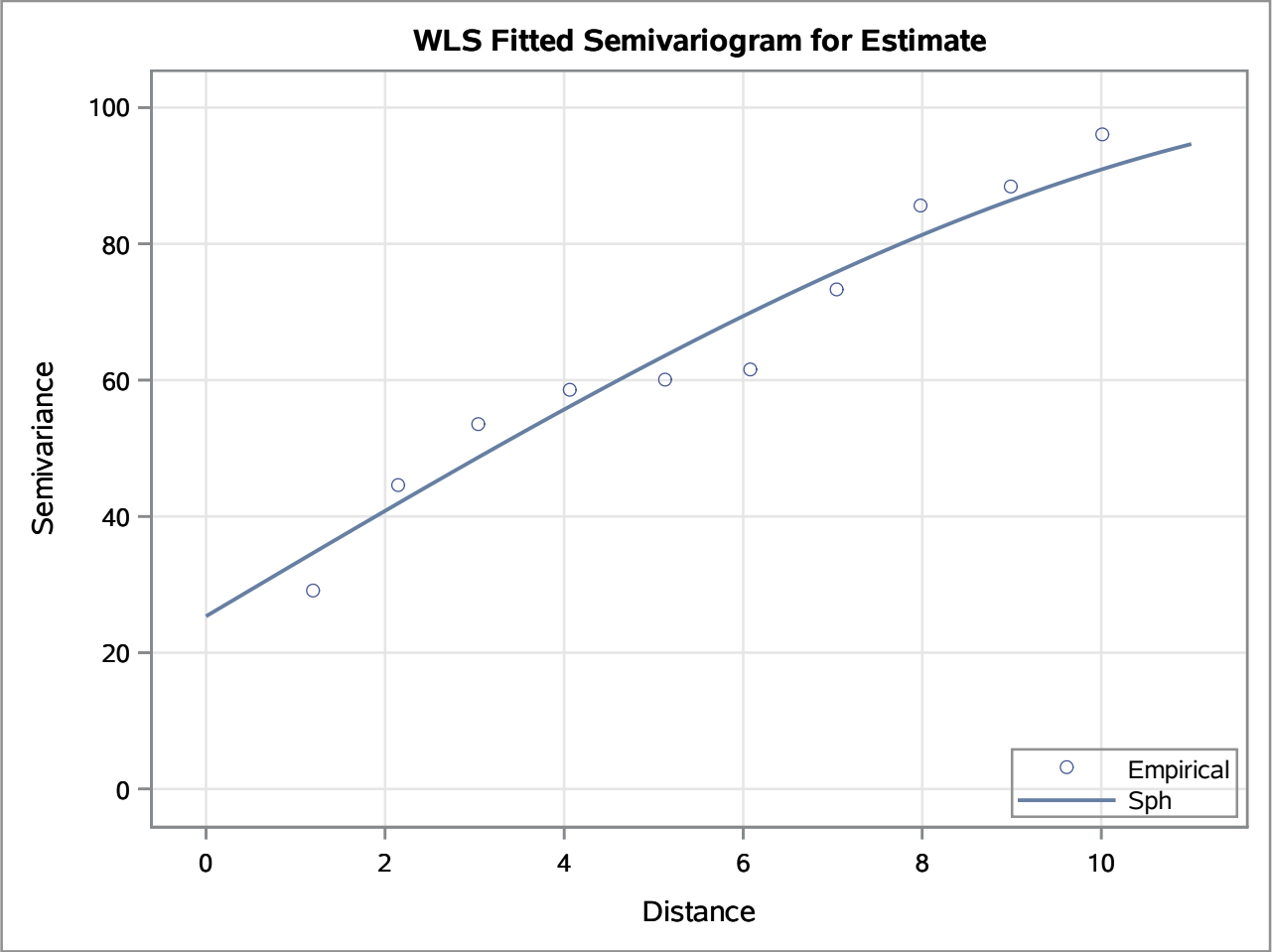
Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	25.3460	2.8650	7	8.85	<.0001
Scale	75.4493	20.4555	7	3.69	0.0078
Range	14.5414	5.5000	7	2.64	0.0332

Fit Summary			
Model	Weighted SSE	AIC	Notes
Sph	15.72153	10.52446	Questionable fit

The VARIOGRAM Procedure

Dependent Variable: Estimate



The MEANS Procedure

Analysis Variable : Yield						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
1	17	17	177.5135294	13.5714194	153.5200000	194.1500000
2	18	18	184.8544444	9.0675136	170.5100000	202.6400000
3	9	9	177.1200000	7.3898038	167.3100000	188.8800000
4	18	18	178.9666667	6.3265119	170.3300000	193.8500000
5	10	10	203.5800000	15.9824390	179.0600000	226.8800000
6	17	17	179.4491176	12.5852396	156.4000000	204.5300000
7	8	8	179.3337500	6.2875295	169.6700000	189.5800000
8	17	17	186.2723529	5.4706781	176.1100000	195.0700000
9	16	16	191.1381250	8.5824854	175.9600000	206.3100000
10	17	17	195.1223529	7.9657906	179.4100000	208.5200000
11	17	17	172.8517647	8.6146323	157.7600000	183.0400000
12	17	17	176.6176471	10.6552478	155.3900000	191.0500000
13	9	9	183.0233333	8.1831061	171.2600000	197.2500000
14	18	18	185.3133333	9.6236260	172.9800000	203.7400000
15	11	11	202.7618182	25.4206238	138.1000000	233.2800000
16	16	16	190.0118750	9.7928309	175.5300000	205.0300000
17	9	9	180.3911111	10.4356498	167.3300000	197.9600000
18	17	17	194.3841176	6.1940759	184.2400000	203.2800000
19	18	18	188.6377778	7.3957687	173.8000000	200.2100000
20	18	18	190.0477778	10.5138869	176.4500000	214.5600000
21	17	17	167.4805882	8.9551581	153.4400000	188.9400000
22	18	18	176.6022222	6.9796785	163.1000000	185.9600000
23	9	9	188.9100000	7.4685641	177.0300000	198.2600000
24	17	17	196.4958824	11.1702535	172.1300000	212.3000000
25	12	12	169.8900000	25.5438066	122.8600000	201.9400000
26	17	17	187.2317647	8.0512889	163.2000000	196.1000000
27	12	12	185.5533333	12.2887076	162.9100000	205.7700000
28	14	14	178.5564286	12.2691970	159.5900000	198.4900000
29	17	17	190.8188235	9.1167839	178.9900000	206.7800000
30	17	17	179.0923529	10.1899985	165.2100000	208.5900000
31	18	18	162.2022222	8.7801484	143.8100000	181.7800000
32	19	19	178.2815789	13.2419218	153.8800000	200.7700000
33	8	8	189.5162500	6.0298470	181.9000000	202.0700000
34	18	18	191.1083333	9.7476231	177.0600000	213.2600000
35	9	9	181.0088889	15.7029523	158.8300000	200.7500000

The MEANS Procedure

Analysis Variable : Yield						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
36	18	18	170.6838889	13.4729363	145.6500000	197.2000000
37	17	17	172.7064706	9.8767593	155.3300000	191.9800000
38	9	9	194.7855556	8.2974290	182.0300000	208.9800000
39	18	18	186.6844444	9.0151462	171.2200000	200.5900000
40	18	18	180.9877778	10.9882004	166.1700000	203.6700000
41	16	16	157.9493750	17.4472724	132.5200000	181.3100000
42	17	17	171.3805882	10.6980772	150.8700000	189.3800000
43	9	9	172.9477778	8.9642844	161.1200000	188.1700000
44	17	17	175.1947059	7.8884188	163.1100000	193.2000000
45	10	10	192.2990000	15.7582419	173.4800000	217.8500000
46	17	17	180.4617647	6.5410791	168.2700000	188.1600000
47	18	18	192.7322222	8.5523877	175.9600000	205.9600000
48	9	9	189.1044444	8.0220619	180.2200000	201.8000000
49	17	17	188.9532353	7.8128526	175.9250000	206.5100000
50	18	18	176.0255556	9.9512472	156.0600000	192.6900000
51	19	19	161.8215789	9.3659918	147.2200000	186.9000000
52	18	18	172.2200000	5.1623513	163.1700000	179.4800000
53	9	9	171.8333333	9.8899949	158.7700000	189.0300000
54	18	18	174.2344444	8.8979265	153.8700000	188.6600000
55	8	8	189.1787500	12.8956487	174.3600000	211.5900000
56	18	18	187.9805556	15.2317990	161.8000000	214.6200000
57	17	17	169.7900000	14.2022793	152.1400000	201.8000000
58	8	8	180.0700000	13.4291112	170.6900000	209.7600000
59	18	18	183.8150000	9.8299316	168.3600000	203.2400000
60	17	17	189.3394118	10.0959320	175.4100000	211.6000000
61	17	17	176.1582353	16.1013234	139.2200000	201.6300000
62	18	18	174.0666667	12.5475163	151.3000000	195.2300000
63	10	10	173.8060000	15.9223213	154.1900000	202.5600000
64	17	17	190.5294118	8.2488048	164.0200000	199.5900000
65	9	9	182.8022222	3.8291898	178.2100000	189.3600000
66	18	18	180.6150000	11.5352153	161.2400000	204.7700000
67	17	17	165.4382353	12.8224565	146.1100000	186.4000000
68	9	9	181.4222222	13.4180064	160.8500000	196.7400000
69	15	15	188.1013333	13.6963514	159.4100000	217.4000000
70	18	18	188.9272222	11.6079373	163.8000000	211.6900000

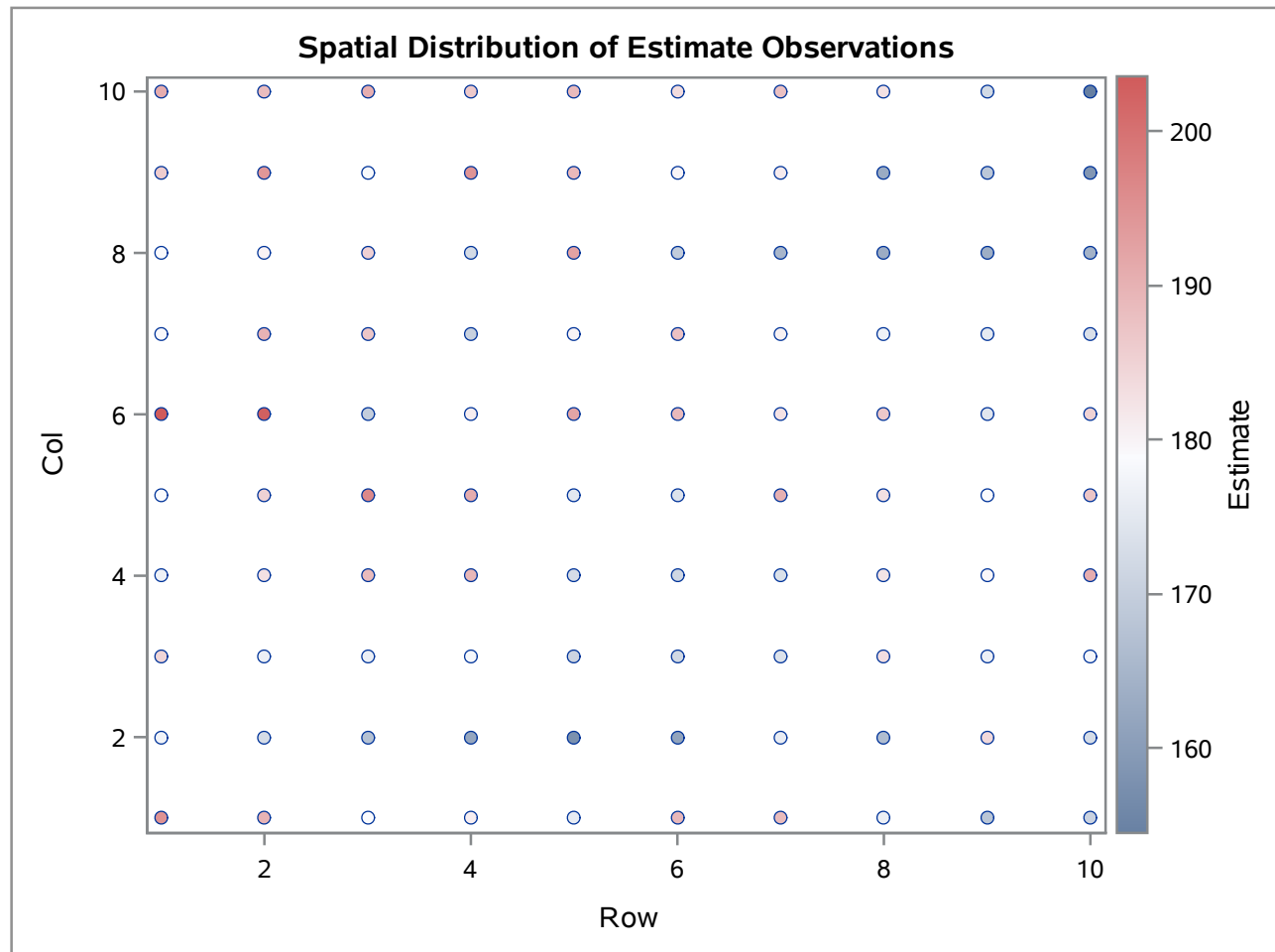
The MEANS Procedure

Analysis Variable : Yield						
Cell	N Obs	N	Mean	Std Dev	Minimum	Maximum
71	17	17	166.7235294	21.1774981	132.3100000	195.9600000
72	17	17	183.4441176	10.6674406	167.9900000	210.0200000
73	11	11	182.6163636	11.2875137	164.2000000	201.0600000
74	18	18	183.1088889	8.5383384	160.1500000	193.4800000
75	9	9	186.9122222	7.9820968	177.2900000	198.8200000
76	17	17	177.1876471	10.7784162	158.0500000	197.0300000
77	17	17	163.4576471	11.2802380	147.2800000	183.2000000
78	8	8	163.1681250	10.5015182	147.3500000	177.1100000
79	17	17	183.0864706	12.0365085	165.2400000	219.8900000
80	18	18	176.7494444	4.0998988	169.4700000	184.0000000
81	18	18	184.2583333	10.7085371	156.8800000	199.0600000
82	18	18	176.8911111	14.2160083	160.3000000	208.3900000
83	10	10	179.8430000	8.2692241	165.3100000	188.7000000
84	17	17	179.2088235	7.9799529	166.0500000	191.0700000
85	8	8	174.6687500	4.8211511	167.7800000	181.4400000
86	17	17	175.4447059	9.1110078	159.0000000	187.8700000
87	16	16	163.8081250	6.4075291	155.1700000	174.6600000
88	9	9	168.8044444	5.8222378	160.5200000	181.1000000
89	18	18	172.4172222	12.6437842	150.7700000	195.2700000
90	16	16	168.4900000	12.3312238	144.2400000	199.4300000
91	17	17	172.9300000	12.7699569	145.5200000	192.3800000
92	18	18	177.8655556	6.8564647	162.0200000	192.5000000
93	11	11	190.9745455	12.1657843	172.2700000	206.2500000
94	18	18	187.2488889	10.6047819	170.0500000	203.8800000
95	9	9	185.2900000	3.6363478	178.2200000	189.7800000
96	18	18	173.4933333	10.2870833	155.7900000	198.2000000
97	18	18	164.6700000	10.3017017	147.9500000	178.1600000
98	8	8	159.0550000	13.3187269	141.8900000	181.4900000
99	20	20	154.4845000	13.8548713	130.2000000	181.5000000
100	19	19	170.9910526	21.8586123	125.2700000	217.9000000

The VARIOGRAM Procedure

Dependent Variable: Estimate

Number of Observations Read	100
Number of Observations Used	100



Autocorrelation Statistics						
Assumption	Coefficient	Observed	Expected	Std Dev	Z	Pr > Z
Randomization	Moran's I	0.0454	-0.0101	0.00677	8.20	<.0001
Randomization	Geary's c	0.9234	1.0000	0.01641	-4.67	<.0001

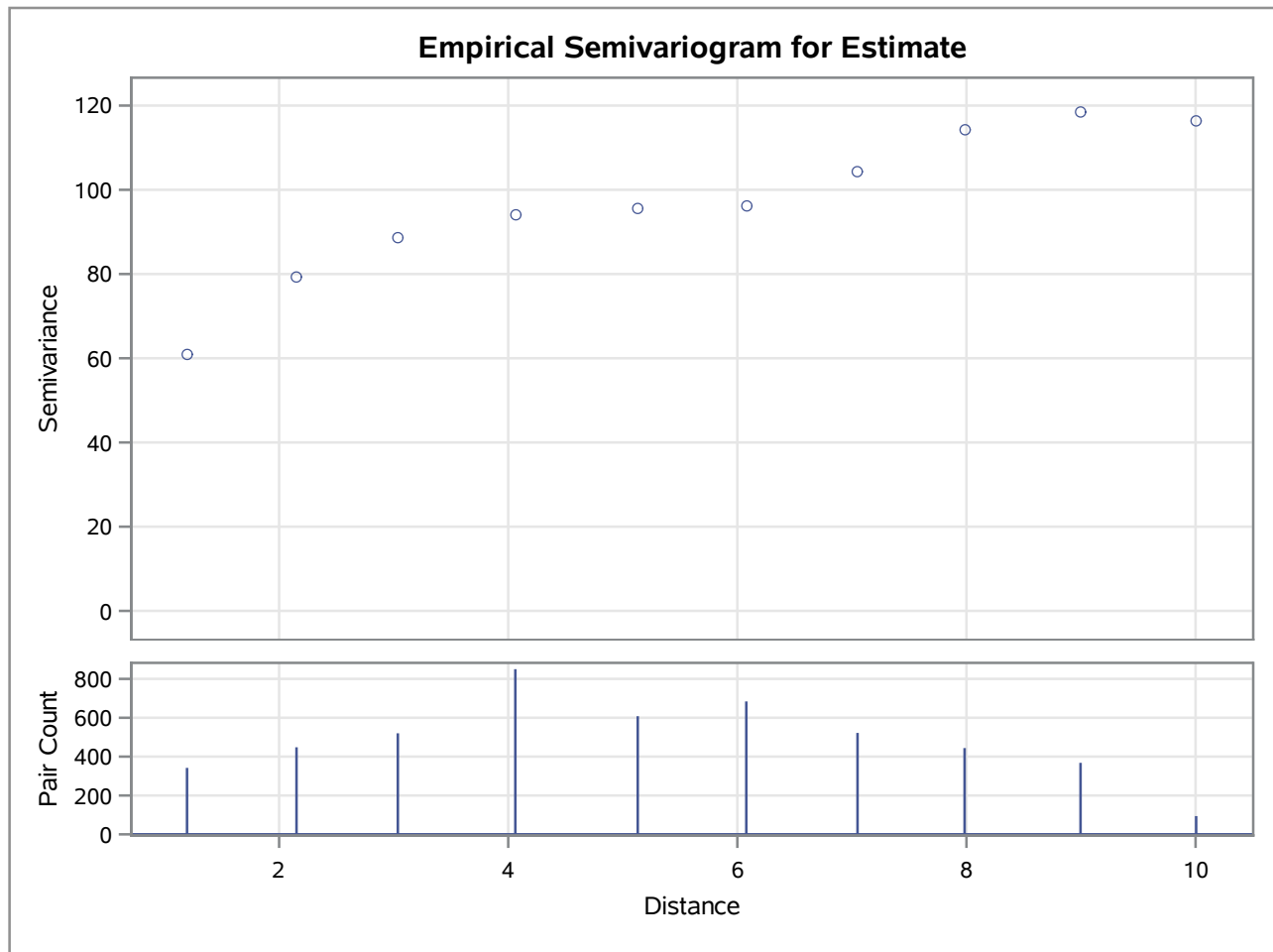
The VARIOGRAM Procedure

Dependent Variable: Estimate

Empirical Semivariogram			
Lag Class	Pair Count	Average Distance	Semivariance
0	0	.	.
1	342	1.20	60.916
2	448	2.15	79.379
3	520	3.04	88.584
4	850	4.06	94.028
5	608	5.13	95.649
6	684	6.08	96.027
7	522	7.05	104.397
8	444	7.98	114.156
9	368	9.00	118.537
10	94	10.01	116.292

The VARIOGRAM Procedure

Dependent Variable: Estimate



The VARIOGRAM Procedure**Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical**

Semivariogram Model Fitting	
Name	Spherical
Label	Sph

Model Information	
Parameter	Initial Value
Nugget	37.8022
Scale	78.5260
Range	5.0025

Optimization Information	
Optimization Technique	Dual Quasi-Newton
Parameters in Optimization	3
Lower Boundaries	3
Upper Boundaries	0
Starting Values From	PROC

The VARIOGRAM Procedure**Dependent Variable: Estimate****Angle: Omnidirectional****Current Model: Spherical****Dual Quasi-Newton Optimization****Dual Broyden - Fletcher - Goldfarb - Shanno Update (DBFGS)****Hessian Computed by Finite Differences (Using Analytic Gradient)**

Optimization Results			
Iterations	16	Function Calls	61
Gradient Calls	0	Active Constraints	0
Objective Function	6.6745497769	Max Abs Gradient Element	2.7279313E-8
Slope of Search Direction	-1.24044E-10		

Convergence criterion (GCONV=1E-8) satisfied.

Parameter Estimates					
Parameter	Estimate	Approx Std Error	DF	t Value	Approx Pr > t
Nugget	58.8985	4.7926	7	12.29	<.0001
Scale	56.9858	6.7023	7	8.50	<.0001
Range	10.3548	2.3400	7	4.43	0.0031

Fit Summary		
Model	Weighted SSE	AIC
Sph	6.67455	1.95717

The VARIOGRAM Procedure

Dependent Variable: Estimate

