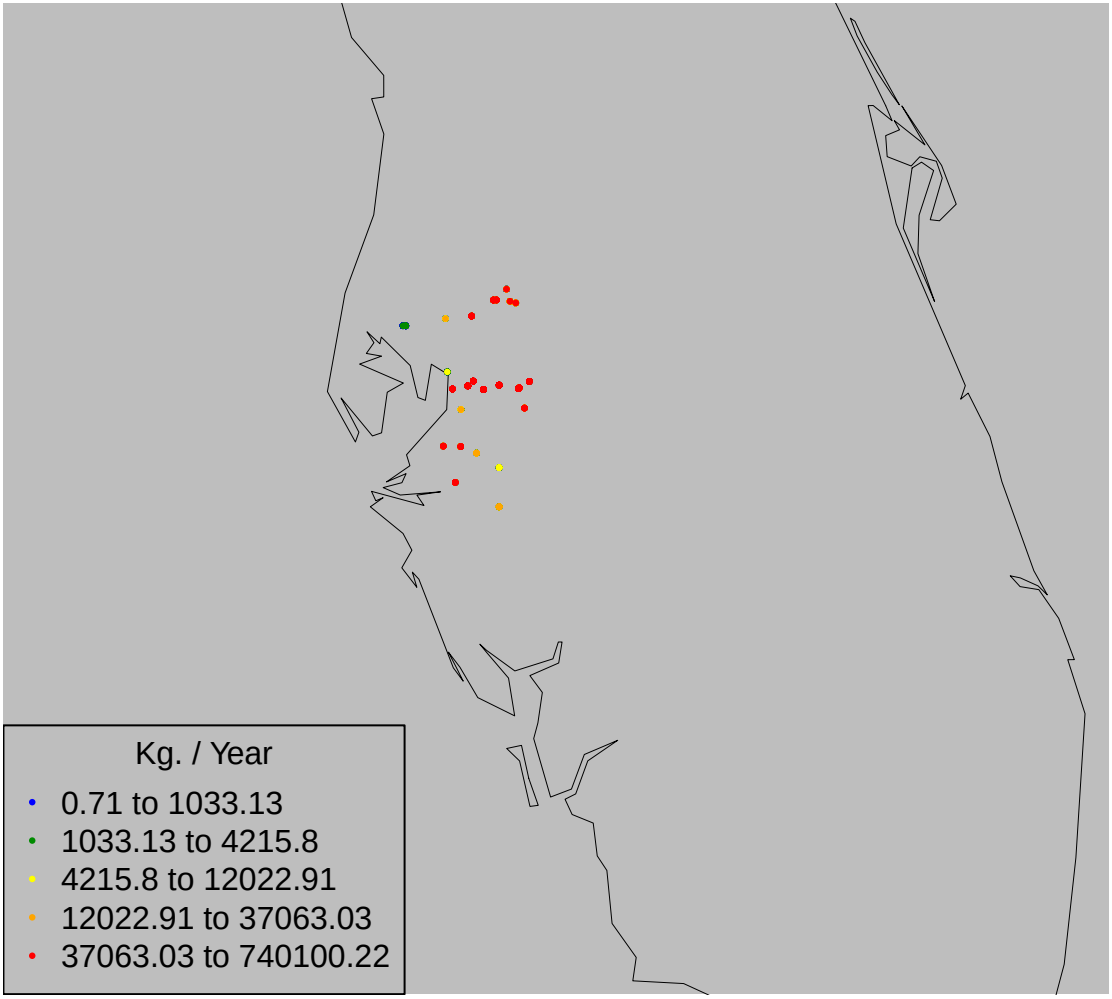
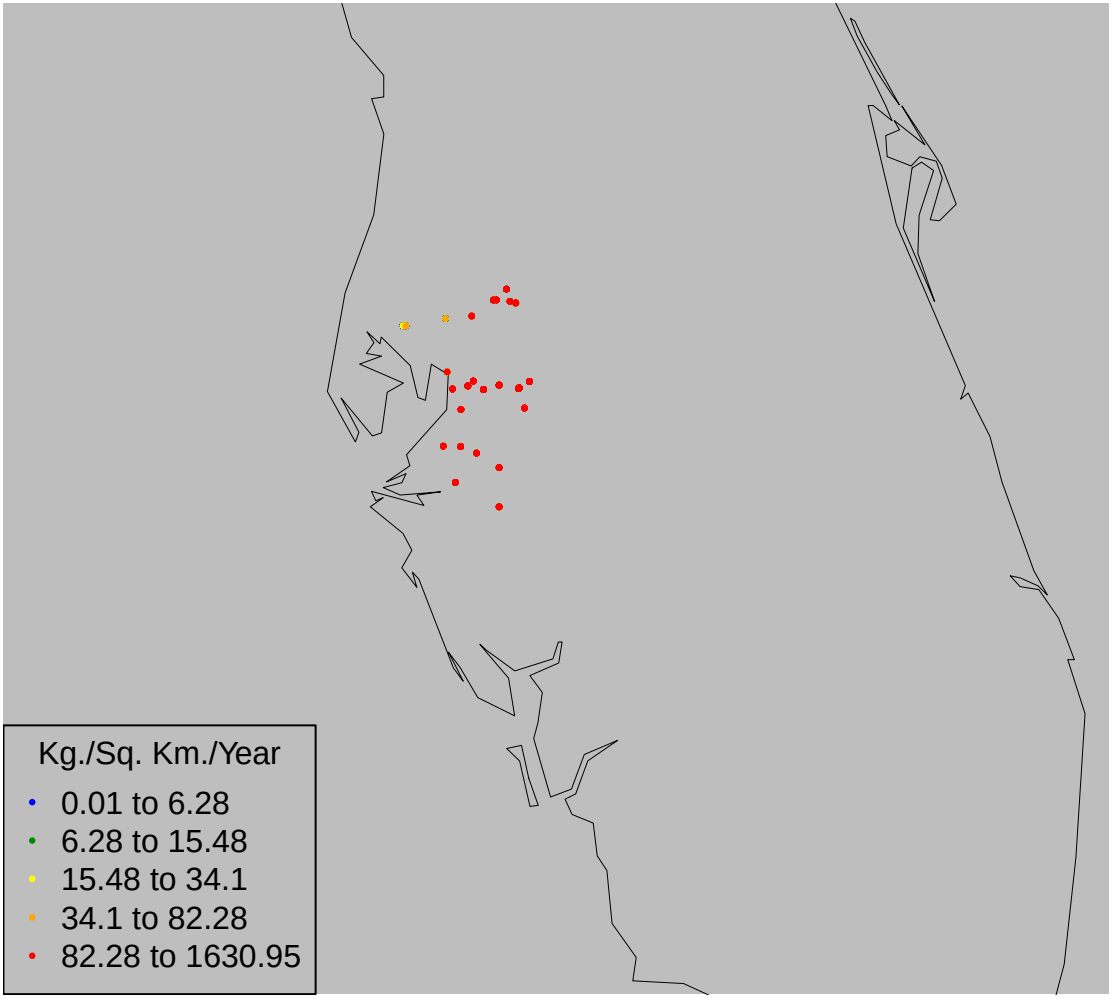
TampaBayTP_diagnostic_plots.pdf Document Contents

Calibration Site Maps for User−Selected Attributes

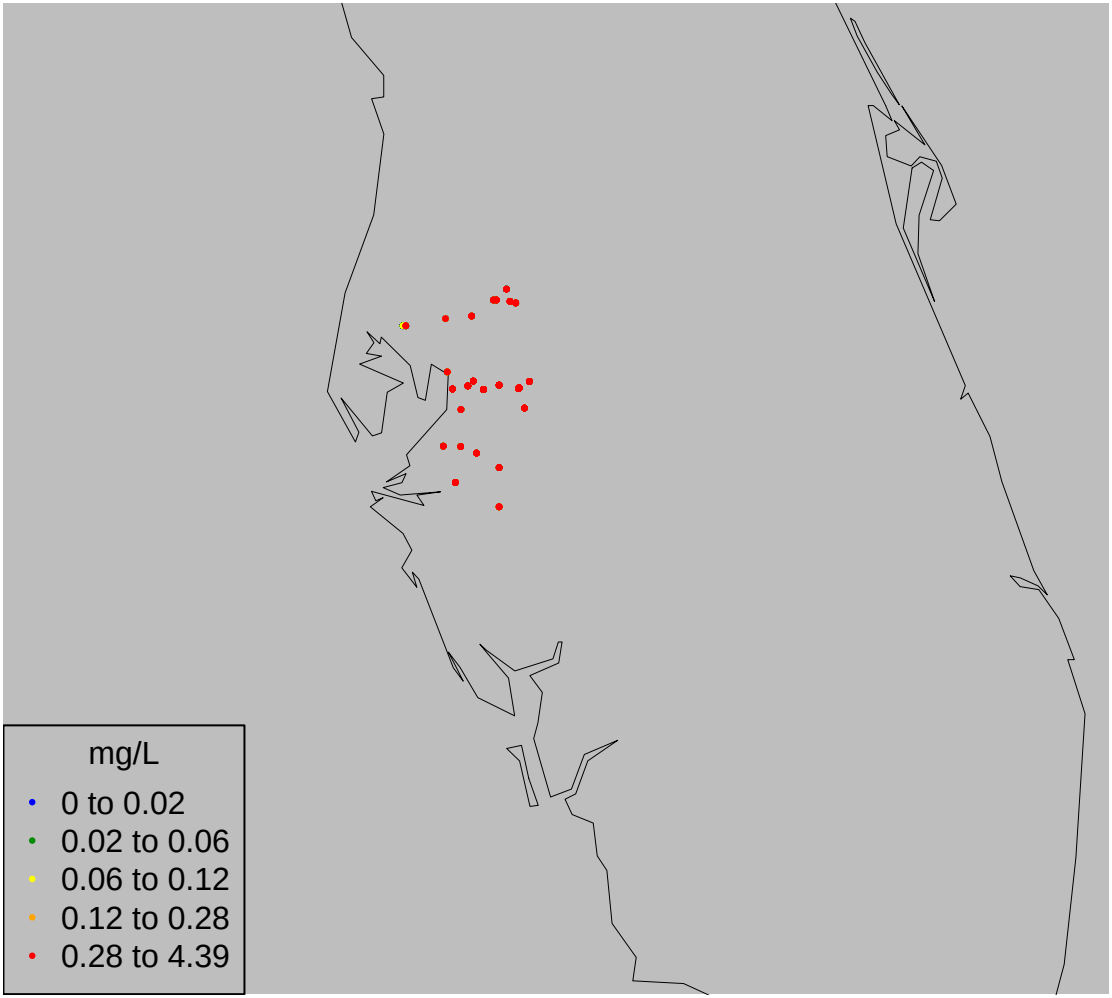
Mean Annual Load at Calibration Sites



Mean Annual Yield at Calibration Sites



Mean Annual Flow−Weighted Concentration at Calibration Sites

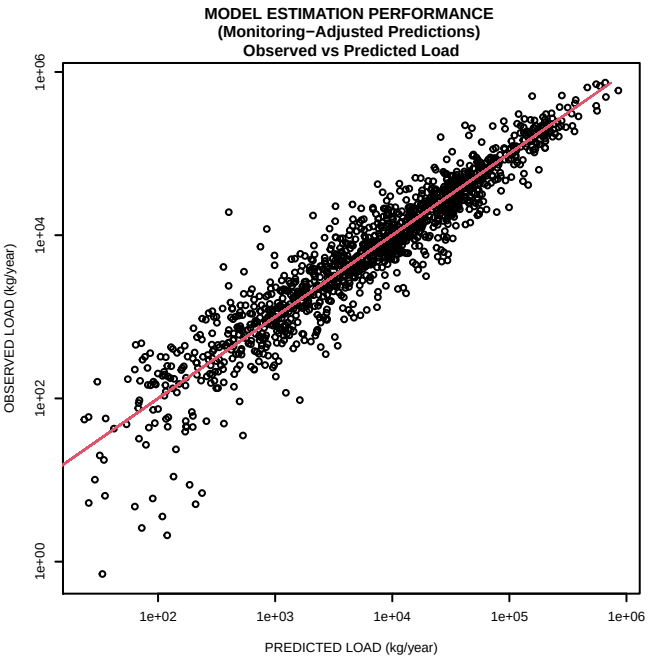


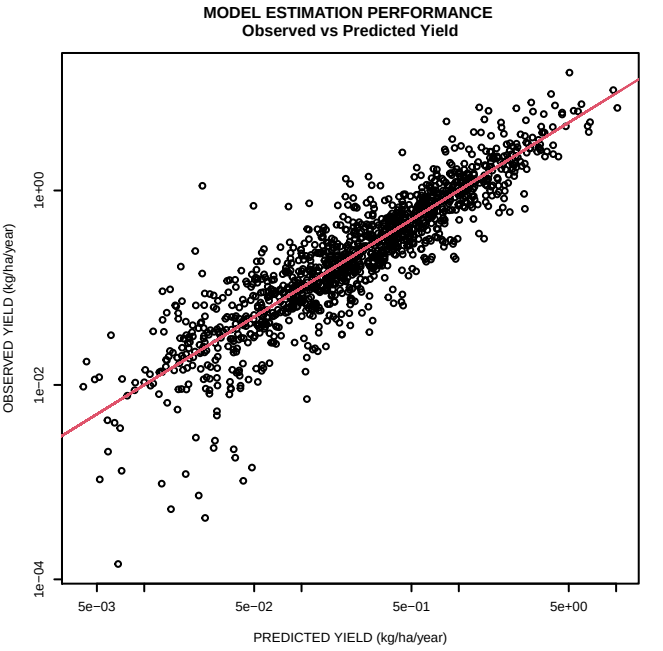
Percent Error in Mean Annual Load at Calibration Sites

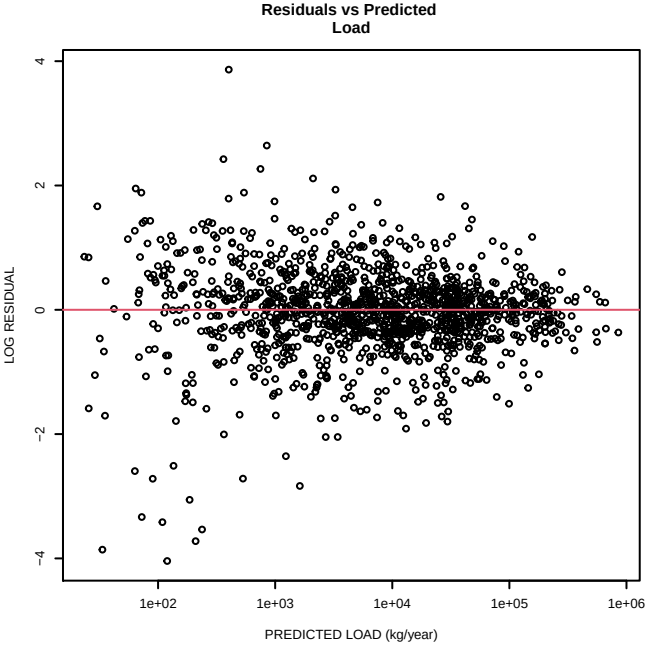
Model Estimation Performance Diagnostics

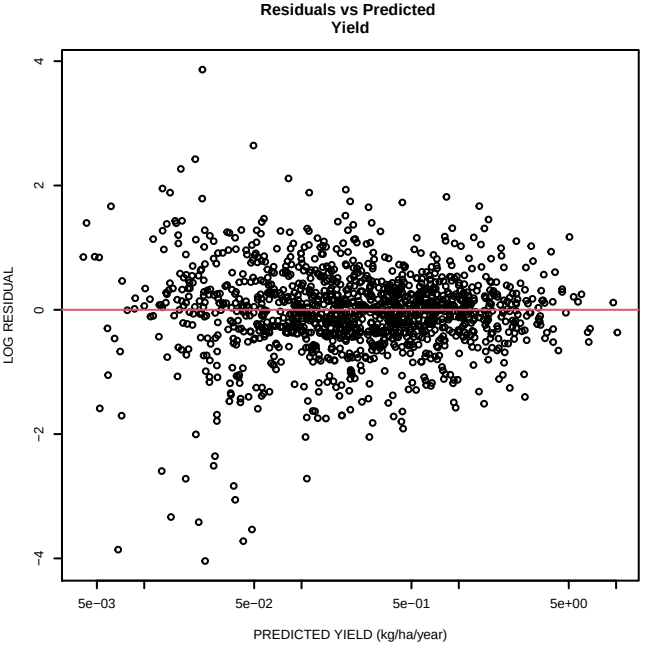
ostics are based on the use of conditioned (monitoring-adjusted) predictions. These
ctions provide the most accurate reach predictions for use in calibrating the model.
ssociated residuals and observed to predicted ratios shown in the following section
de the most relevant measures of the accuracy of the model fit to observed loads.

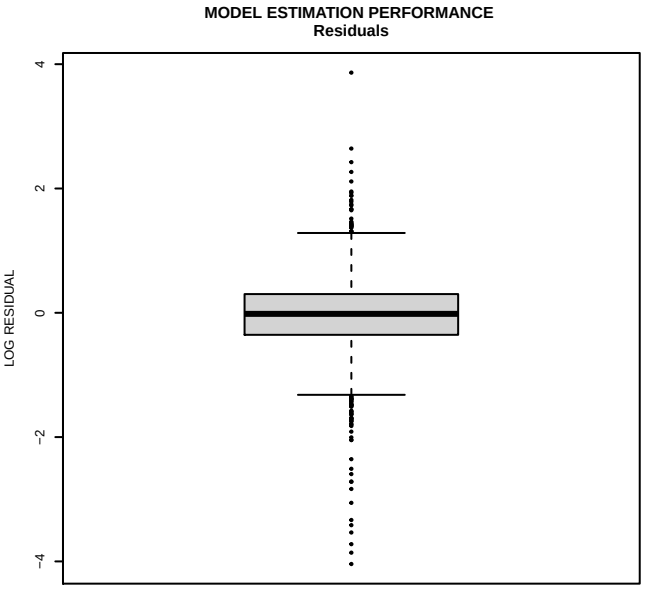
iagnostic plots include:
-plot panel for observed vs. predicted for loads and yields, and log residuals vs.
edicted loads and yields
-plot panel for boxplots of residuals and observed/predicted ratios, normal quantile
ot of standardized residuals, and plot of squared residuals vs. predicted loads
of conditioned prediction loads vs. unconditioned (simulated) prediction loads
lots of the observed to predicted loads vs. the decile classes of the total drainage
ea for the calibration sites
lots of the observed to predicted loads vs. the contiguous spatial classes specified
users in the 'classvar' control setting (e.g., HUC-4)
lots of the observed to predicted loads vs. the deciles of the land-use class variable
ecified by users in the 'class_landuse' control setting, with the land-use classes
pressed as a percentage of the incremental drainage area extending from the calibration
te to the nearest upstream site locations.
-plot panels reported separately for each of the contiguous spatial classes specified
r the first variable entry for the 'classvar[1]' control setting. The panels include:
served vs. predicted loads, observed vs. predicted yields, log residuals vs. predicted
ads, and log residuals vs. predicted yields

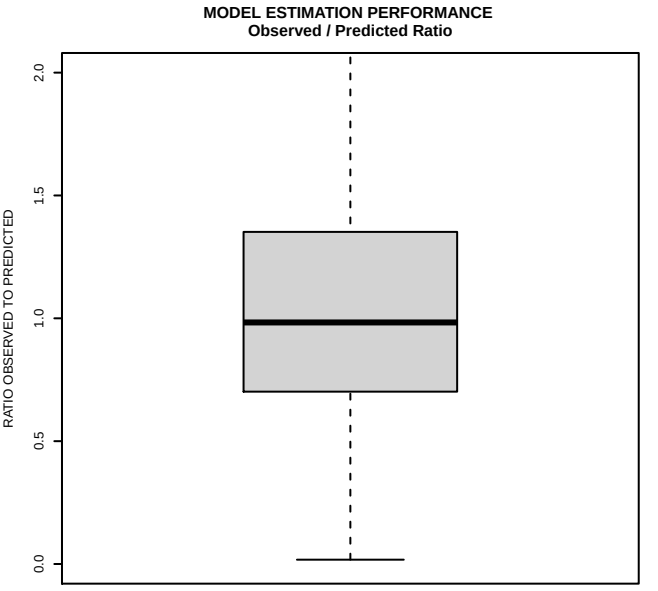

MODEL ESTIMATION PERFORMANCE
(Monitoring−Adjusted Predictions)
Observed vs Predicted Load
OBSERVED LOAD (kg/year)
1e+00
1e+02
1e+04
1e+06
1e+02
1e+03
1e+04
1e+05
1e+06
PREDICTED LOAD (kg/year)

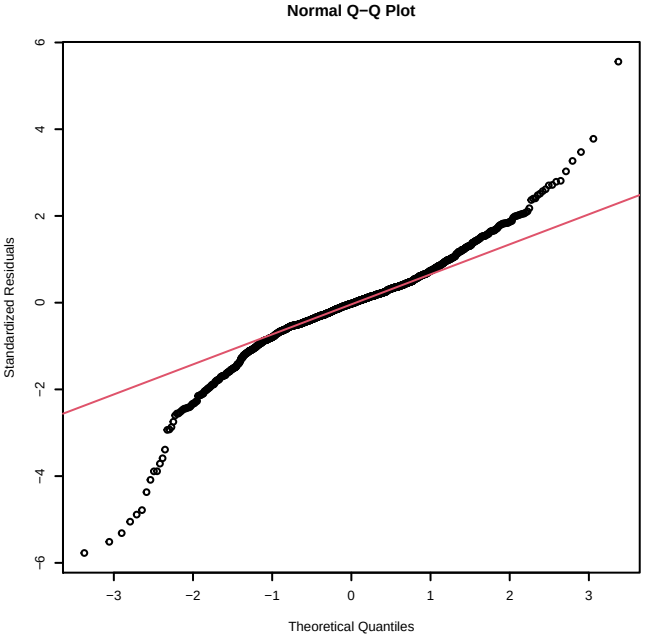

MODEL ESTIMATION PERFORMANCE
Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
1e−04
1e−02
1e+00
5e−03
5e−02
5e−01
5e+00
PREDICTED YIELD (kg/ha/year)

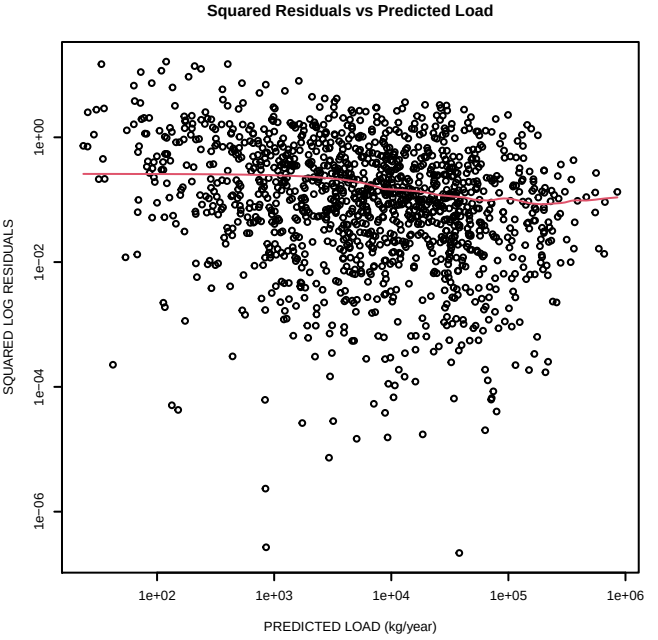

Residuals vs Predicted
Load
LOG RESIDUAL
−4
−2
0
2
4
1e+02
1e+03
1e+04
1e+05
1e+06
PREDICTED LOAD (kg/year)

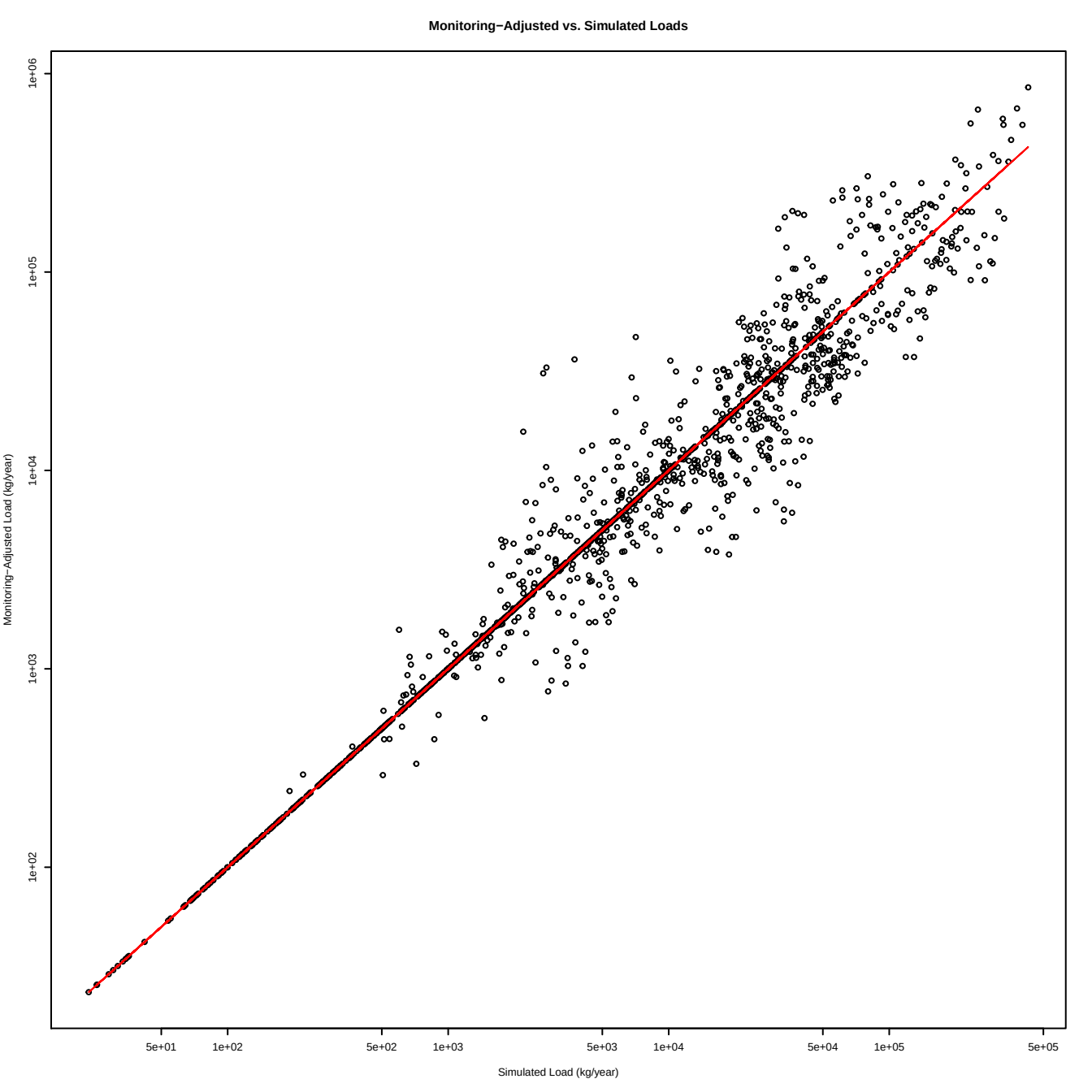

Residuals vs Predicted
Yield
LOG RESIDUAL
−4
−2
0
2
4
5e−03
5e−02
5e−01
5e+00
PREDICTED YIELD (kg/ha/year)

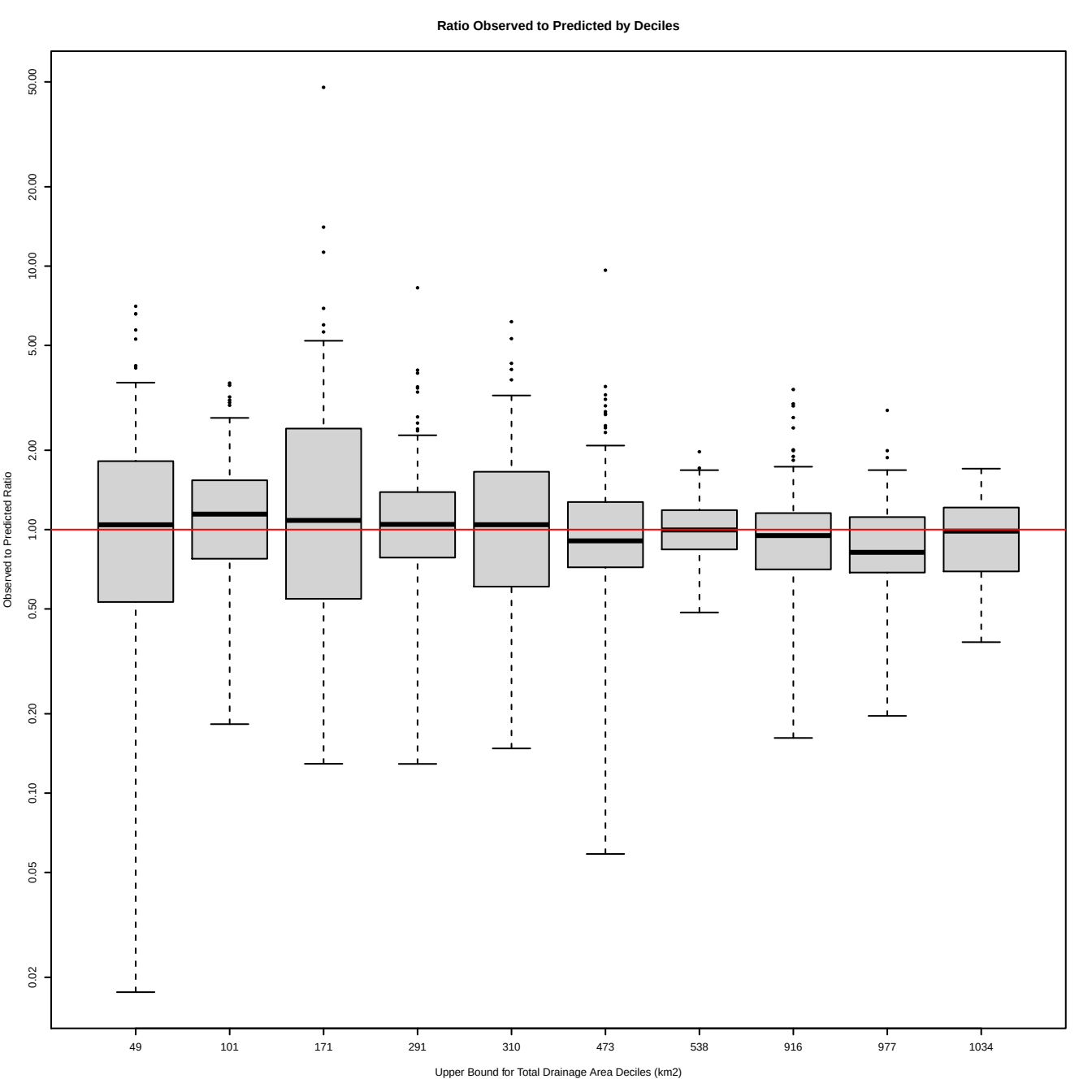

MODEL ESTIMATION PERFORMANCE
Residuals
LOG RESIDUAL
4
2
0
−2
−4


MODEL ESTIMATION PERFORMANCE
Observed / Predicted Ratio
RATIO OBSERVED TO PREDICTED
2.0
1.5
1.0
0.5
0.0

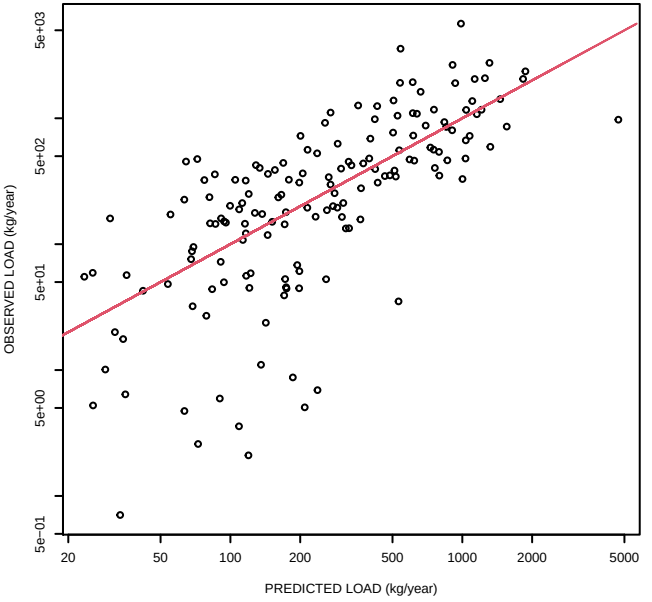

Normal Q−Q Plot
Standardized Residuals
Theoretical Quantiles
6
4
2
0
−2
−4
−6
−3
−2
−1
0
1
2
3


Squared Residuals vs Predicted Load
SQUARED LOG RESIDUALS
PREDICTED LOAD (kg/year)
1e+00
1e−02
1e−04
1e−06
1e+02
1e+03
1e+04
1e+05
1e+06

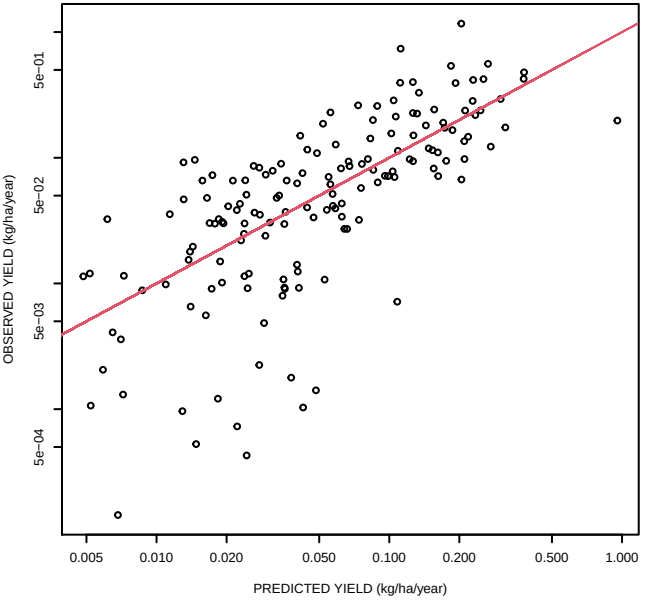

Monitoring−Adjusted vs. Simulated Loads
Monitoring−Adjusted Load (kg/year)
1e+02
1e+03
1e+04
1e+05
1e+06
5e+01
1e+02
5e+02
1e+03
5e+03
1e+04
5e+04
1e+05
5e+05
Simulated Load (kg/year)


Ratio Observed to Predicted by Deciles
Observed to Predicted Ratio
50.00
20.00
10.00
5.00
2.00
1.00
0.50
0.20
0.10
0.05
0.02
49
101
171
291
310
473
538
916
977
1034
Upper Bound for Total Drainage Area Deciles (km2)

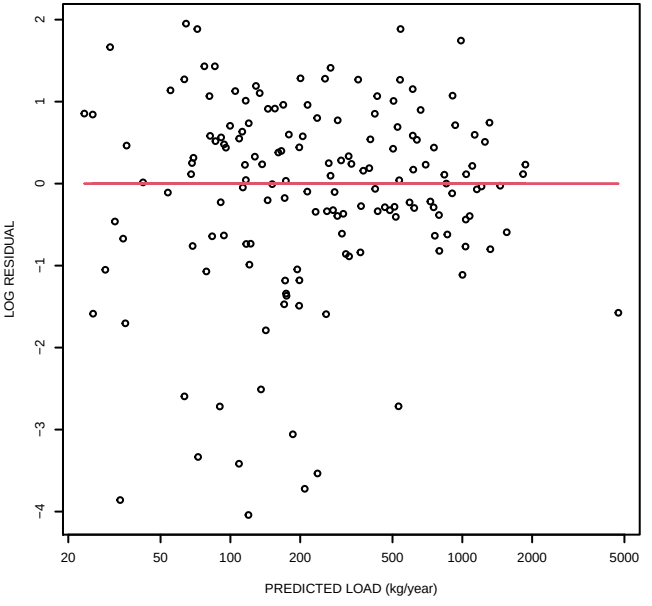
Observed vs Predicted Load
CLASS Region = 49(n=158)



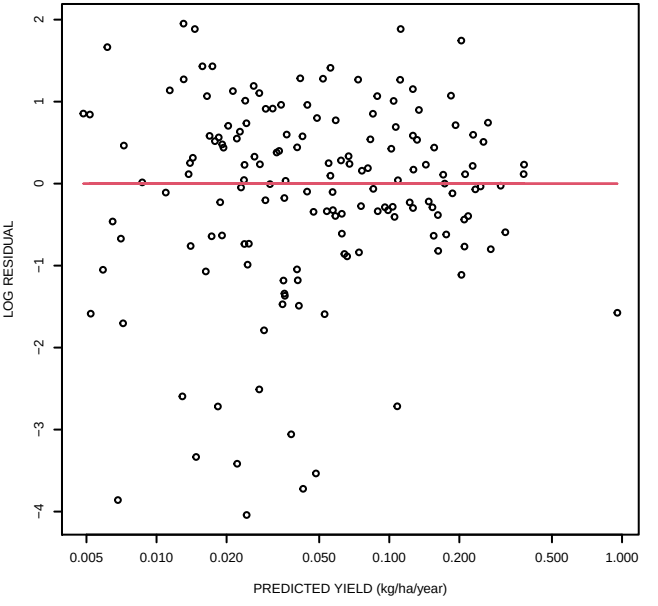
Observed vs Predicted Yield

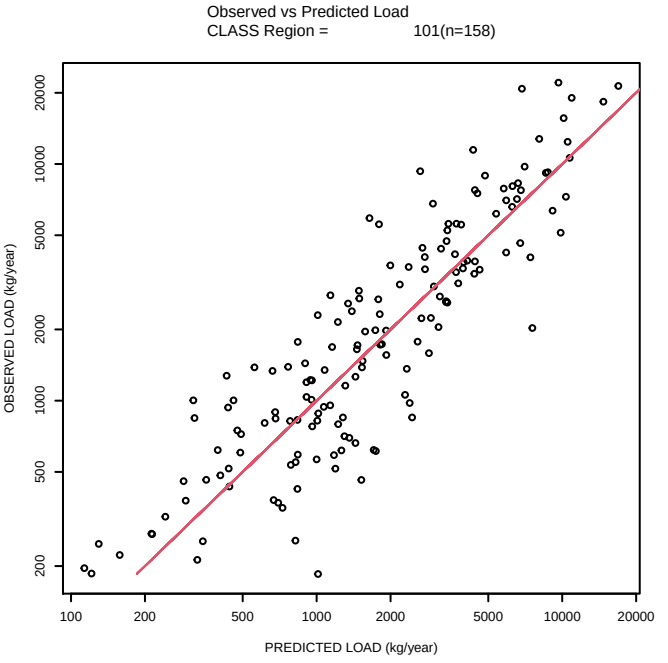


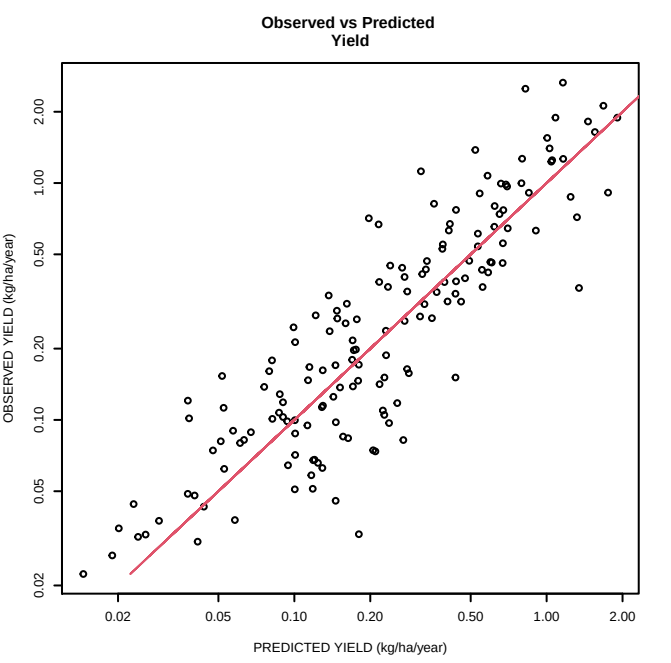
Residuals vs Predicted Load

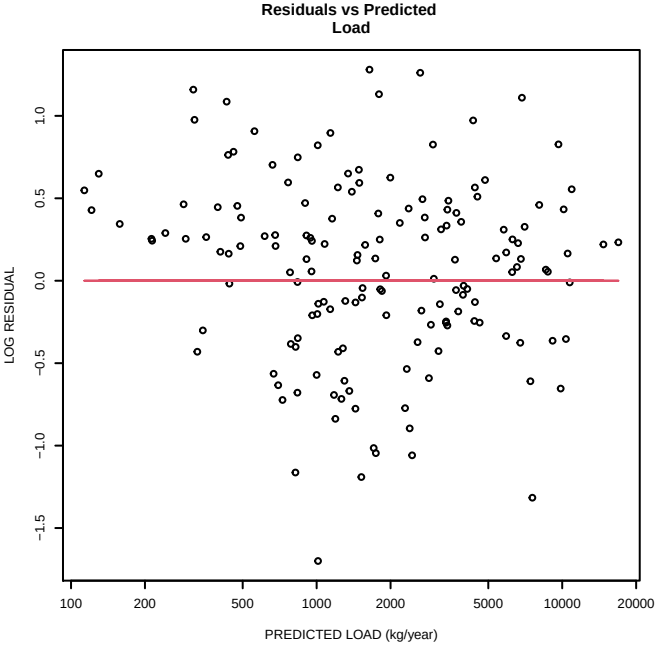


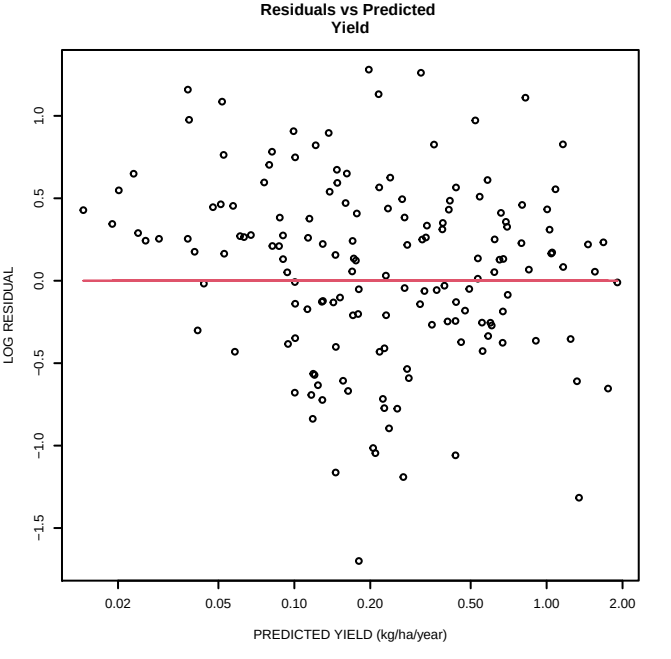
Residuals vs Predicted Yield

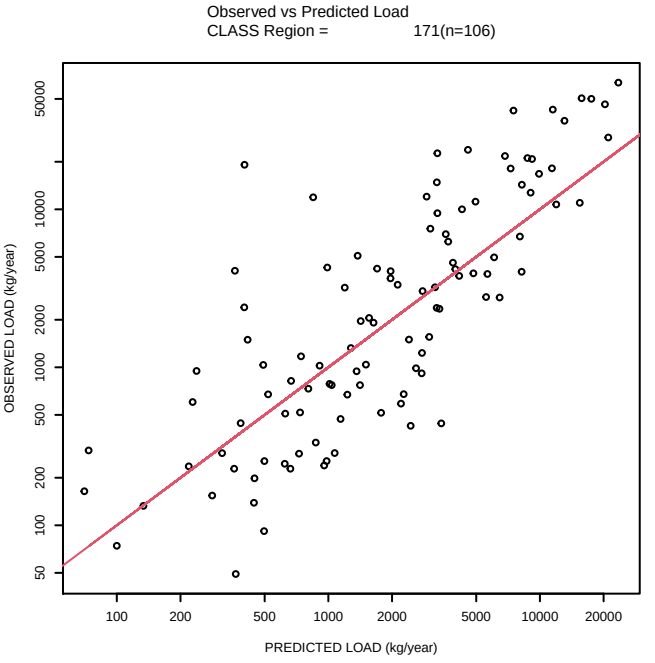


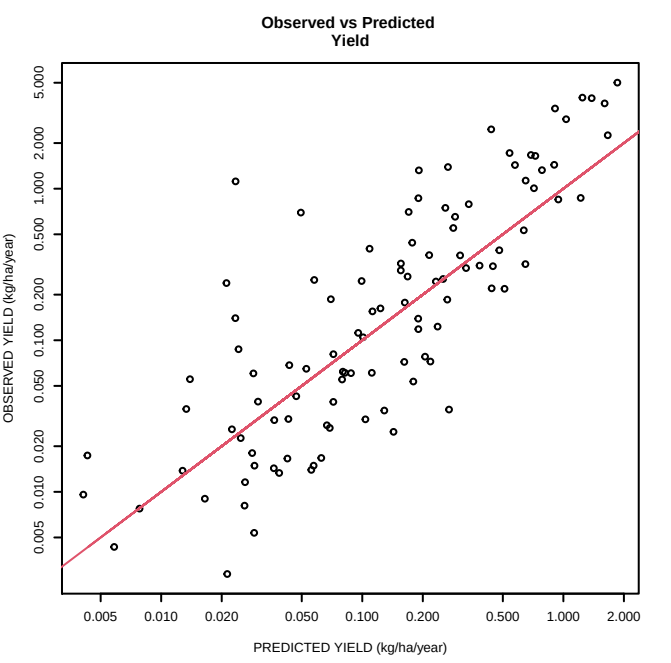

Observed vs Predicted Load
CLASS Region = 101(n=158)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
200
500
1000
2000
5000
10000
20000
100

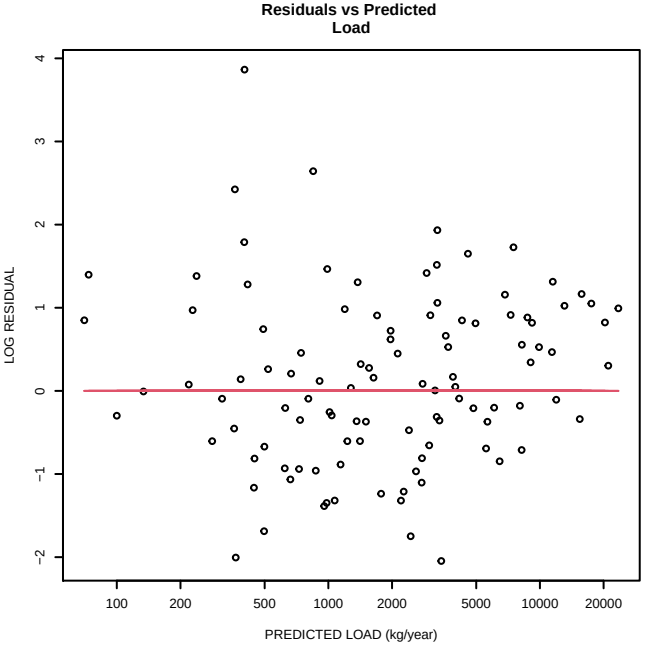

Observed vs Predicted
Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.02
0.05
0.10
0.20
0.50
1.00
2.00

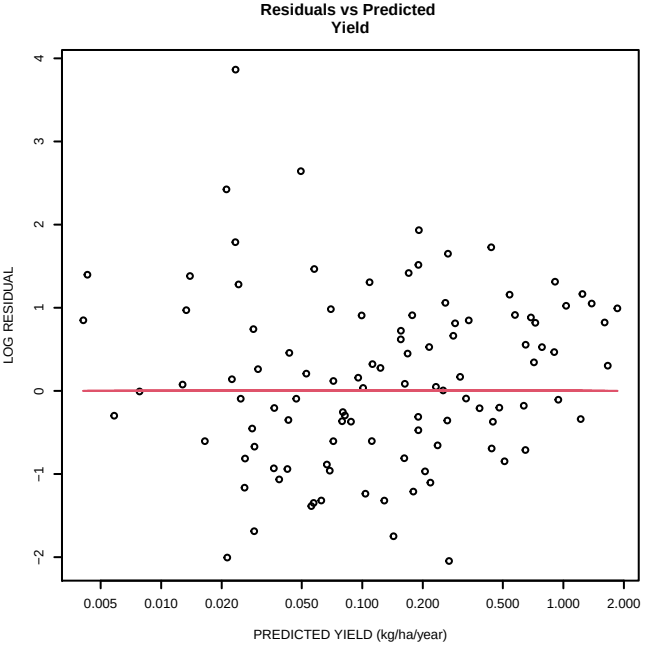

Residuals vs Predicted
Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
100
200
500
1000
2000
5000
10000
20000

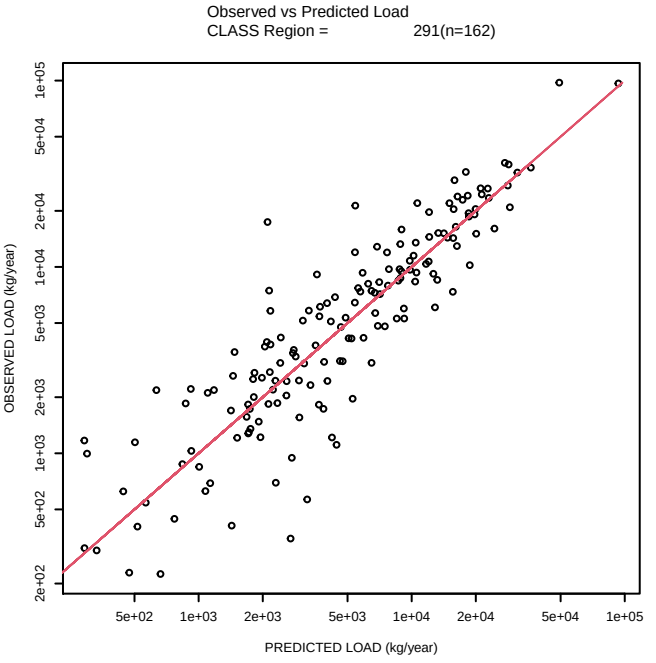

Residuals vs Predicted
Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
0.02
0.05
0.10
0.20
0.50
1.00
2.00

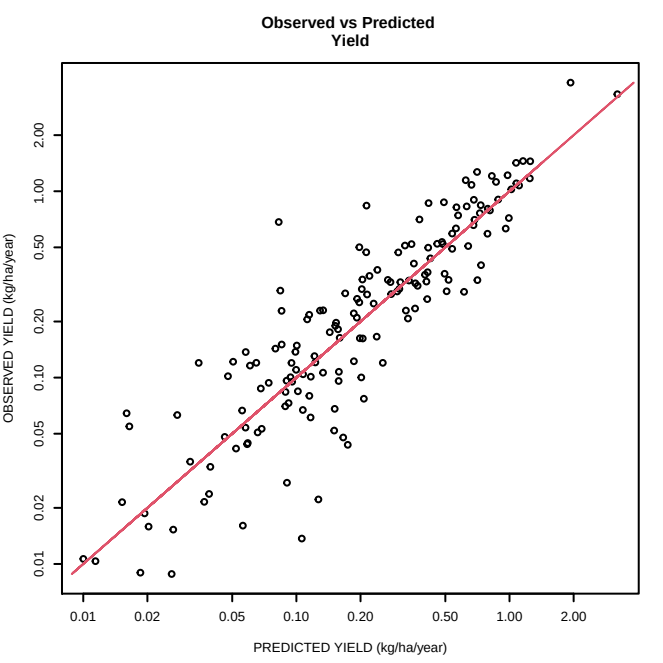

Observed vs Predicted Load
CLASS Region = 171(n=106)
OBSERVED LOAD (kg/year)
50
100
200
500
1000
2000
5000
10000
50000
PREDICTED LOAD (kg/year)
100
200
500
1000
2000
5000
10000
20000

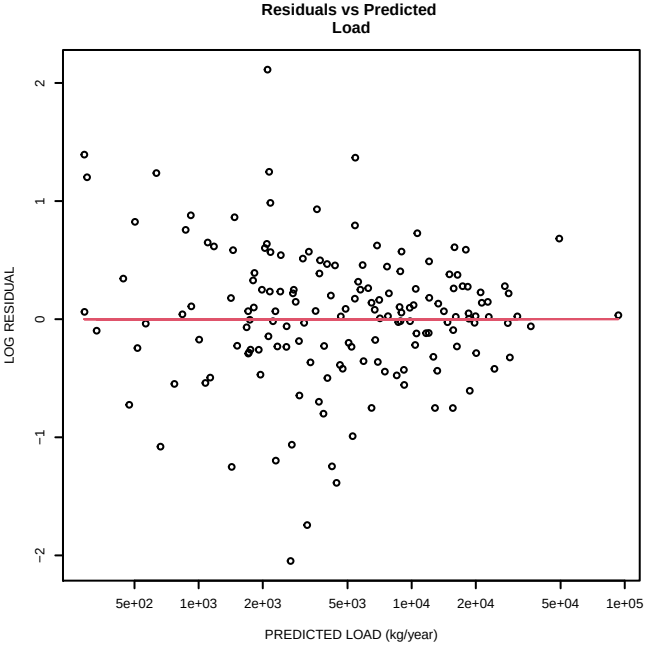

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000
5.000
PREDICTED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000

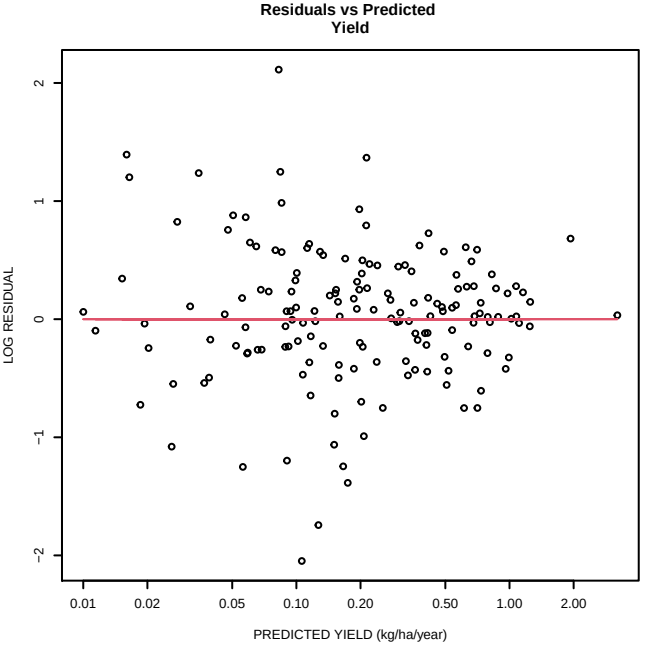

Residuals vs Predicted Load
LOG RESIDUAL
−2
−1
0
1
2
3
4
PREDICTED LOAD (kg/year)
100
200
500
1000
2000
5000
10000
20000


Residuals vs Predicted Yield
LOG RESIDUAL
−2
−1
0
1
2
3
4
PREDICTED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000

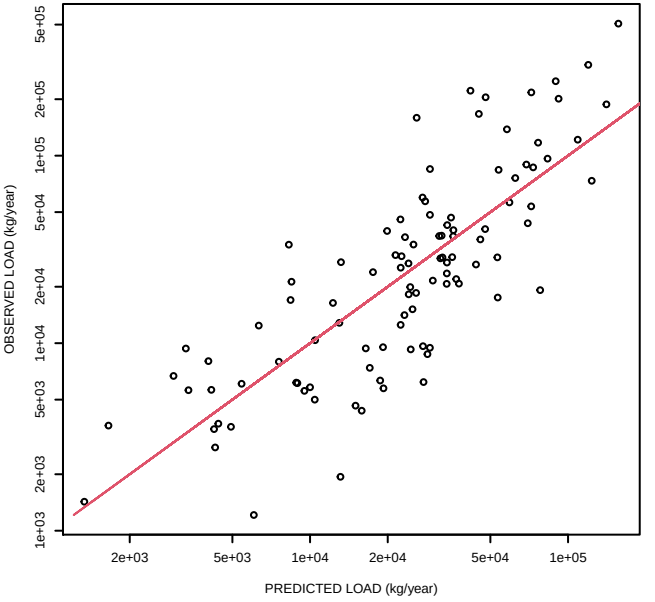

Observed vs Predicted Load
CLASS Region = 291(n=162)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
2e+02
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05


Observed vs Predicted
Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00

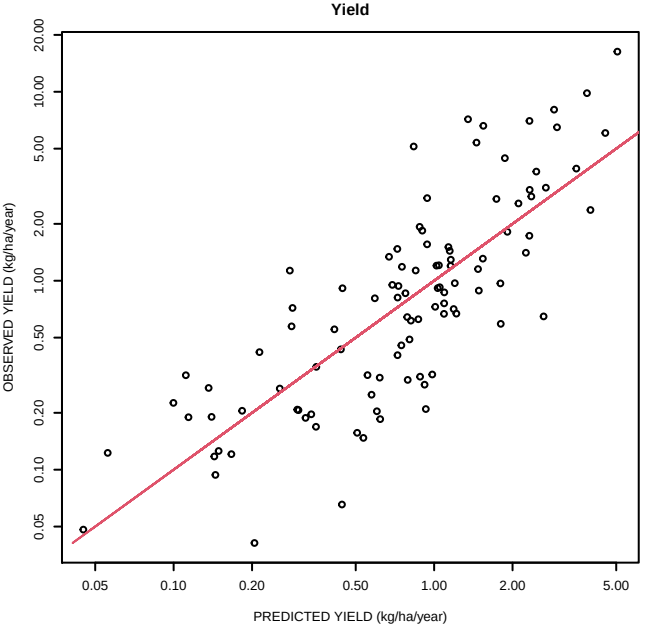

Residuals vs Predicted
Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−2
−1
0
1
2
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05


Residuals vs Predicted
Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−2
−1
0
1
2
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00

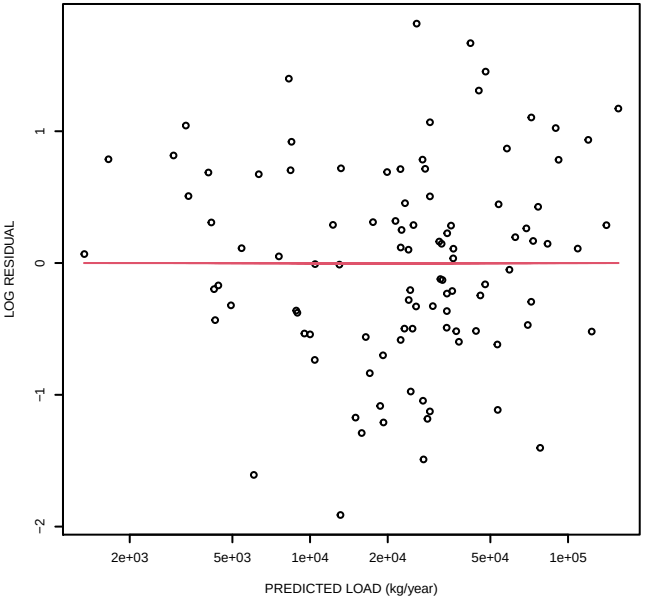
Observed vs Predicted Load
CLASS Region = 310(n=102)



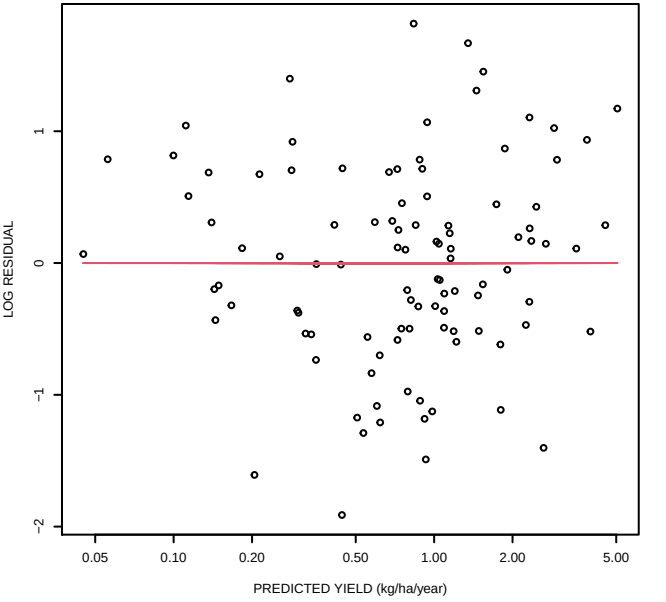
Observed vs Predicted Yield

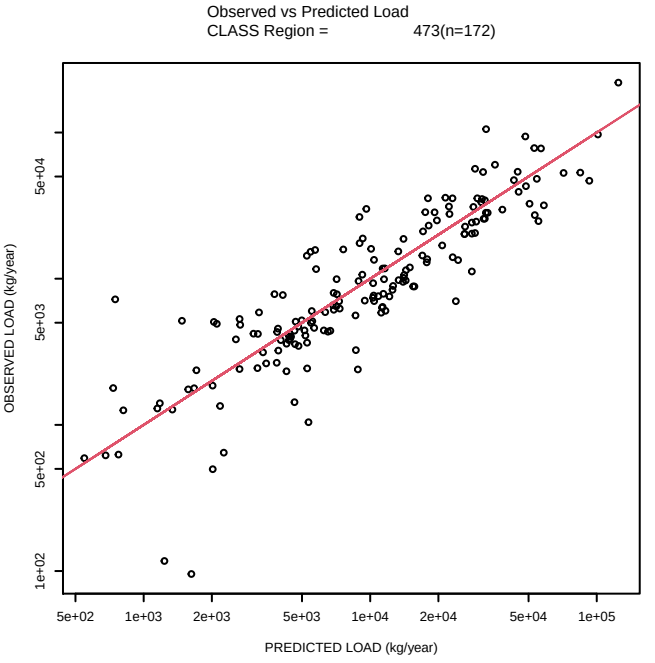


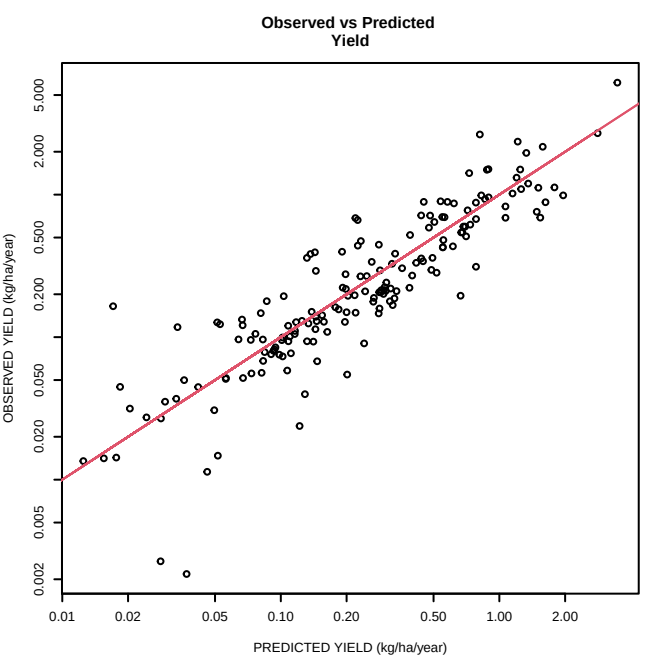
Residuals vs Predicted Load

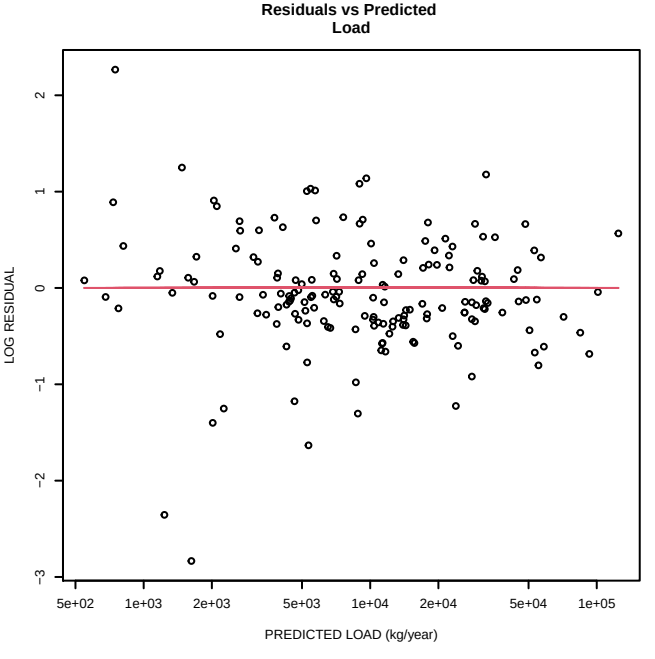


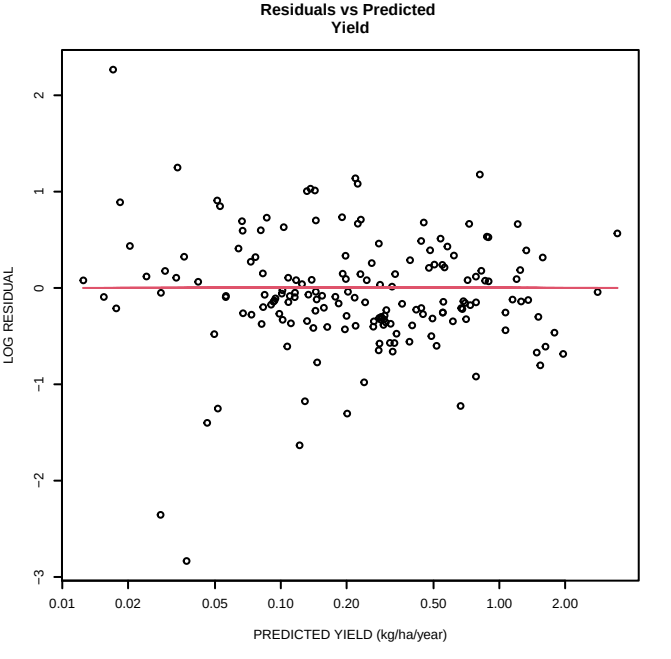
Residuals vs Predicted Yield

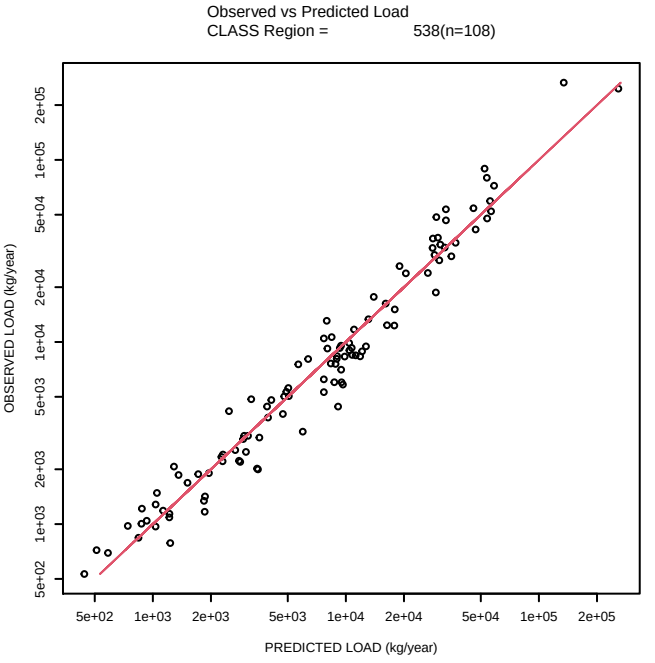


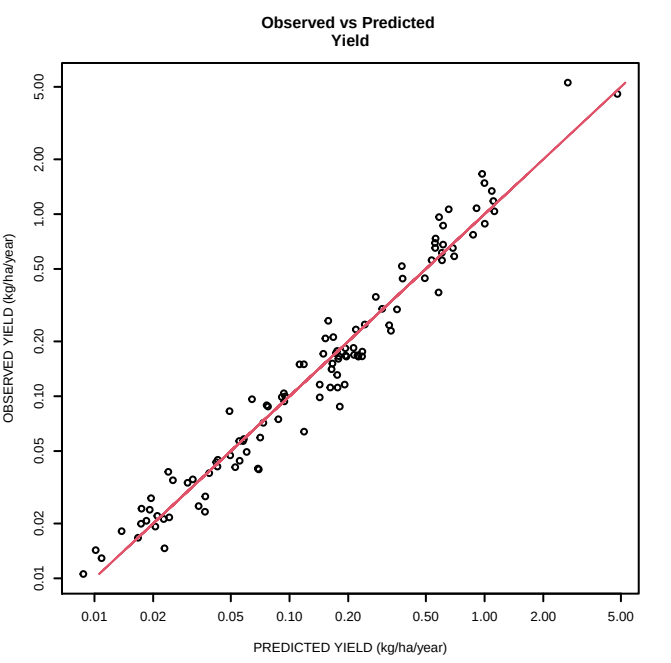

Observed vs Predicted Load
CLASS Region = 473(n=172)
OBSERVED LOAD (kg/year)
1e+02
5e+02
5e+03
5e+04
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
PREDICTED LOAD (kg/year)

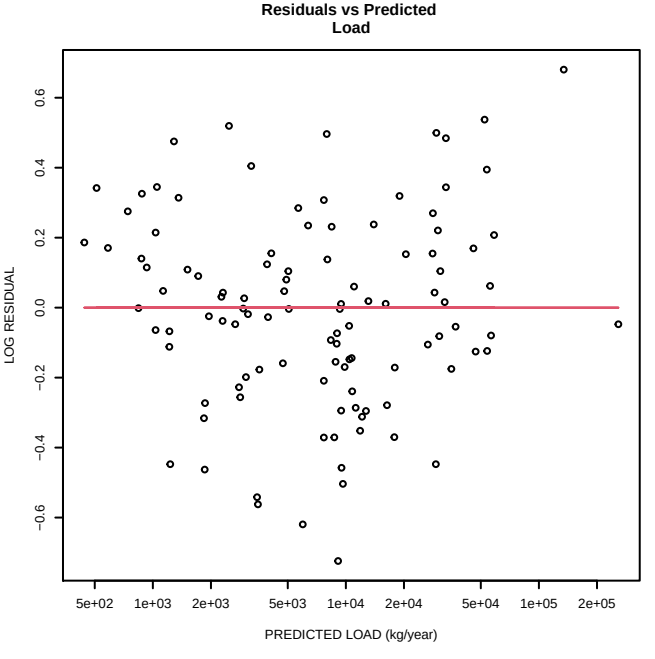

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
0.002
0.005
0.020
0.050
0.200
0.500
2.000
5.000
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
PREDICTED YIELD (kg/ha/year)

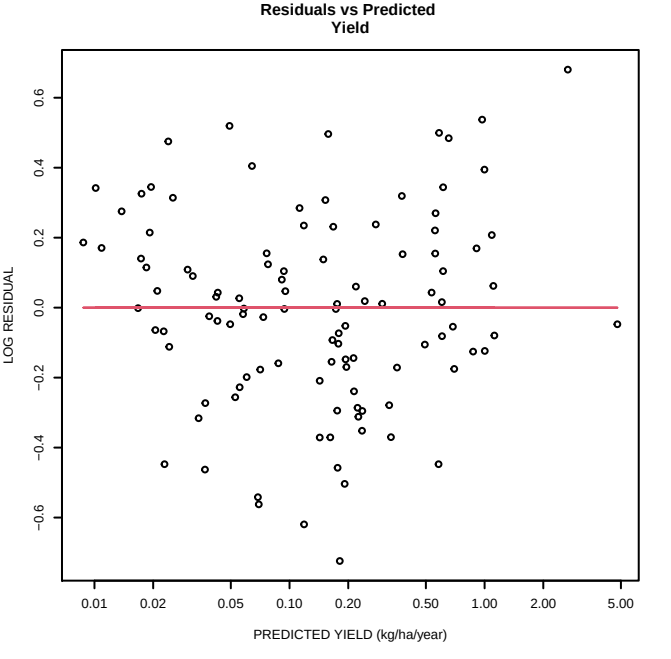

Residuals vs Predicted Load
LOG RESIDUAL
−3
−2
−1
0
1
2
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
PREDICTED LOAD (kg/year)

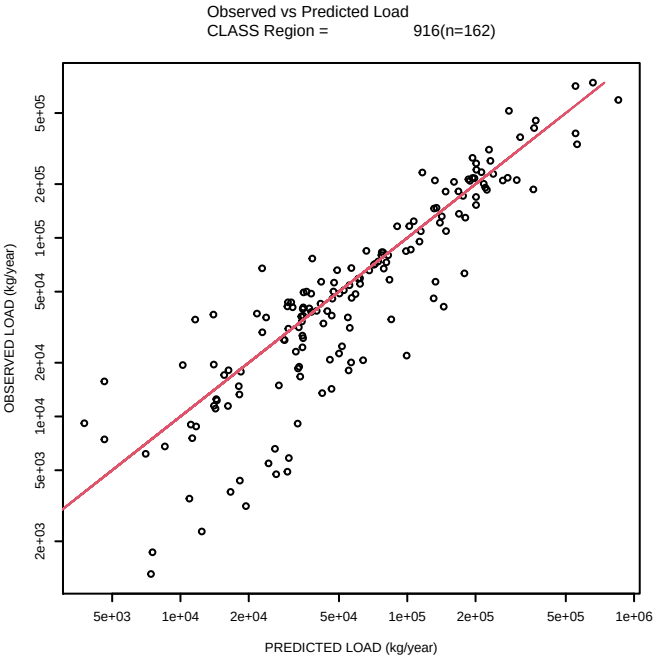

Residuals vs Predicted Yield
LOG RESIDUAL
−3
−2
−1
0
1
2
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
PREDICTED YIELD (kg/ha/year)

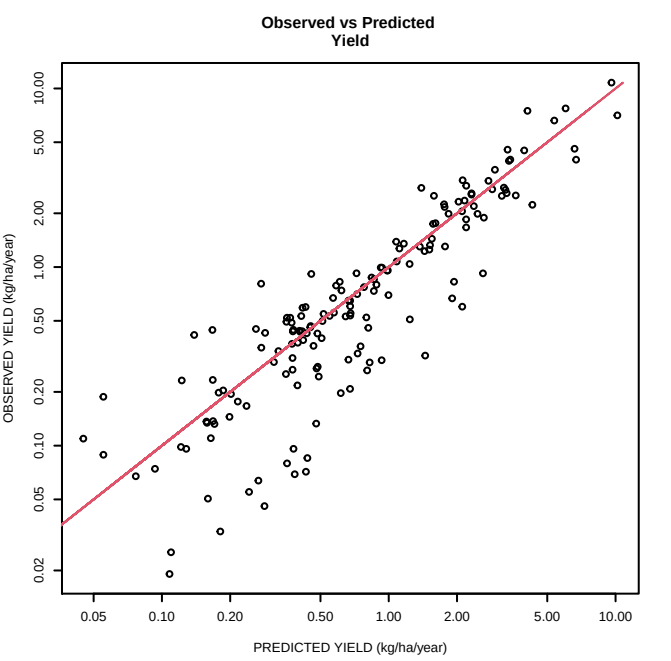

Observed vs Predicted Load
CLASS Region = 538(n=108)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05

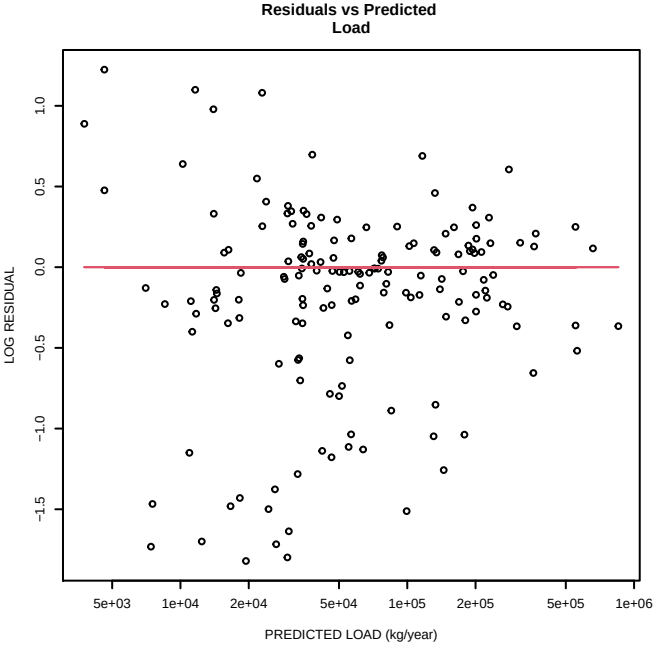

Observed vs Predicted
Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00

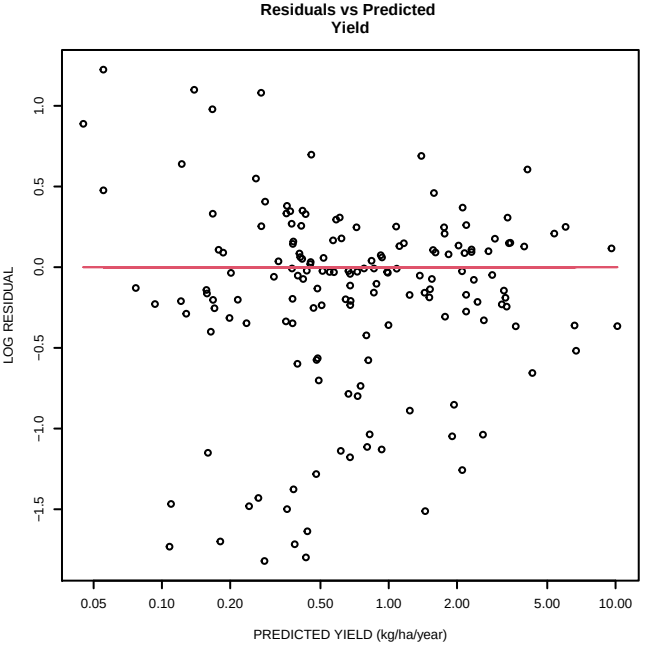

Residuals vs Predicted
Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−0.6
−0.4
−0.2
0.0
0.2
0.4
0.6
5e+02
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05

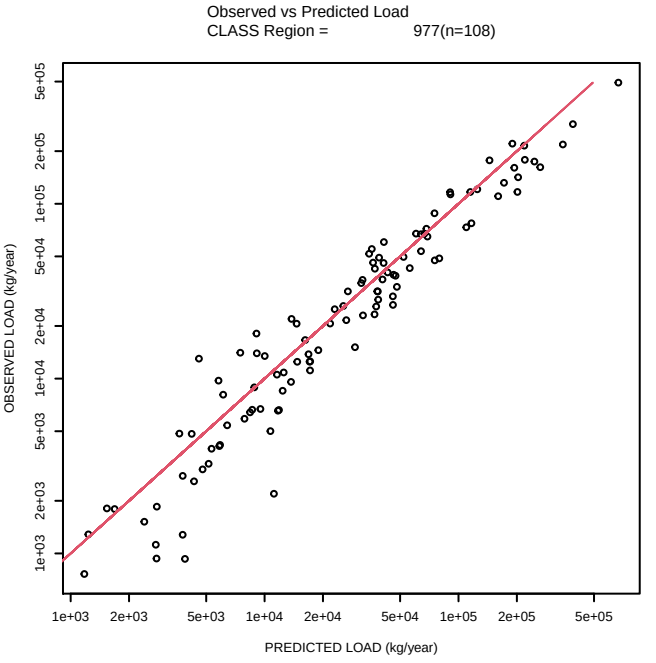

Residuals vs Predicted
Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−0.6
−0.4
−0.2
0.0
0.2
0.4
0.6
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00

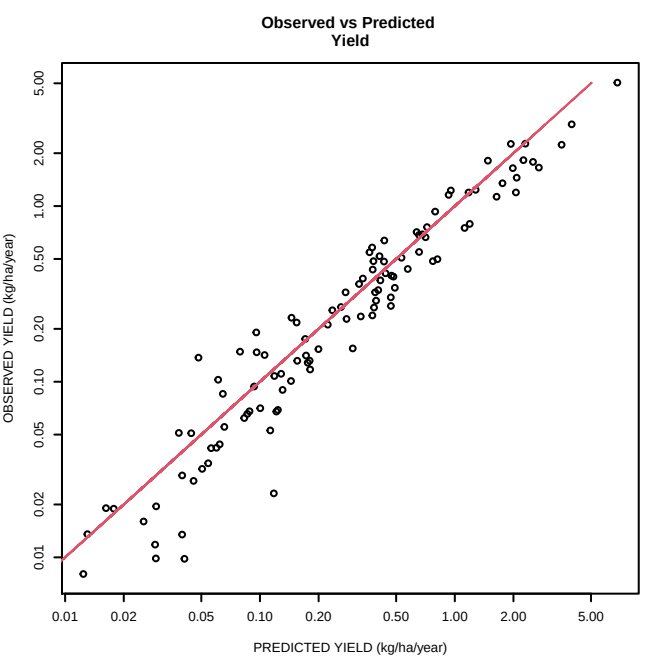

Observed vs Predicted Load
CLASS Region = 916(n=162)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
1e+06

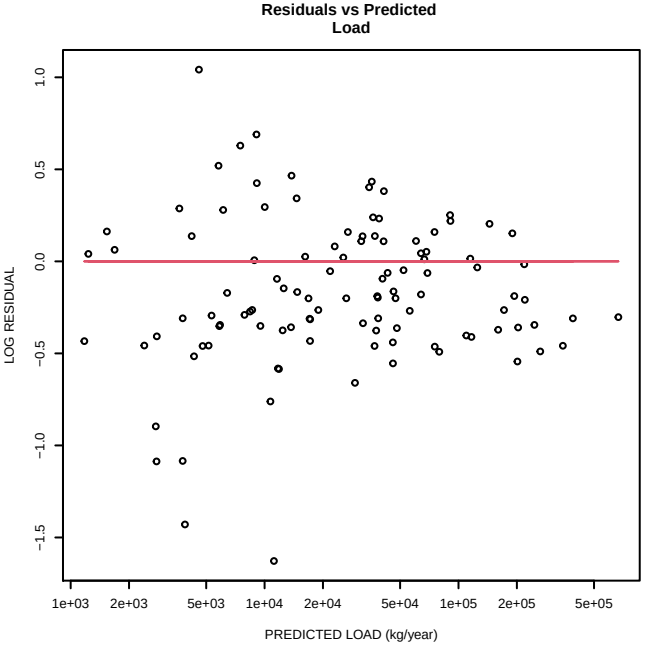

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00
10.00

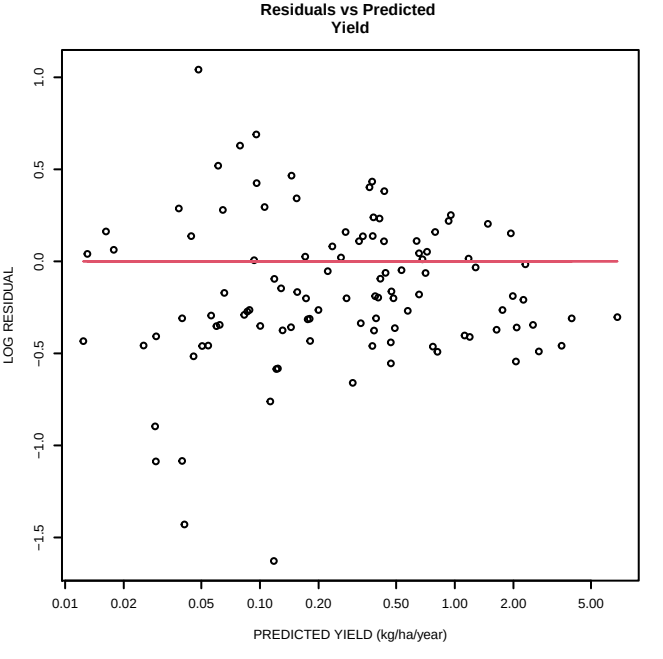

Residuals vs Predicted Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
1e+06

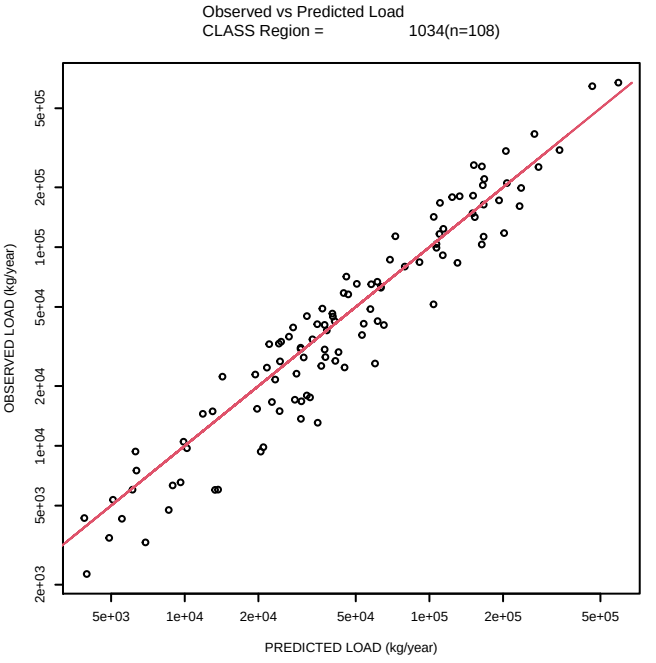

Residuals vs Predicted Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
0.05
0.10
0.20
0.50
1.00
2.00
5.00
10.00

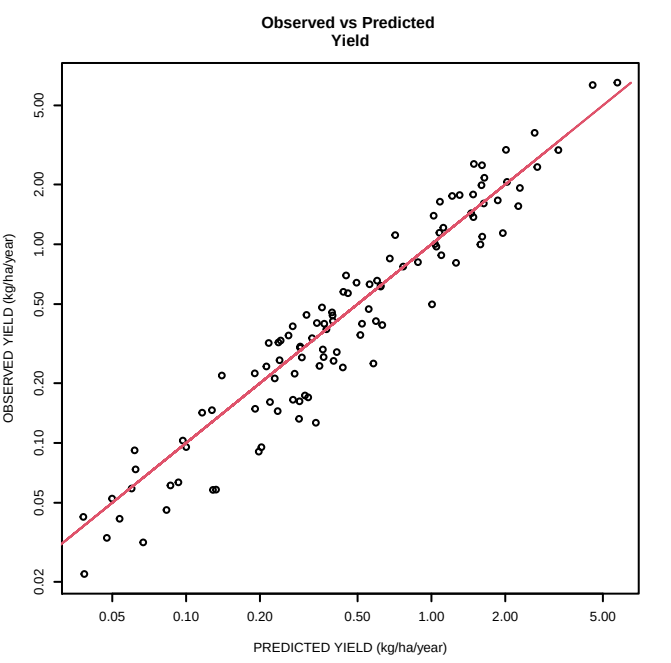

Observed vs Predicted Load
CLASS Region = 977(n=108)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05

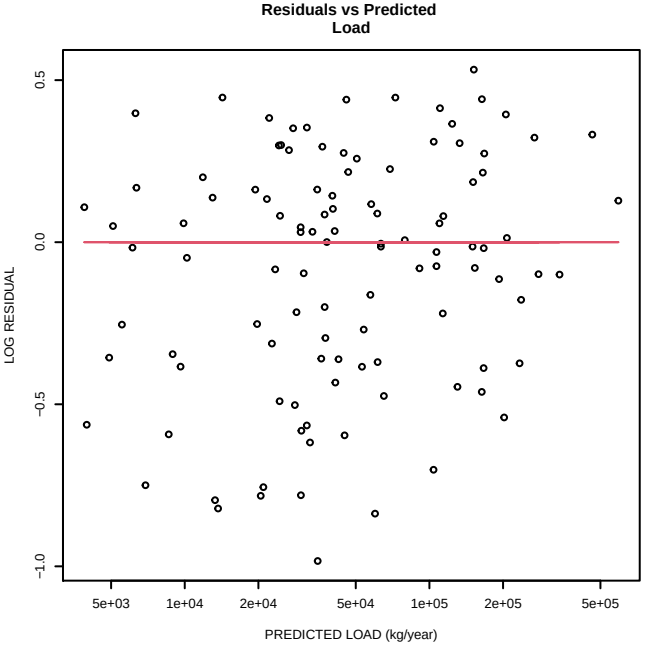

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00

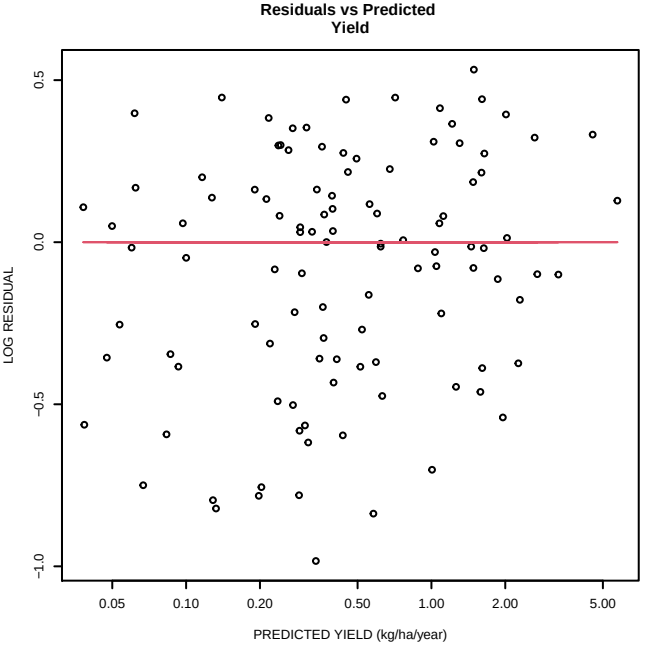

Residuals vs Predicted Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
−1.5
−1.0
−0.5
0.0
0.5
1.0


Residuals vs Predicted Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00
−1.5
−1.0
−0.5
0.0
0.5
1.0


Observed vs Predicted Load
CLASS Region = 1034(n=108)
OBSERVED LOAD (kg/year)
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
PREDICTED LOAD (kg/year)


Observed vs Predicted
Yield
OBSERVED YIELD (kg/ha/year)
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00
PREDICTED YIELD (kg/ha/year)

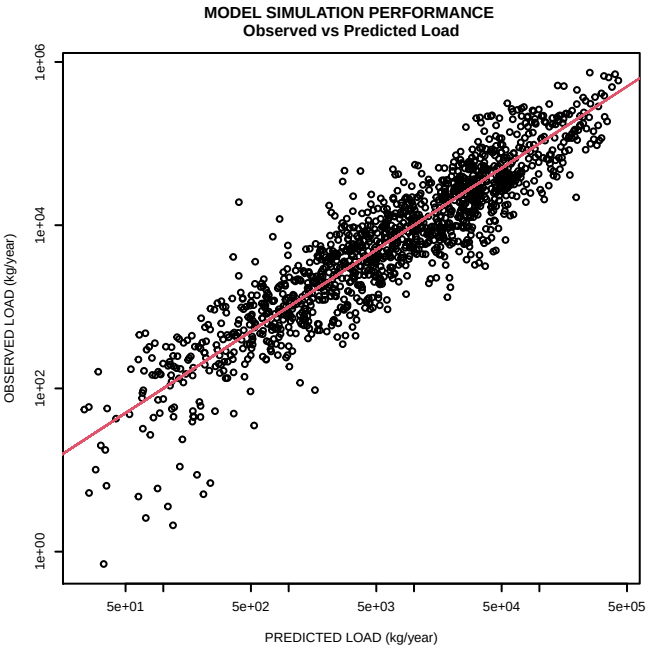

Residuals vs Predicted
Load
LOG RESIDUAL
−1.0
−0.5
0.0
0.5
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05
PREDICTED LOAD (kg/year)

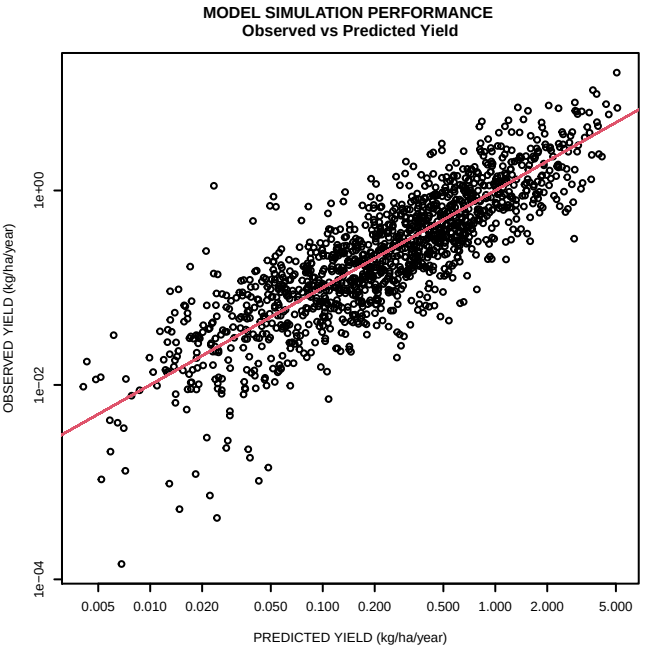

Residuals vs Predicted
Yield
LOG RESIDUAL
−1.0
−0.5
0.0
0.5
0.05
0.10
0.20
0.50
1.00
2.00
5.00
PREDICTED YIELD (kg/ha/year)

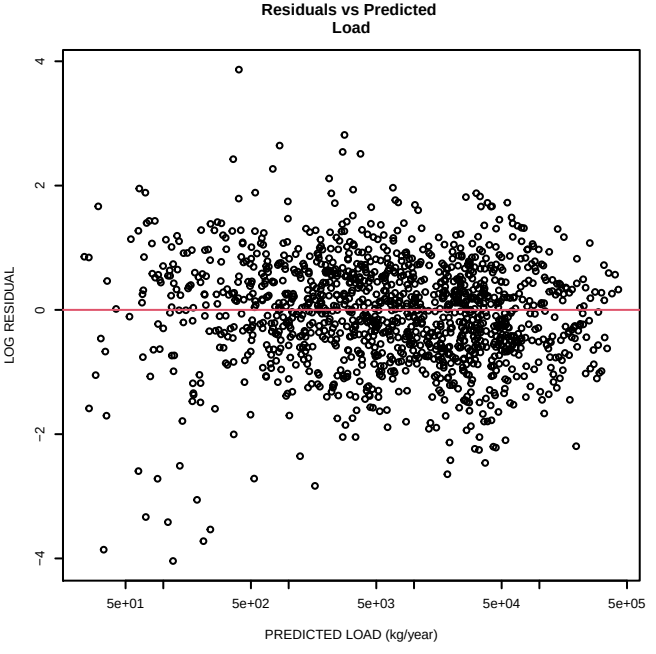
Model Simulation Performance Diagnostics

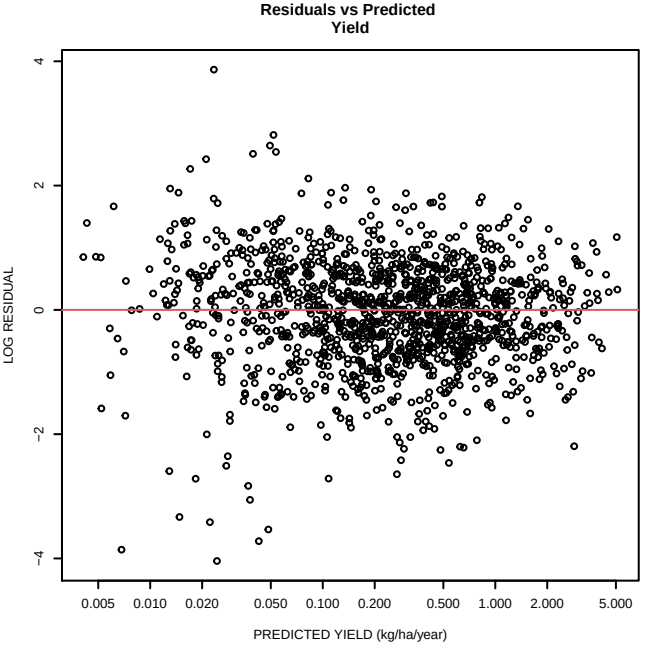
ostics are based on the use of unconditioned predictions (i.e., predictions
are not adjusted for monitoring loads). These predictions (and the associated
uals and observed to predicted ratios shown in the following section) provide
est measure of the predictive skill of the estimated model in simulation mode.
imulated predictions are computed using mean coefficients from the NLLS model
ated with monitoring−adjusted (conditioned) predictions.

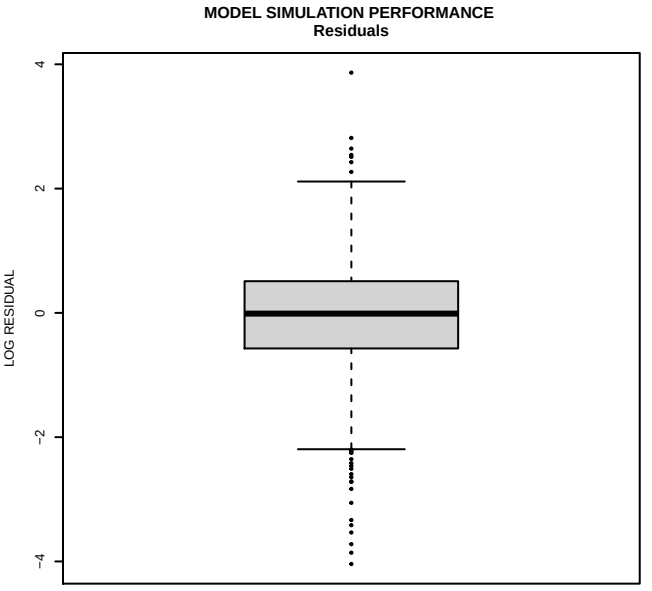
iagnostic plots include:
−plot panel for observed vs. predicted for loads and yields, and log residuals vs.
edicted loads and yields
−plot panel for boxplots of residuals and observed/predicted ratios, normal quantile
ot of standardized residuals, and plot of squared residuals vs. predicted loads
 of conditioned prediction loads vs. unconditioned (simulated) prediction loads
lots of the observed to predicted loads vs. the decile classes of the total drainage
ea for the calibration sites
lots of the observed to predicted loads vs. the contiguous spatial classes specified
 users in the 'classvar' control setting (e.g., HUC−4)
lots of the observed to predicted loads vs. the deciles of the land−use class variable
ecified by users in the 'class_landuse' control setting, with the land−use classes
pressed as a percentage of the incremental drainage area extending from the calibration
te to the nearest upstream site locations.
−plot panels reported separately for each of the contiguous spatial classes specified
r the first variable entry for the 'classvar[1]' control setting. The panels include:
served vs. predicted loads, observed vs. predicted yields, log residuals vs. predicted
ads, and log residuals vs. predicted yields

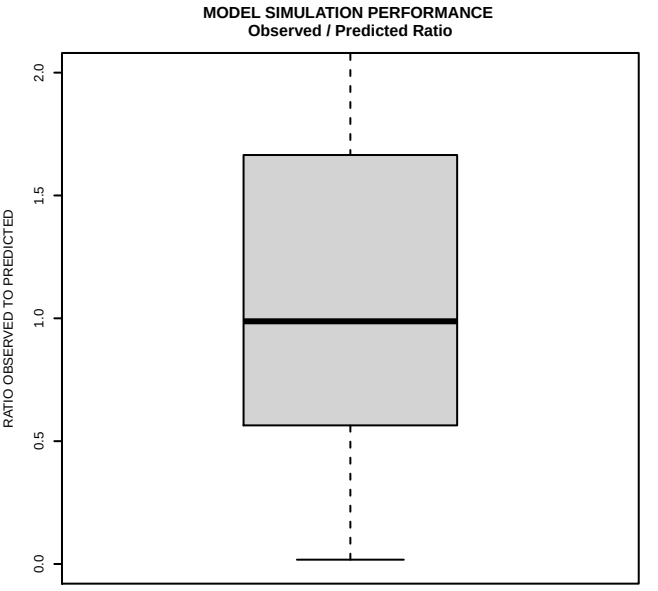

MODEL SIMULATION PERFORMANCE
Observed vs Predicted Load
OBSERVED LOAD (kg/year)
1e+00
1e+02
1e+04
1e+06
5e+01
5e+02
5e+03
5e+04
5e+05
PREDICTED LOAD (kg/year)

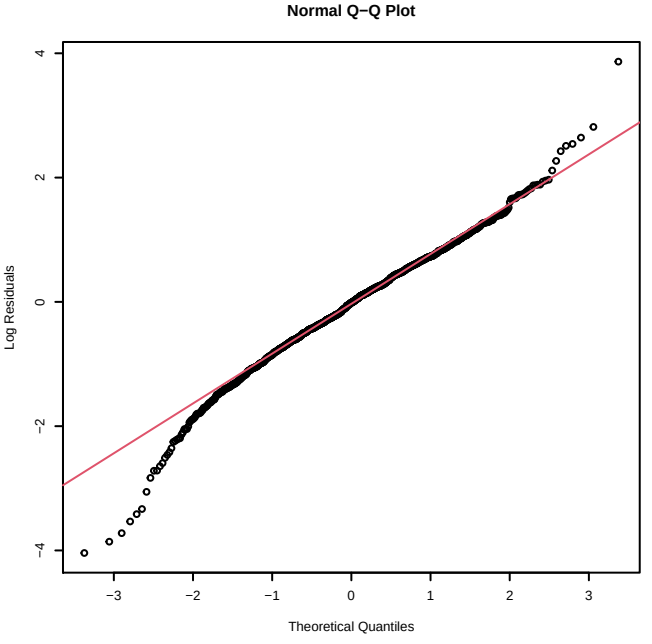

MODEL SIMULATION PERFORMANCE
Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
1e−04
1e−02
1e+00
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000
5.000
PREDICTED YIELD (kg/ha/year)

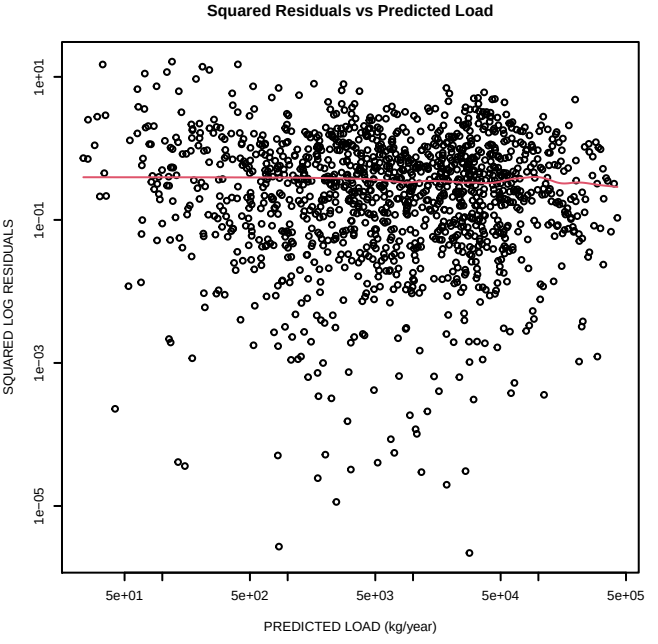

Residuals vs Predicted
Load
LOG RESIDUAL
−4
−2
0
2
4
5e+01
5e+02
5e+03
5e+04
5e+05
PREDICTED LOAD (kg/year)

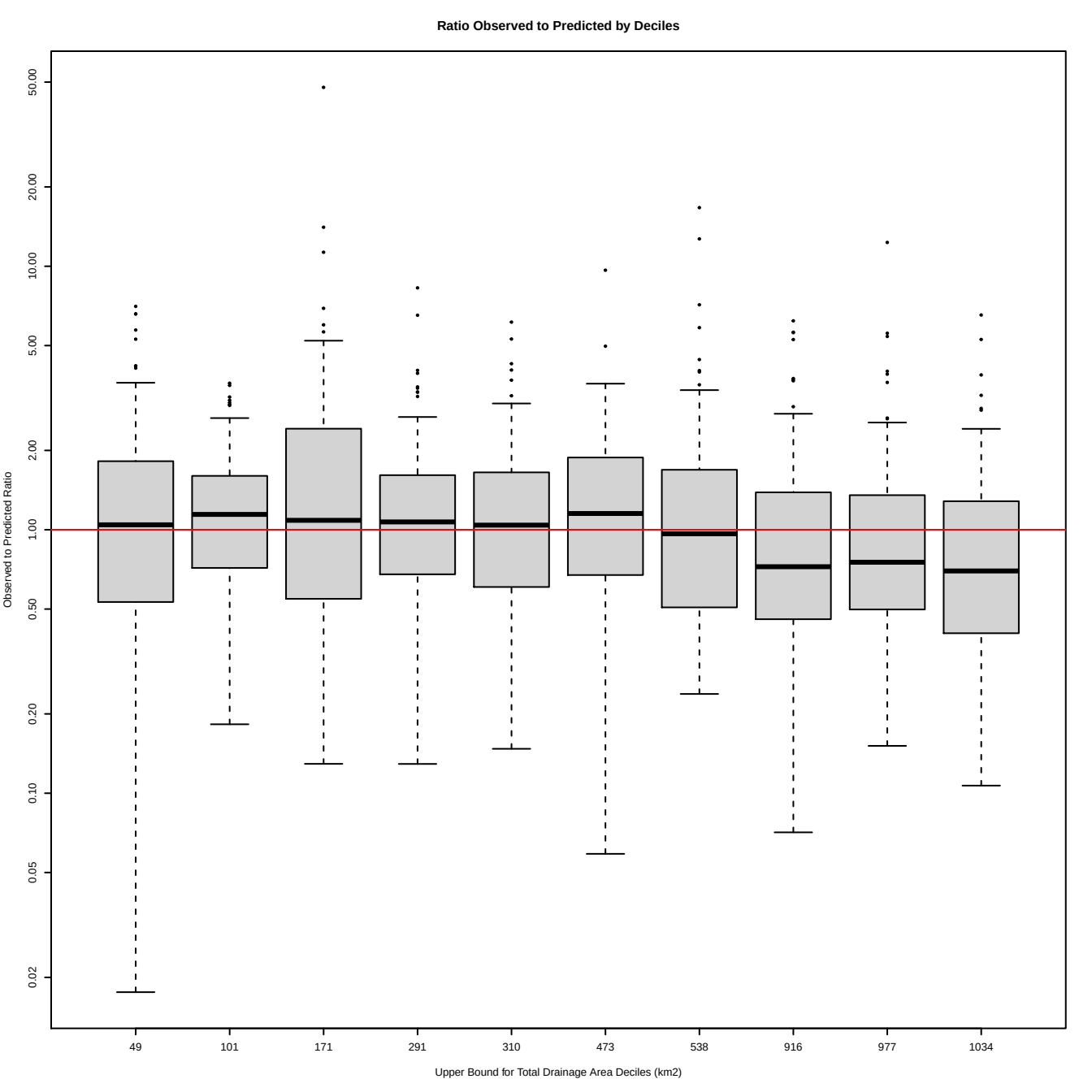

Residuals vs Predicted
Yield
LOG RESIDUAL
−4
−2
0
2
4
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000
5.000
PREDICTED YIELD (kg/ha/year)


MODEL SIMULATION PERFORMANCE
Residuals
LOG RESIDUAL
4
2
0
−2
−4

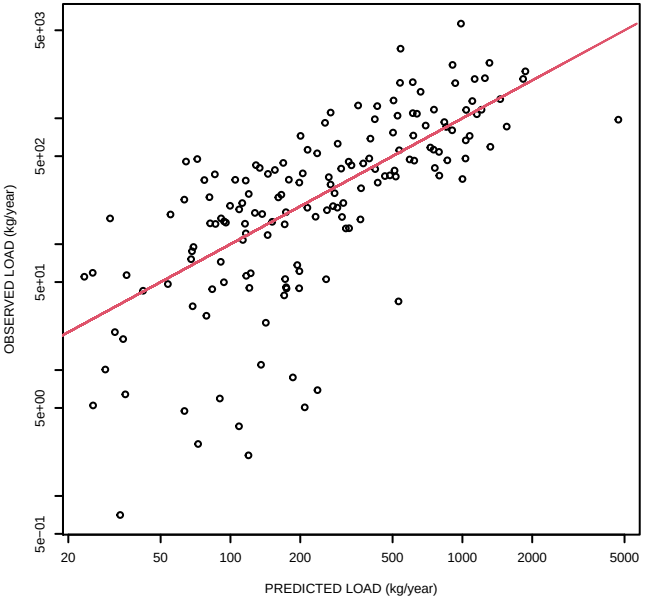

MODEL SIMULATION PERFORMANCE
Observed / Predicted Ratio
RATIO OBSERVED TO PREDICTED
2.0
1.5
1.0
0.5
0.0


Normal Q−Q Plot
Log Residuals
Theoretical Quantiles
4
2
0
−2
−4
−3
−2
−1
0
1
2
3

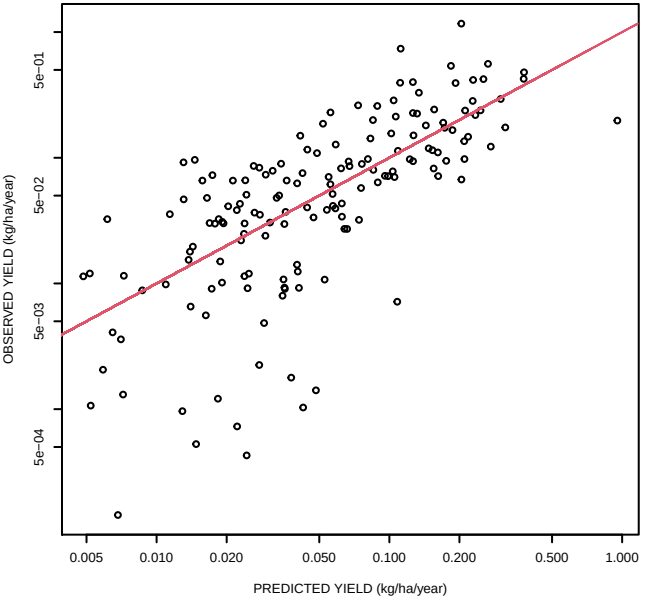

Squared Residuals vs Predicted Load
SQUARED LOG RESIDUALS
1e+01
1e−01
1e−03
1e−05
5e+01
5e+02
5e+03
5e+04
5e+05
PREDICTED LOAD (kg/year)


Ratio Observed to Predicted by Deciles
Observed to Predicted Ratio
50.00
20.00
10.00
5.00
2.00
1.00
0.50
0.20
0.10
0.05
0.02
49
101
171
291
310
473
538
916
977
1034
Upper Bound for Total Drainage Area Deciles (km2)

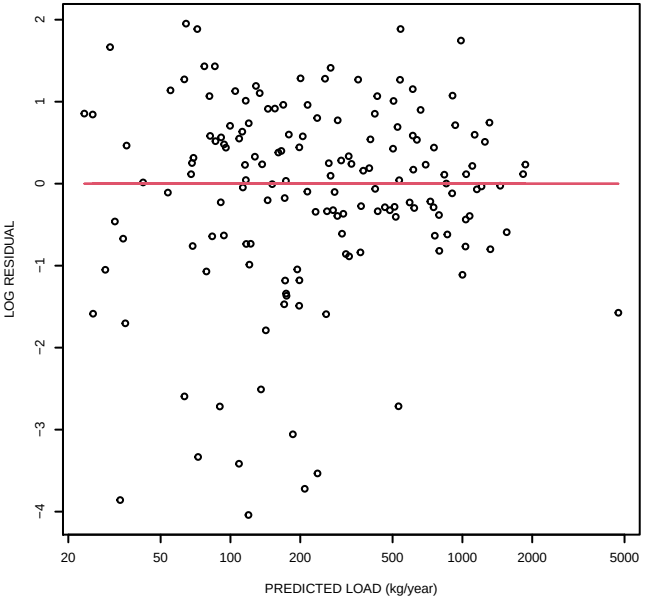
Observed vs Predicted Load
CLASS Region = 49(n=158)



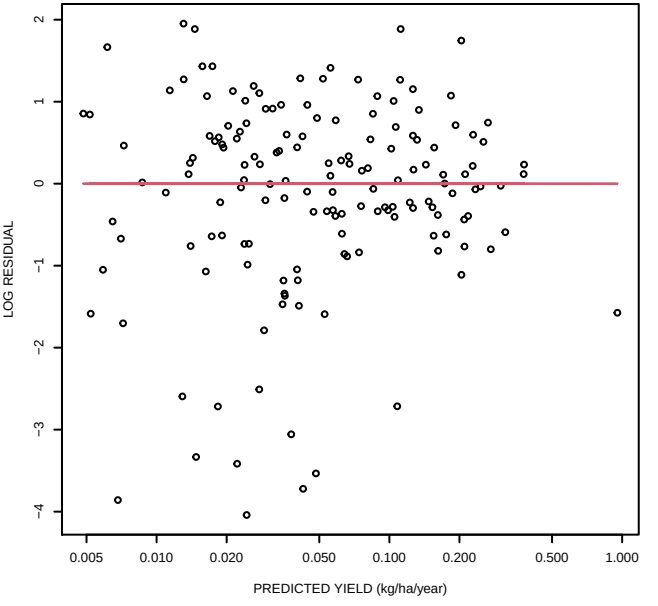
Observed vs Predicted Yield

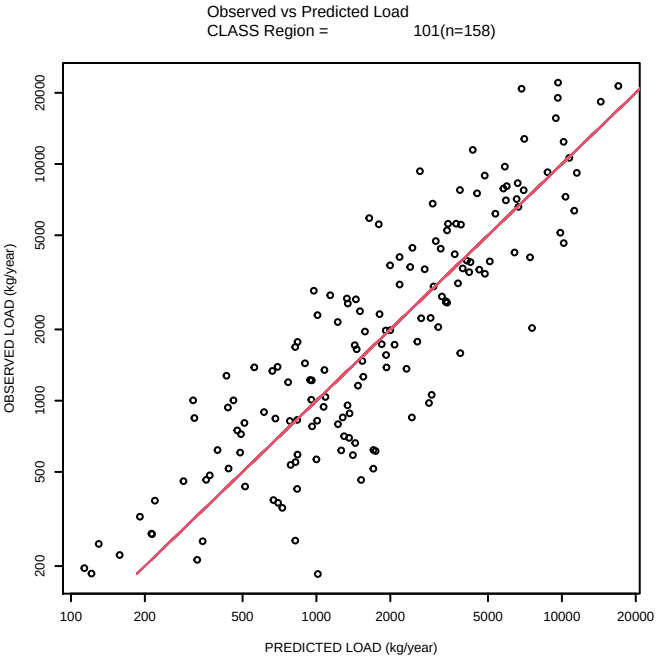


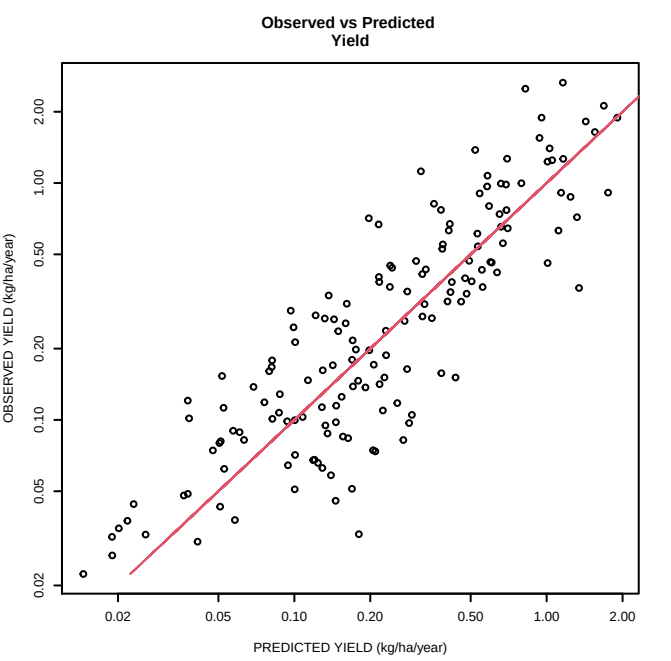
Residuals vs Predicted Load

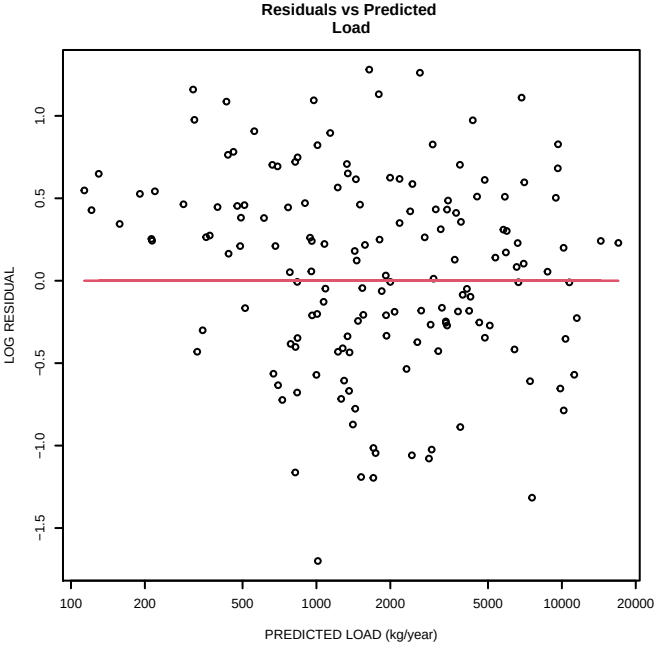


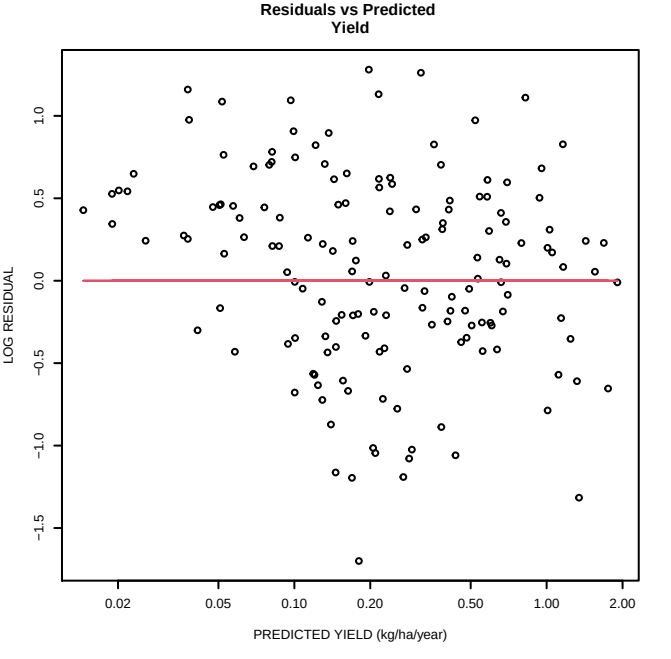
Residuals vs Predicted Yield

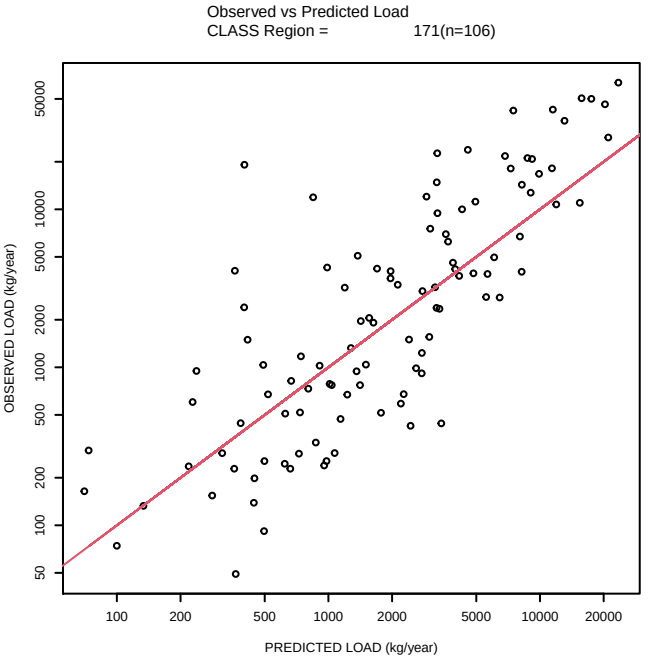


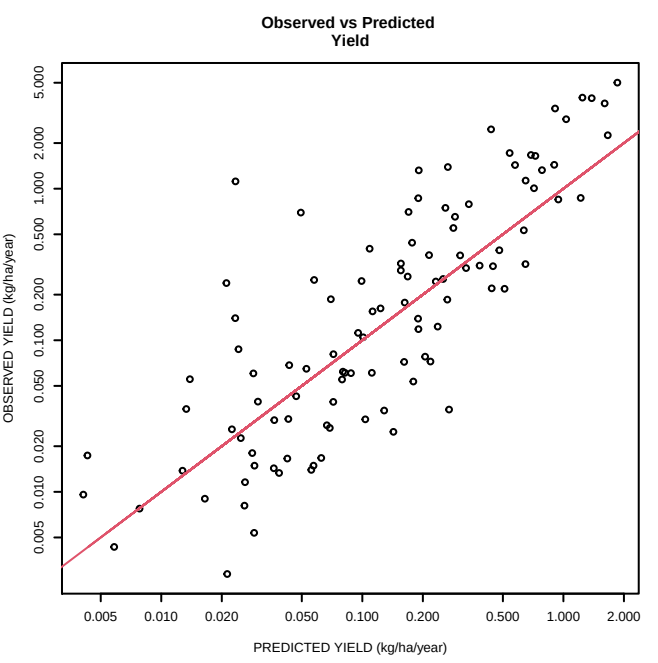

Observed vs Predicted Load
CLASS Region = 101(n=158)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
200
500
1000
2000
5000
10000
20000
100

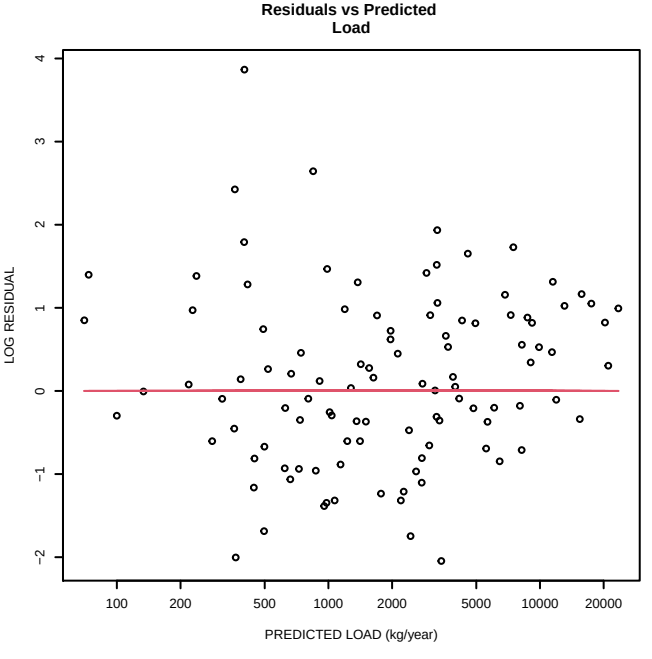

Observed vs Predicted
Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.02
0.05
0.10
0.20
0.50
1.00
2.00

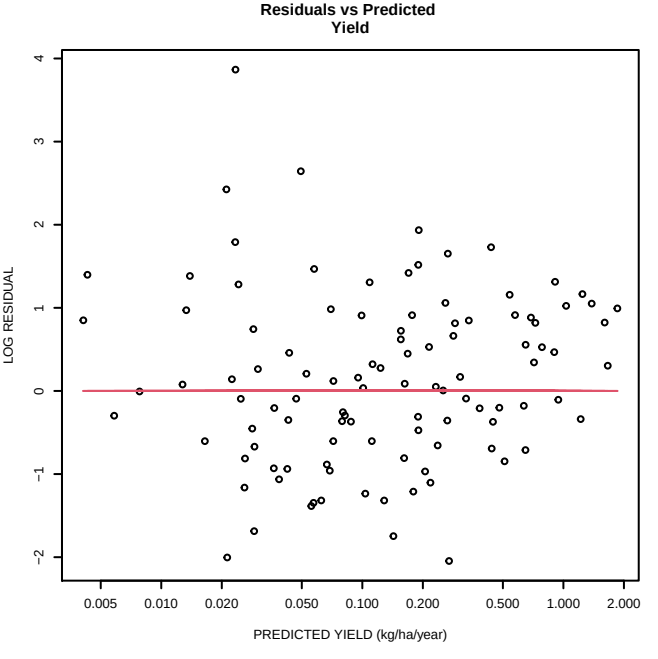

Residuals vs Predicted
Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
100
200
500
1000
2000
5000
10000
20000

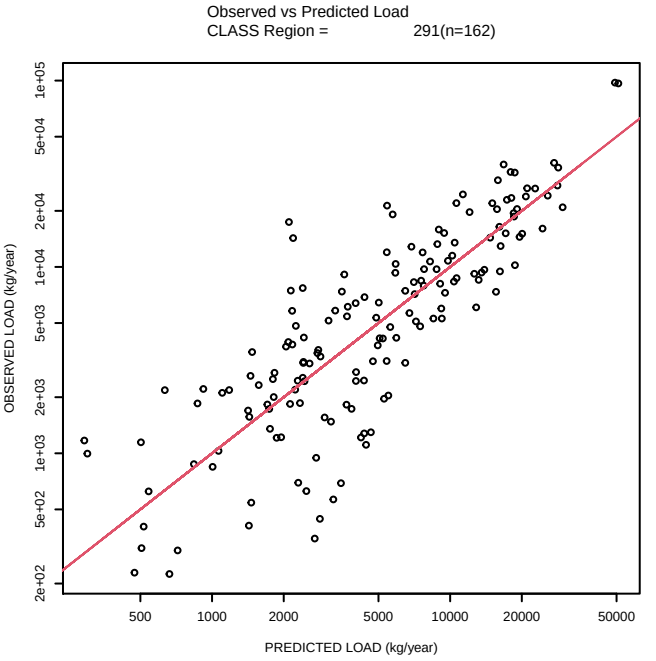

Residuals vs Predicted
Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−1.5
−1.0
−0.5
0.0
0.5
1.0
0.02
0.05
0.10
0.20
0.50
1.00
2.00

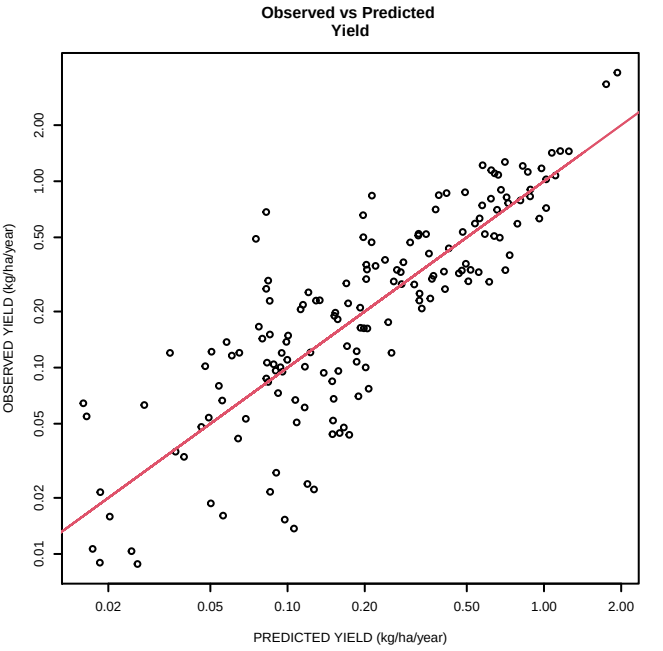

Observed vs Predicted Load
CLASS Region = 171(n=106)
OBSERVED LOAD (kg/year)
50
100
200
500
1000
2000
5000
10000
50000
PREDICTED LOAD (kg/year)
100
200
500
1000
2000
5000
10000
20000

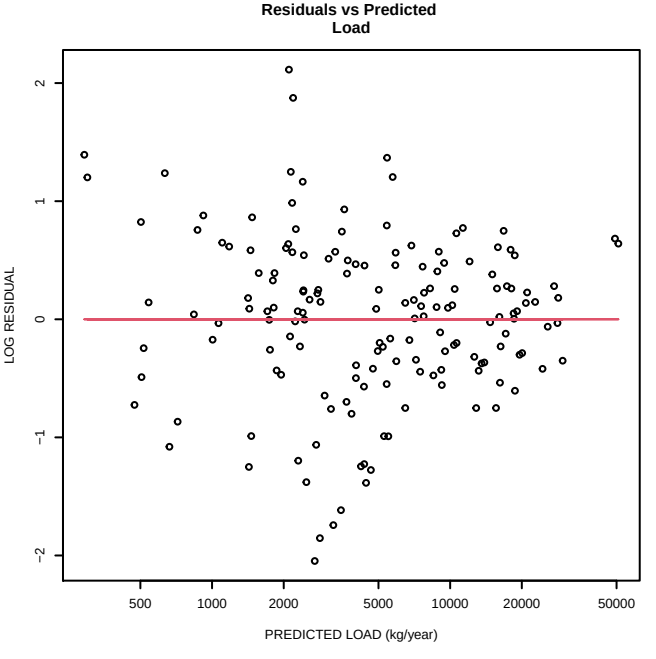

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000
5.000
PREDICTED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000

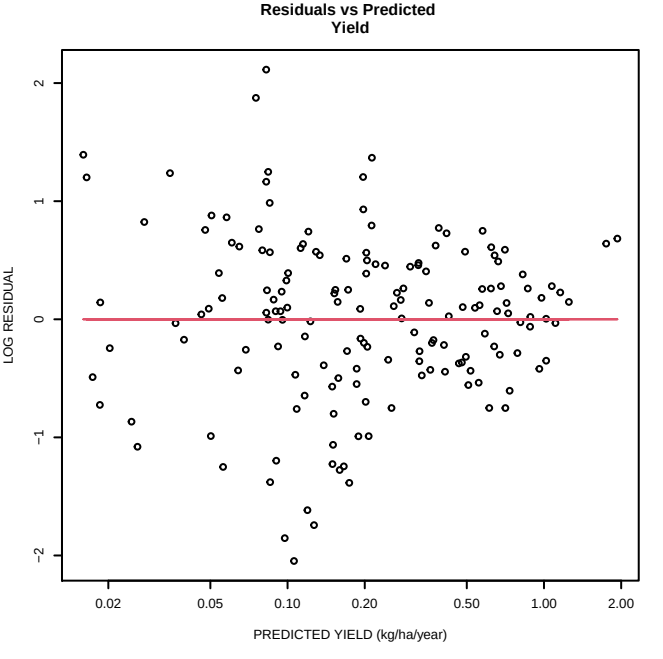

Residuals vs Predicted Load
LOG RESIDUAL
−2
−1
0
1
2
3
4
PREDICTED LOAD (kg/year)
100
200
500
1000
2000
5000
10000
20000

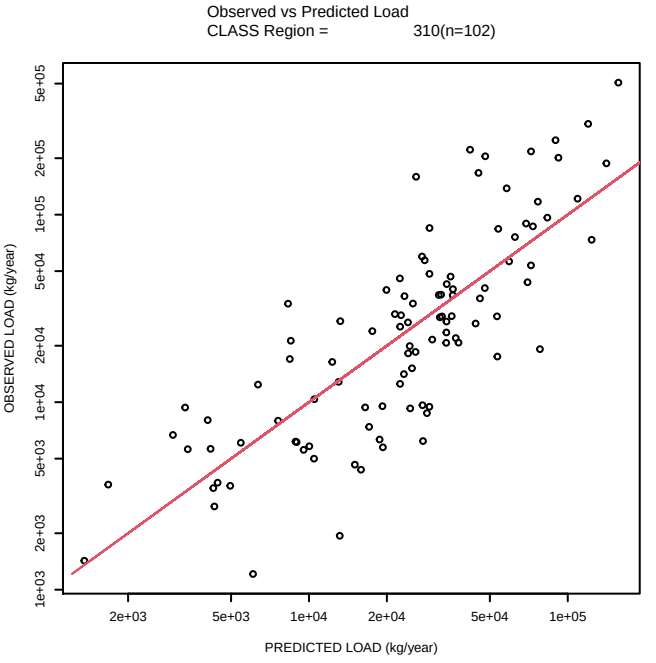

Residuals vs Predicted Yield
LOG RESIDUAL
−2
−1
0
1
2
3
4
PREDICTED YIELD (kg/ha/year)
0.005
0.010
0.020
0.050
0.100
0.200
0.500
1.000
2.000

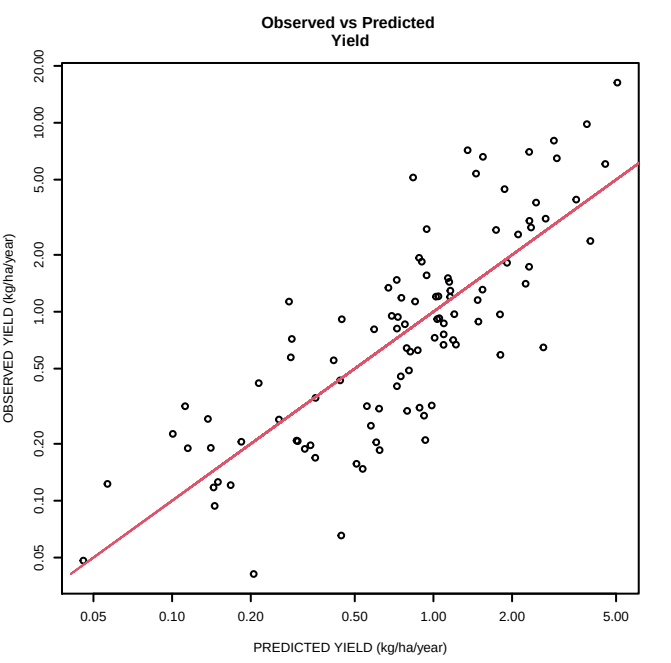

Observed vs Predicted Load
CLASS Region = 291(n=162)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)

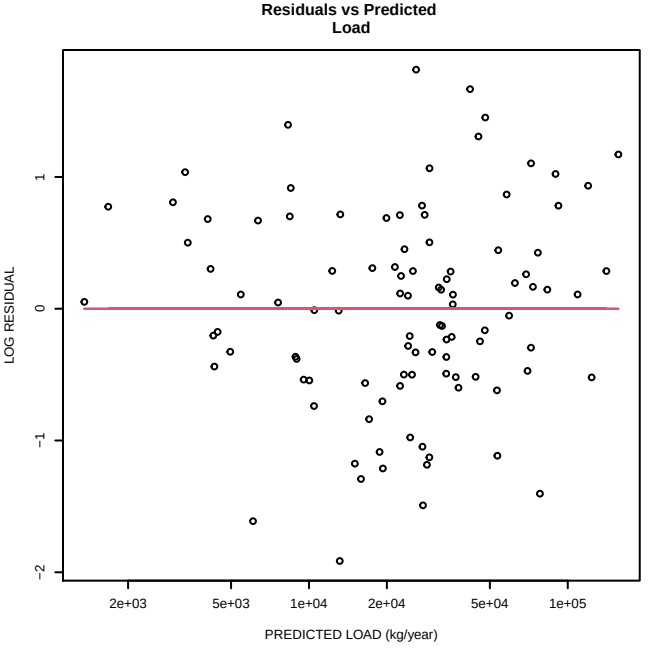

Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)

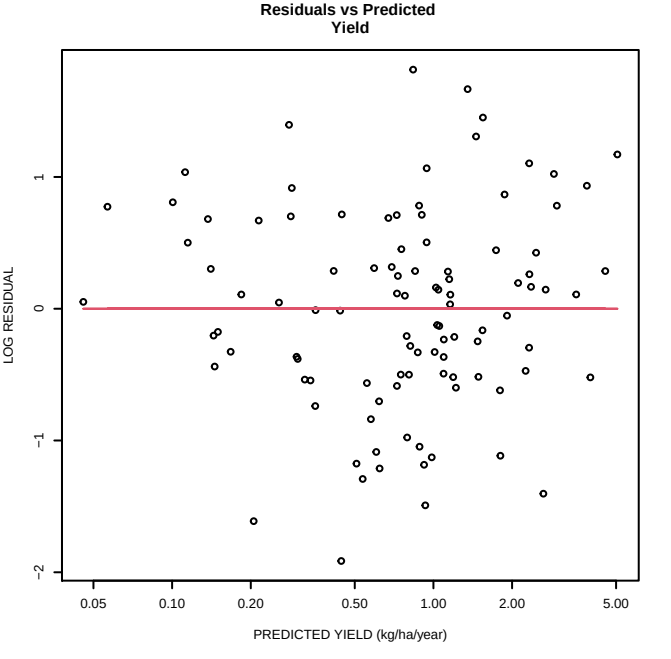

Residuals vs Predicted Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)


Residuals vs Predicted Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)

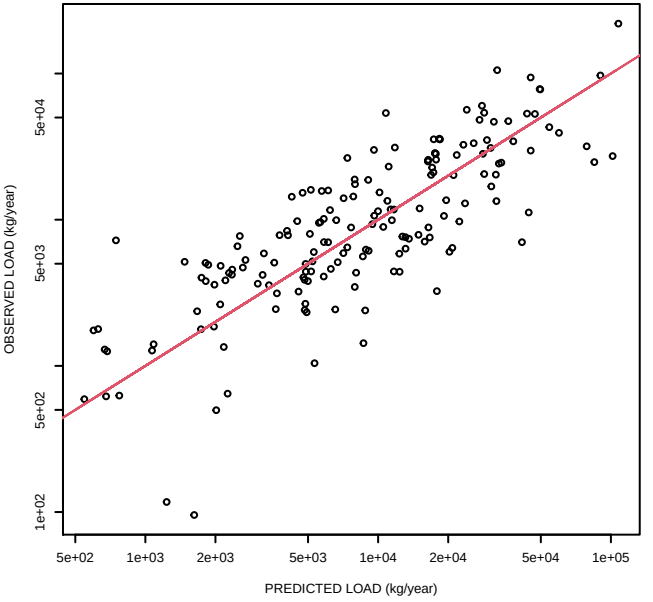

Observed vs Predicted Load
CLASS Region = 310(n=102)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
5e+05


Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)
0.05
0.10
0.20
0.50
1.00
2.00
5.00
10.00
20.00

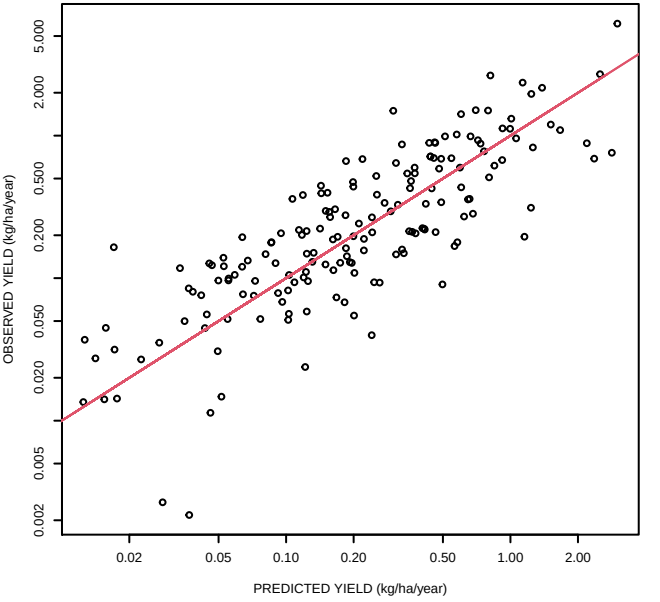

Residuals vs Predicted Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)
−2
−1
0
1
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05


Residuals vs Predicted Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)
−2
−1
0
1
0.05
0.10
0.20
0.50
1.00
2.00
5.00

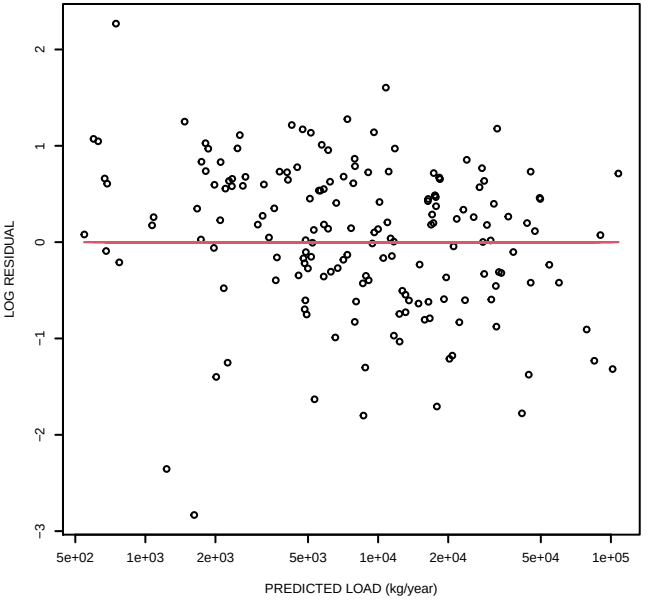
Observed vs Predicted Load
CLASS Region = 473(n=172)



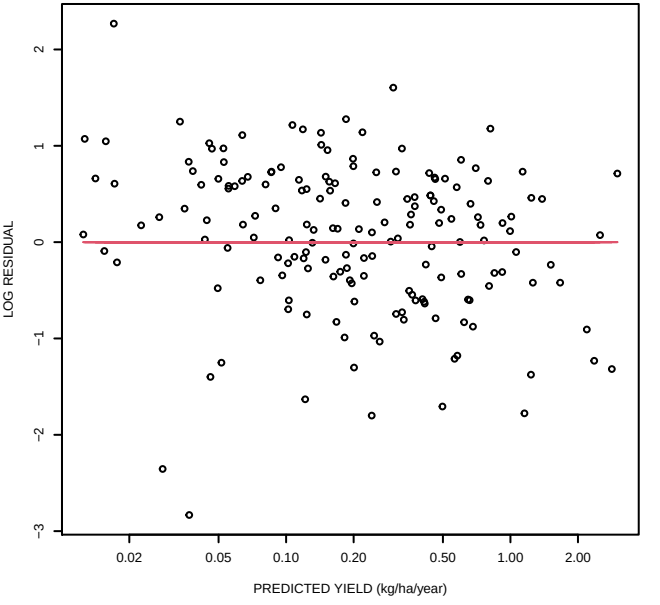
Observed vs Predicted Yield

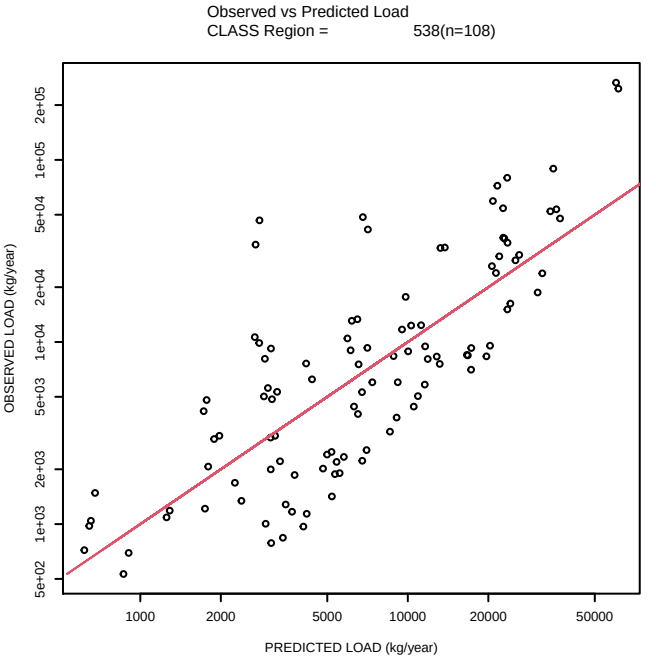


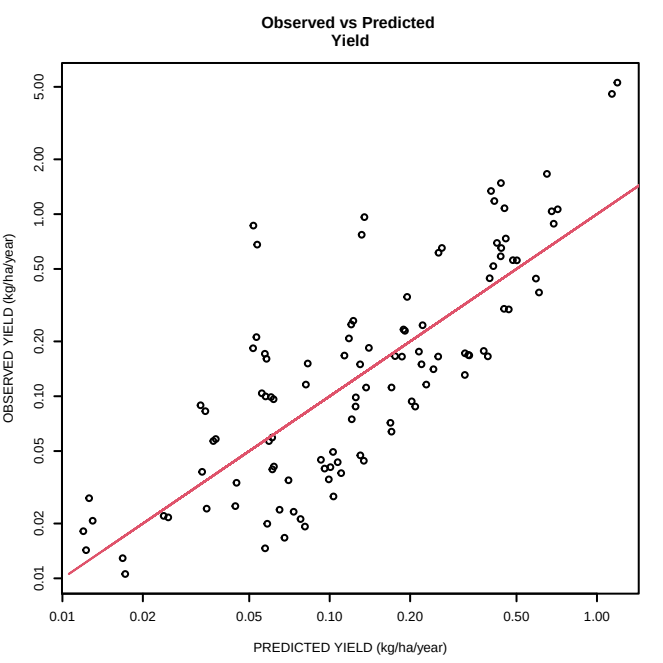
Residuals vs Predicted Load

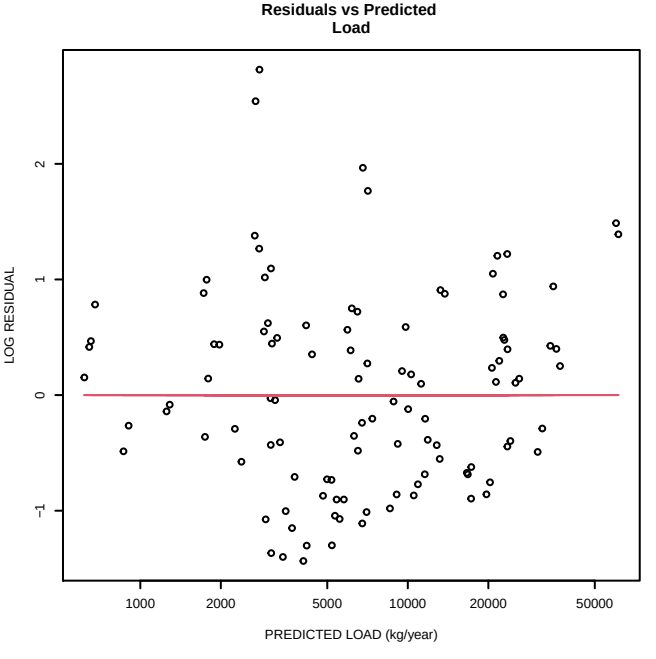


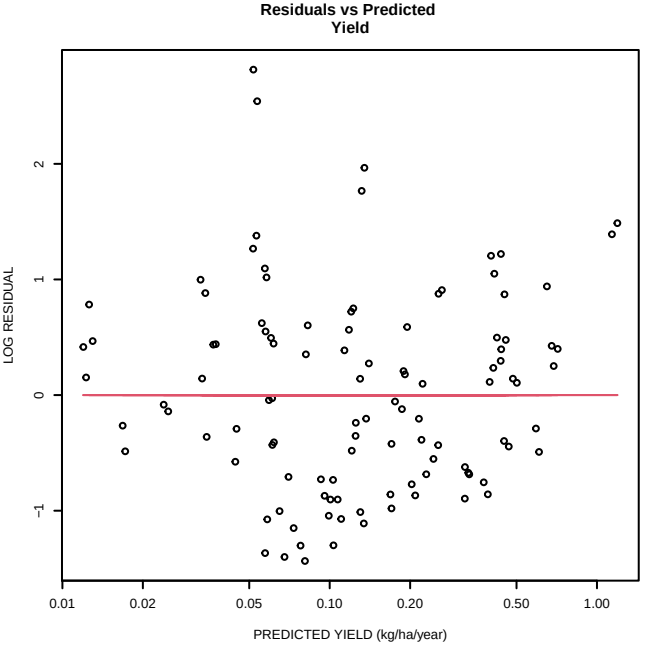
Residuals vs Predicted Yield



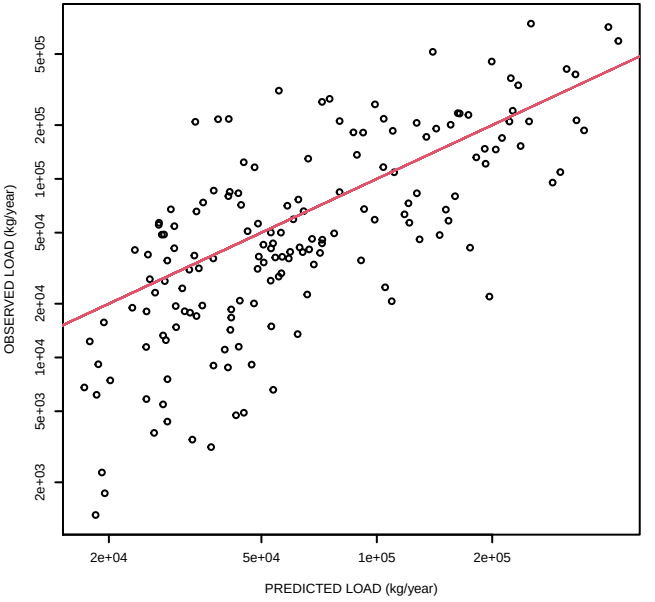

Observed vs Predicted Load
CLASS Region = 538(n=108)
OBSERVED LOAD (kg/year)
PREDICTED LOAD (kg/year)


Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
PREDICTED YIELD (kg/ha/year)

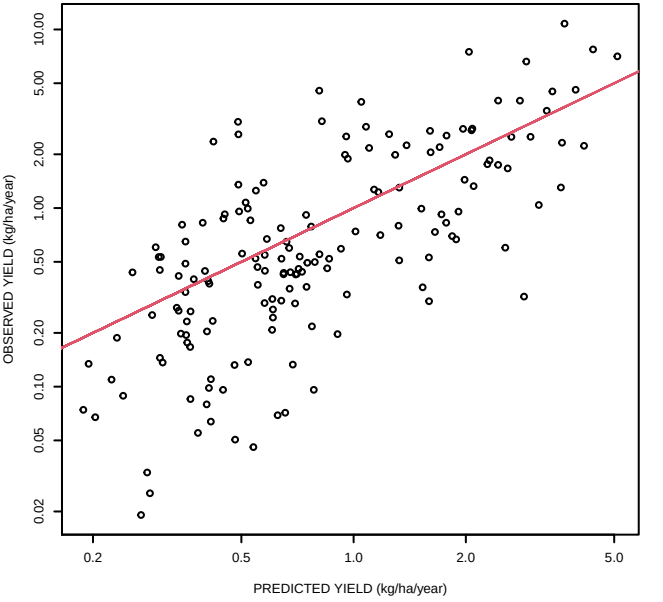

Residuals vs Predicted Load
LOG RESIDUAL
PREDICTED LOAD (kg/year)


Residuals vs Predicted Yield
LOG RESIDUAL
PREDICTED YIELD (kg/ha/year)

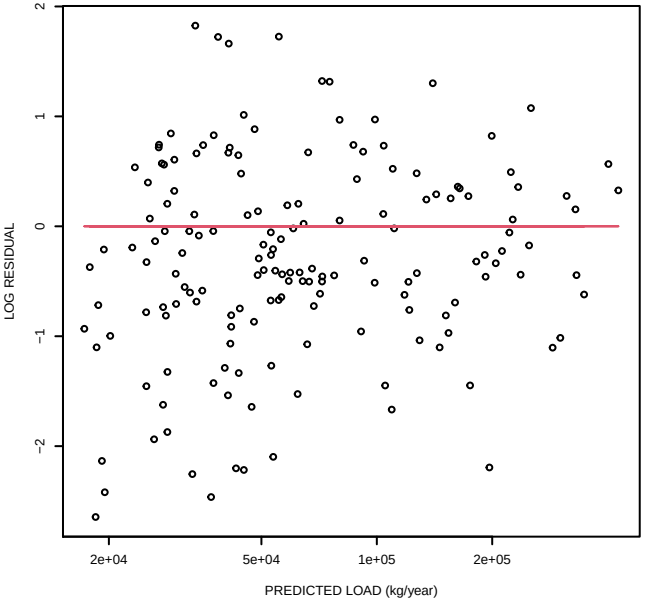
Observed vs Predicted Load
CLASS Region = 916(n=162)



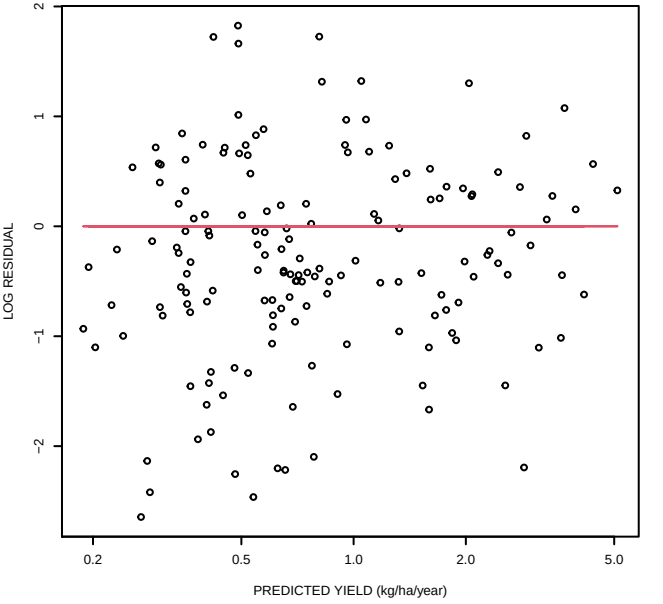
Observed vs Predicted Yield

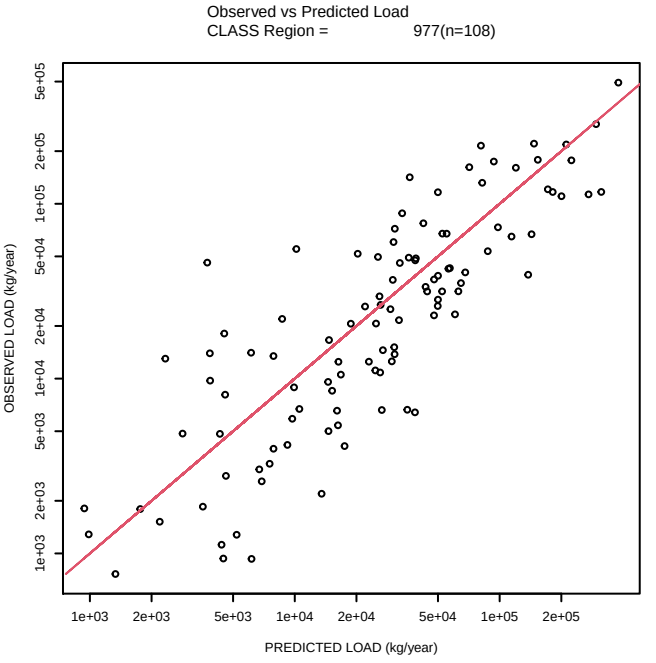


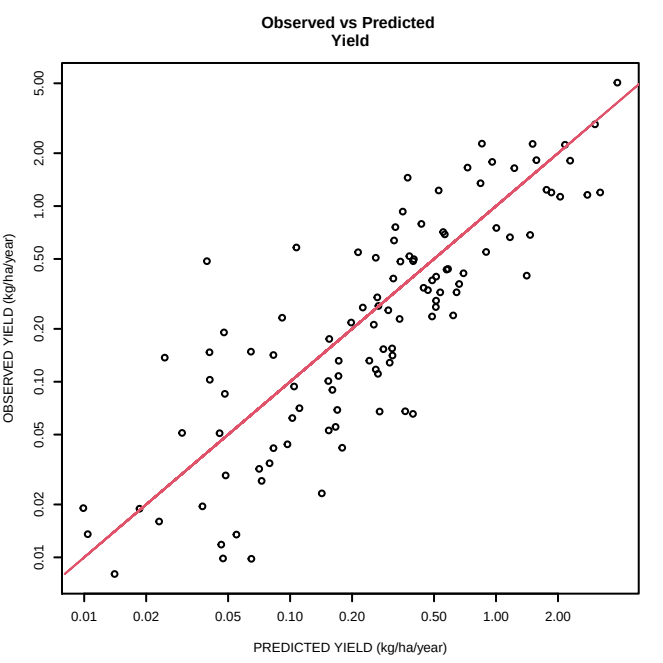
Residuals vs Predicted Load

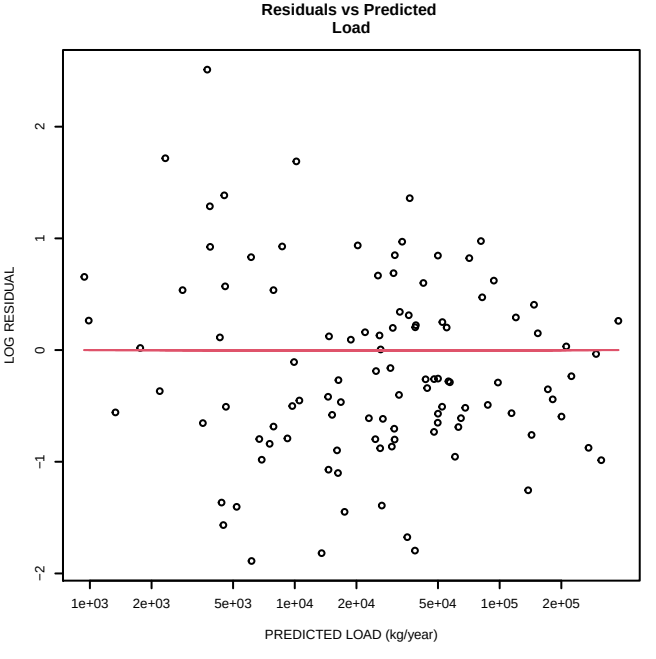


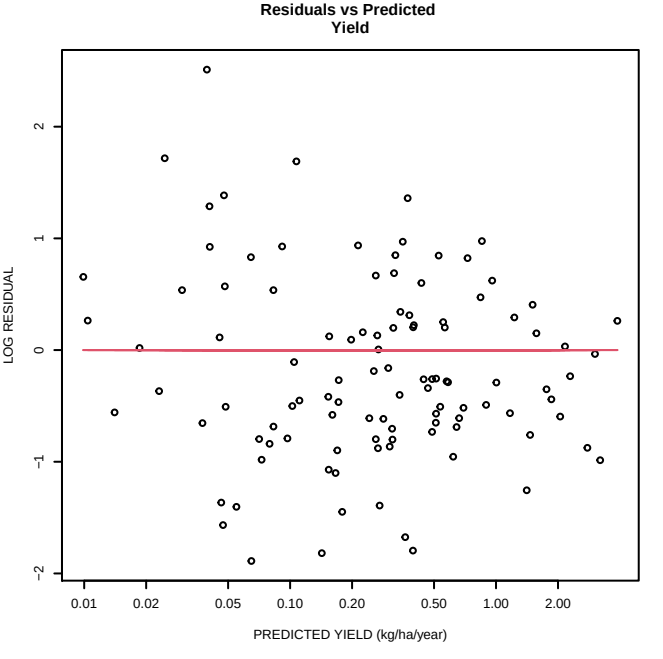
Residuals vs Predicted Yield



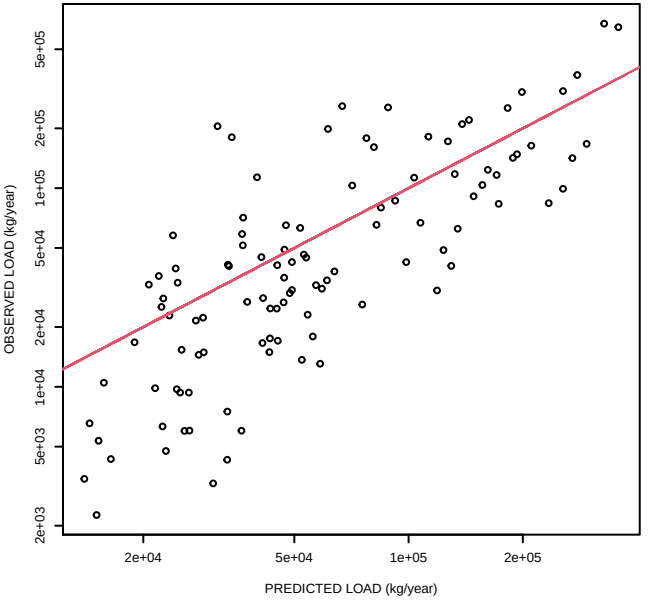

Observed vs Predicted Load
CLASS Region = 977(n=108)
OBSERVED LOAD (kg/year)
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
PREDICTED LOAD (kg/year)


Observed vs Predicted Yield
OBSERVED YIELD (kg/ha/year)
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
5.00
PREDICTED YIELD (kg/ha/year)

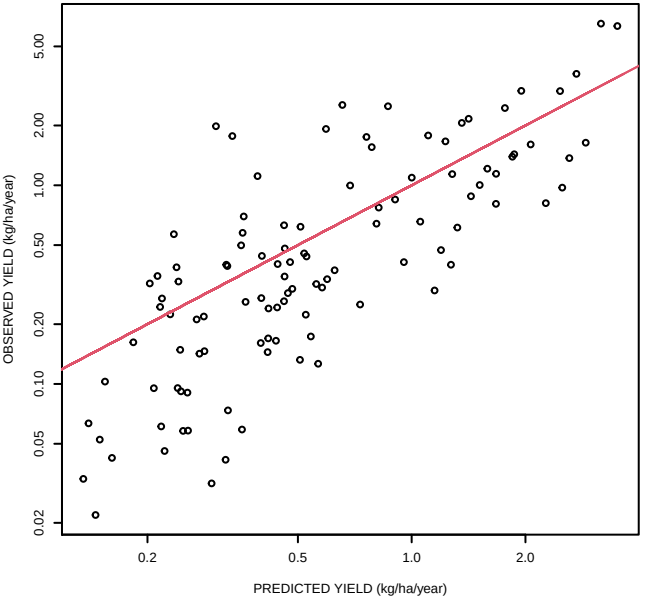

Residuals vs Predicted Load
LOG RESIDUAL
−2
−1
0
1
2
1e+03
2e+03
5e+03
1e+04
2e+04
5e+04
1e+05
2e+05
PREDICTED LOAD (kg/year)


Residuals vs Predicted Yield
LOG RESIDUAL
−2
−1
0
1
2
0.01
0.02
0.05
0.10
0.20
0.50
1.00
2.00
PREDICTED YIELD (kg/ha/year)

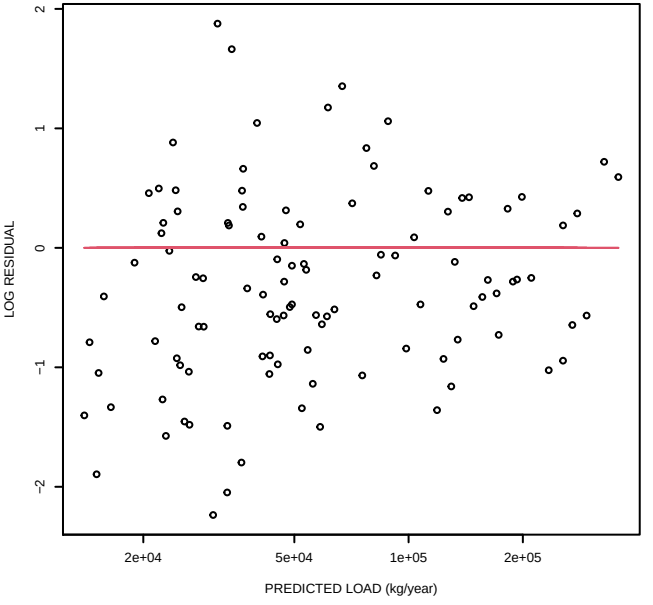
Observed vs Predicted Load
CLASS Region = 1034(n=108)



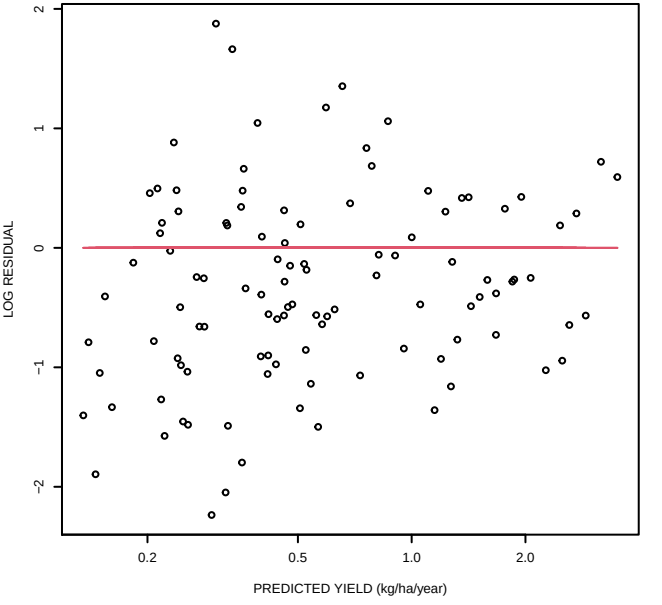
Observed vs Predicted Yield



Residuals vs Predicted Load



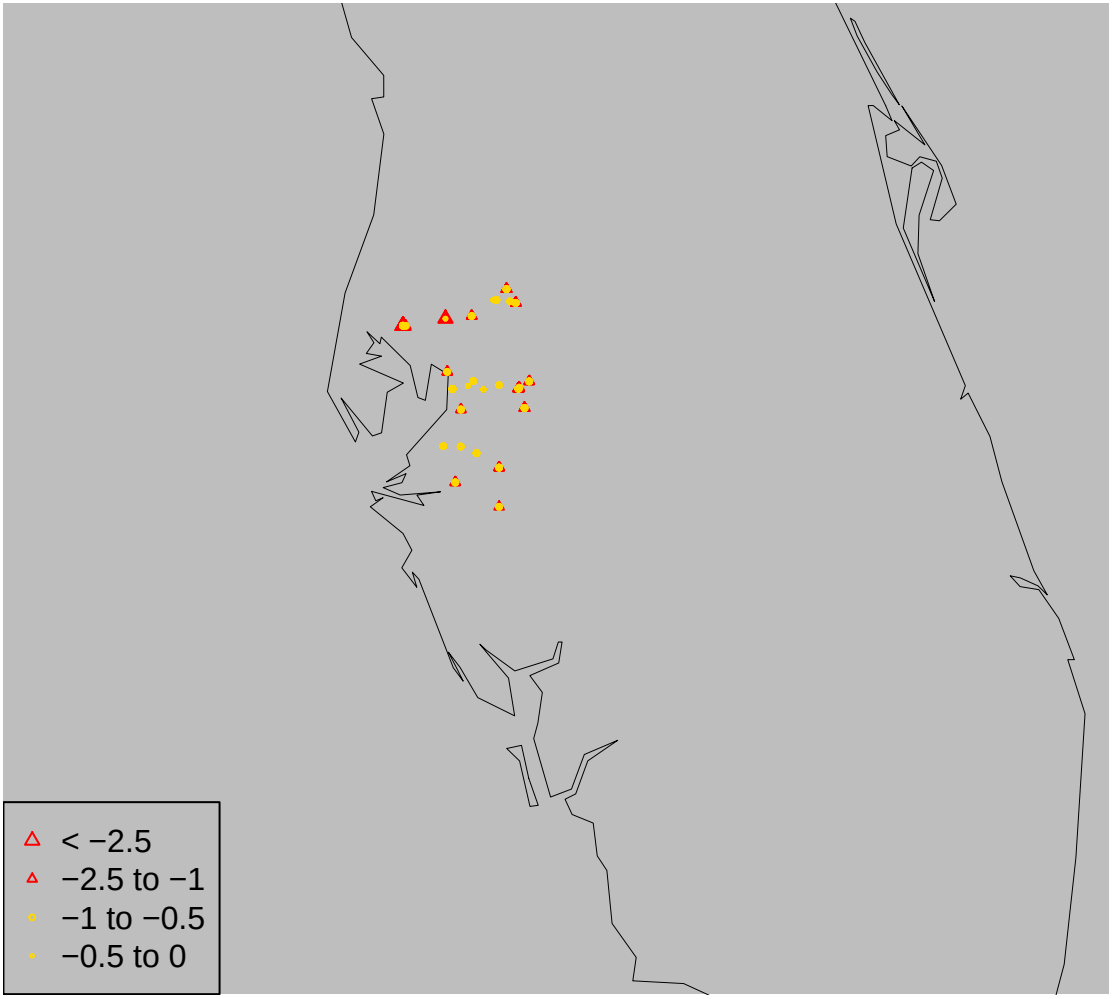
Residuals vs Predicted Yield



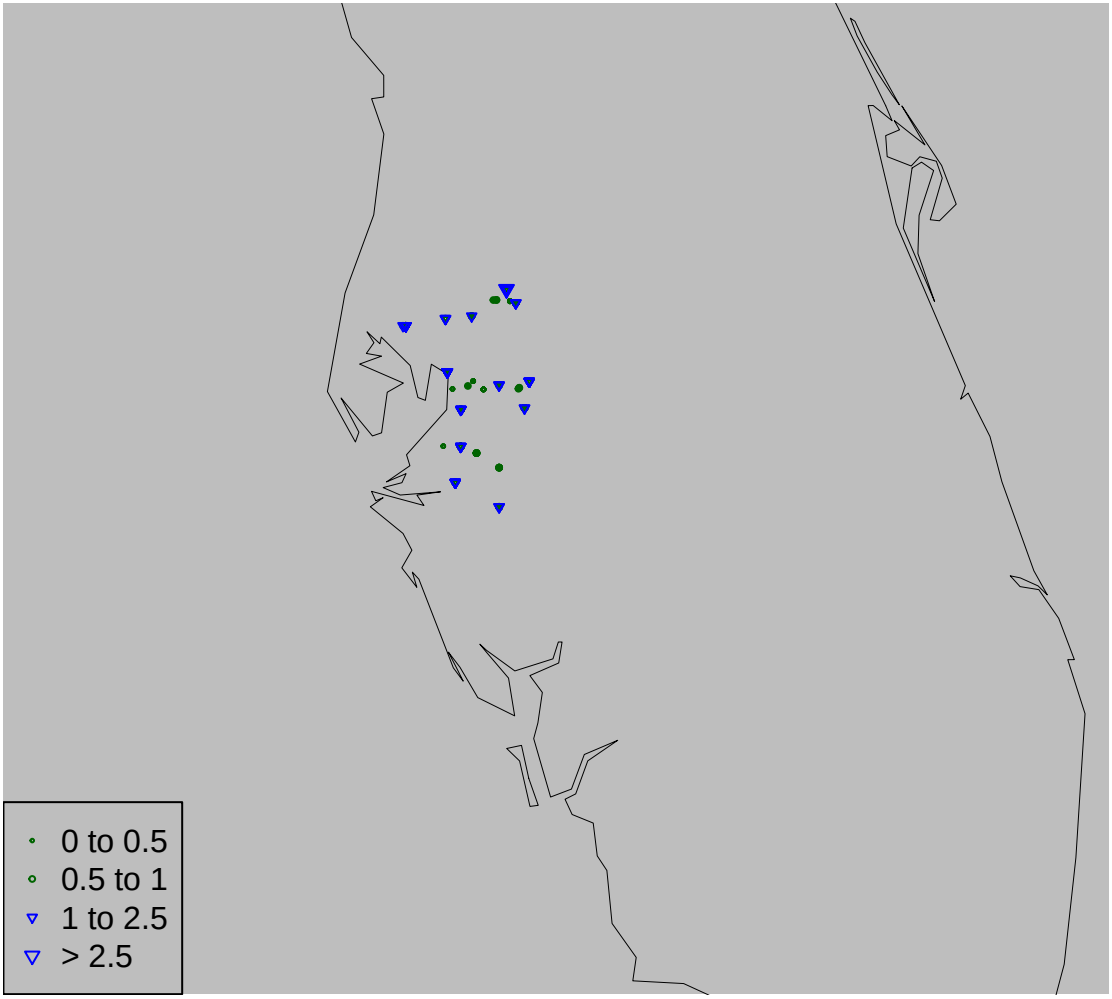
Maps of Model Residuals and Observed to Predicted Ratios for the Calibration Sites

nclude:
luals, based on monitoring conditioned predictions (i.e., model estimation residuals)
luals, based on the unconditioned predictions (i.e., model simulation residuals)
zed residuals based on the monitoring conditioned predictions
observed to predicted loads for the conditioned predictions (i.e., model estimation ra
observed to predicted load for the unconditioned predictions (i.e., model simulation r

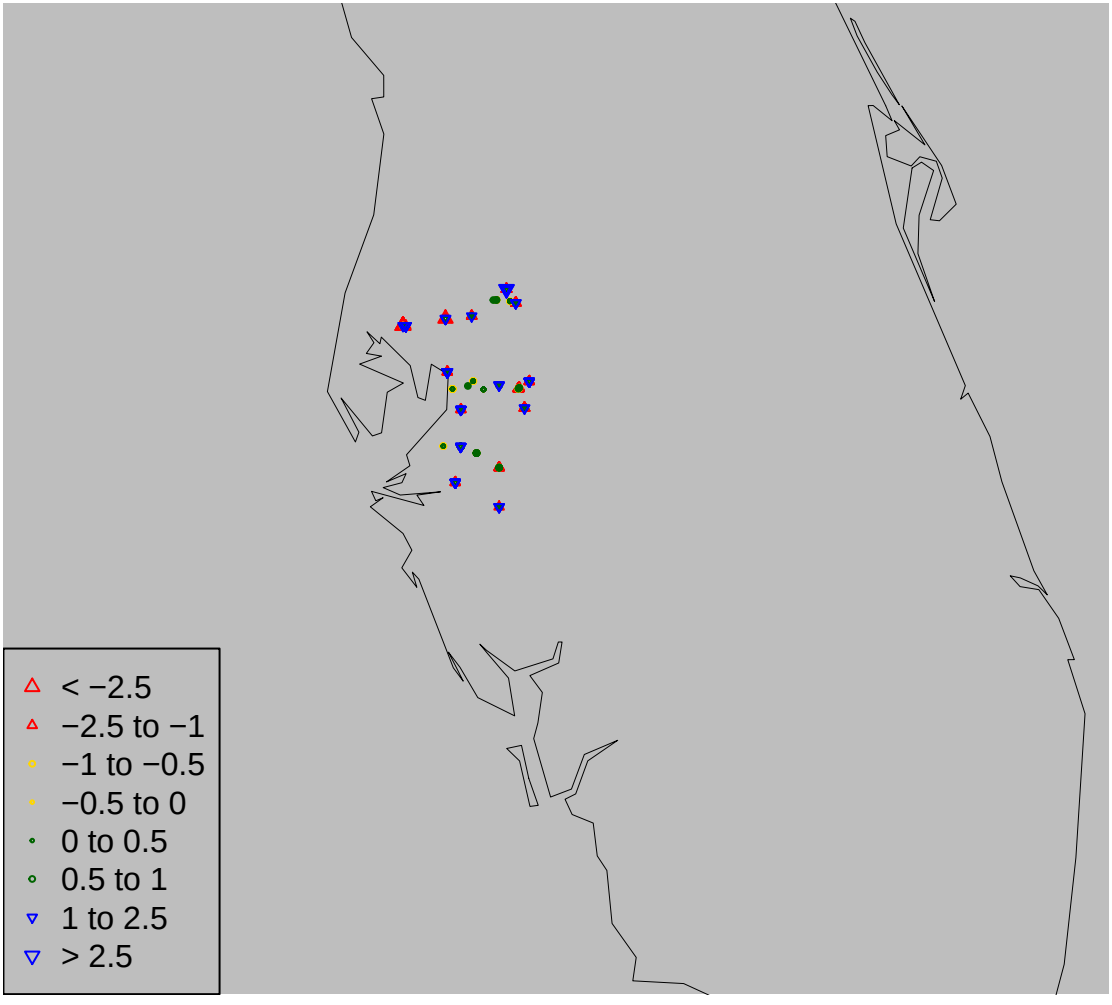
Model Estimation Log Residuals − Over Predictions − n=693



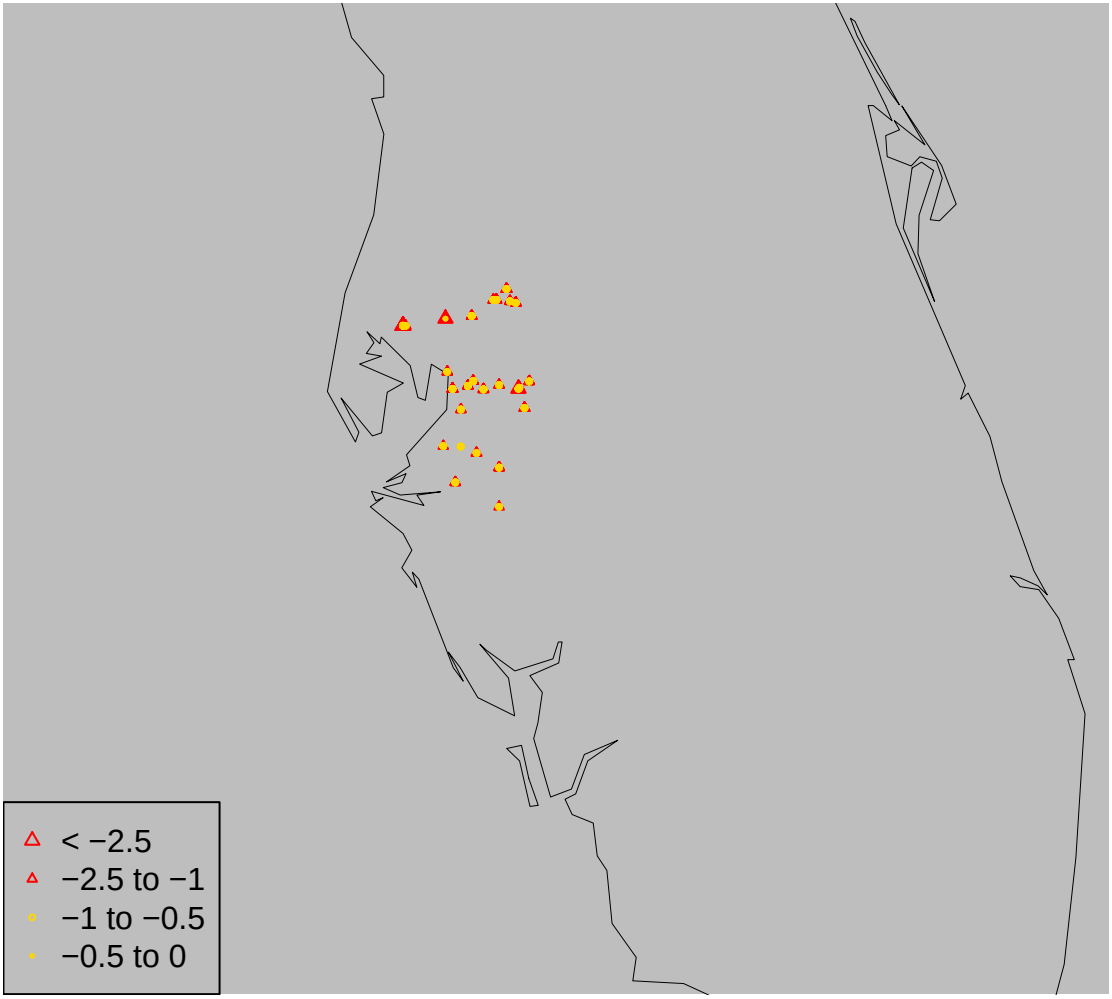
Model Estimation Log Residuals − Under Predictions − n=651



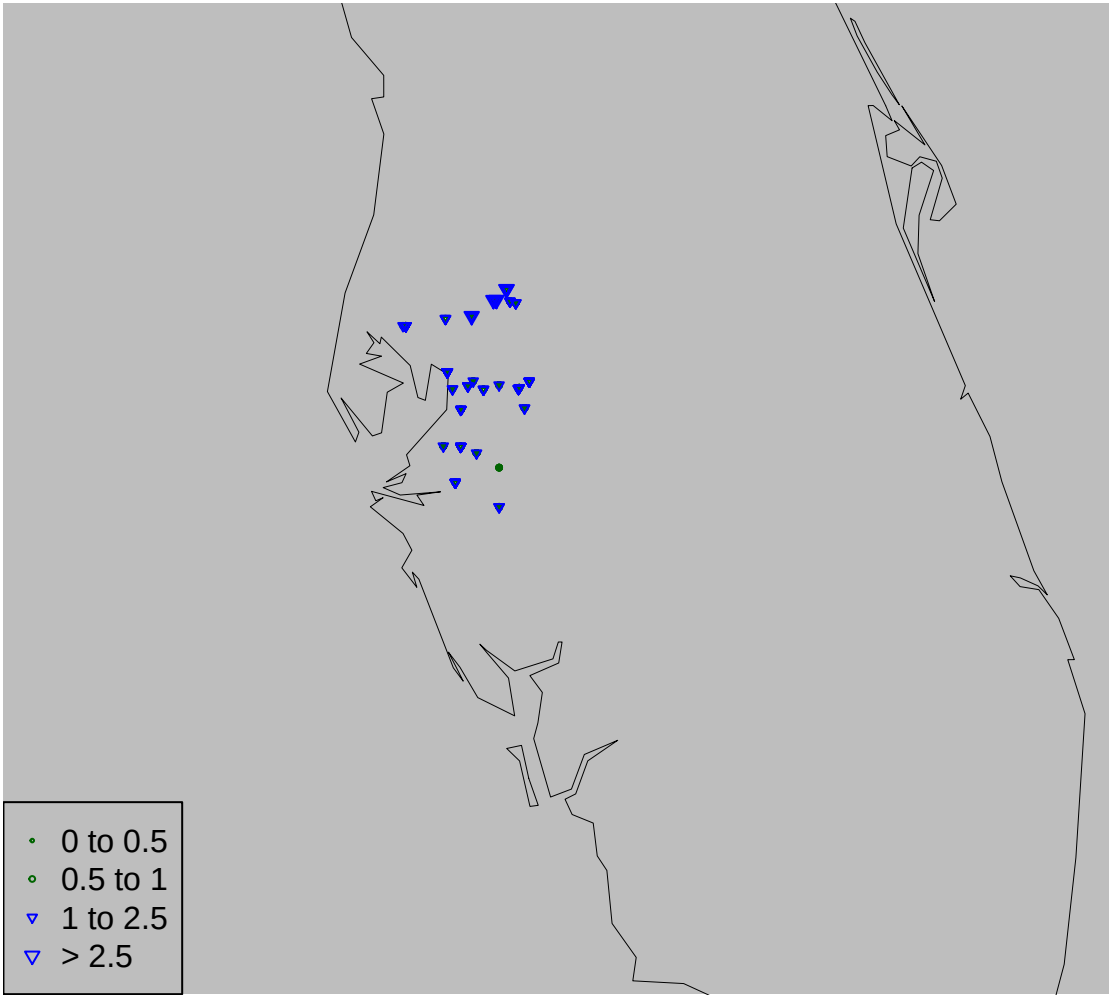
Model Estimation Log Residuals



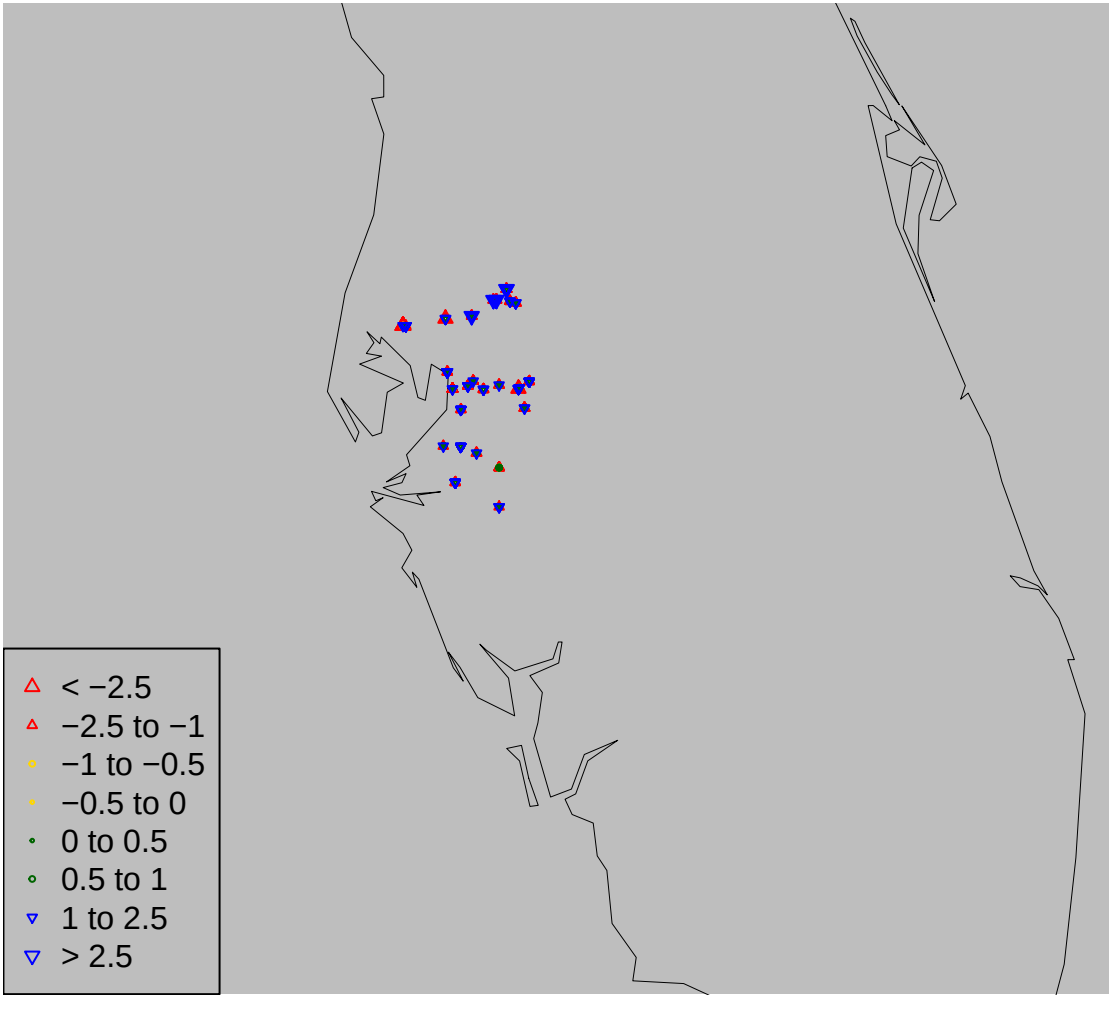
Model Simulation Log Residuals − Over Predictions − n=682



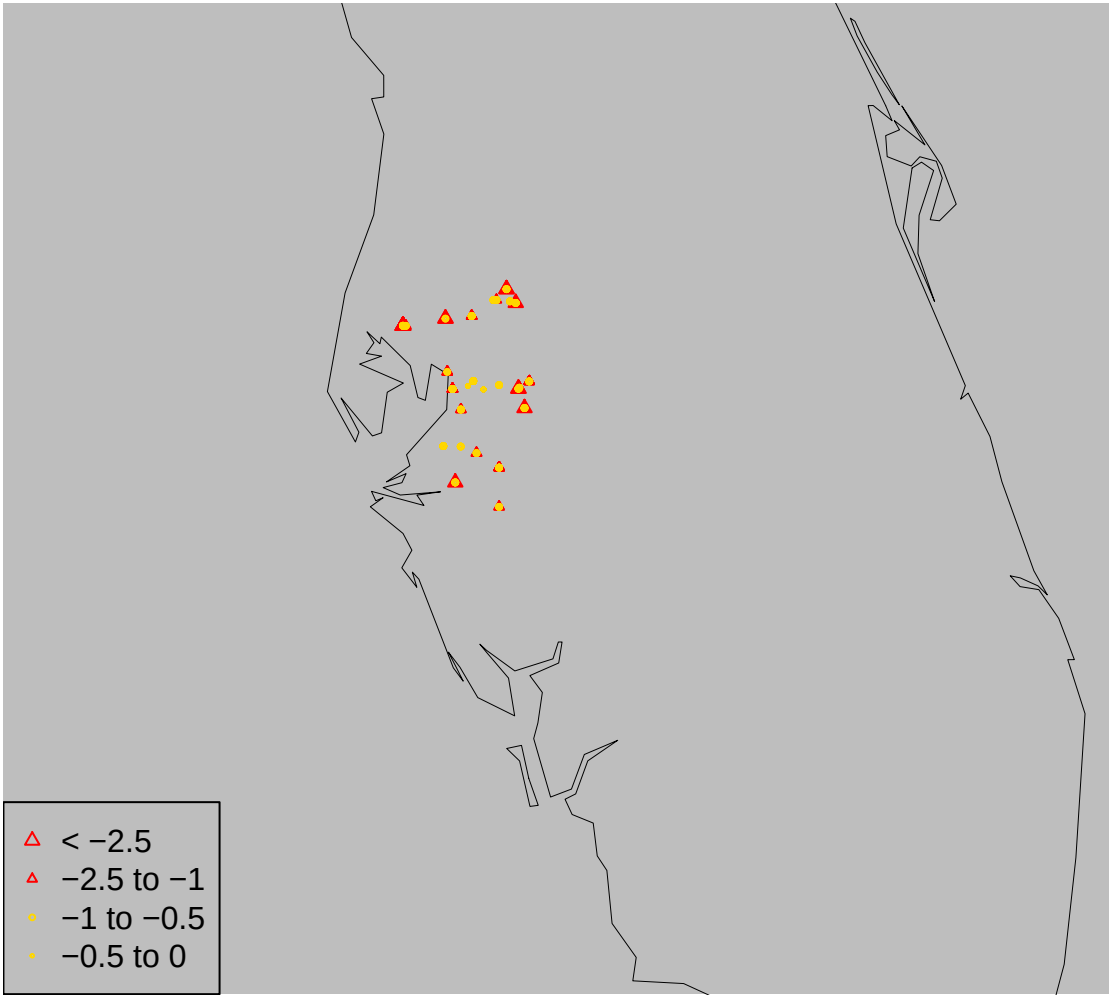
Model Simulation Log Residuals − Under Predictions − n=662



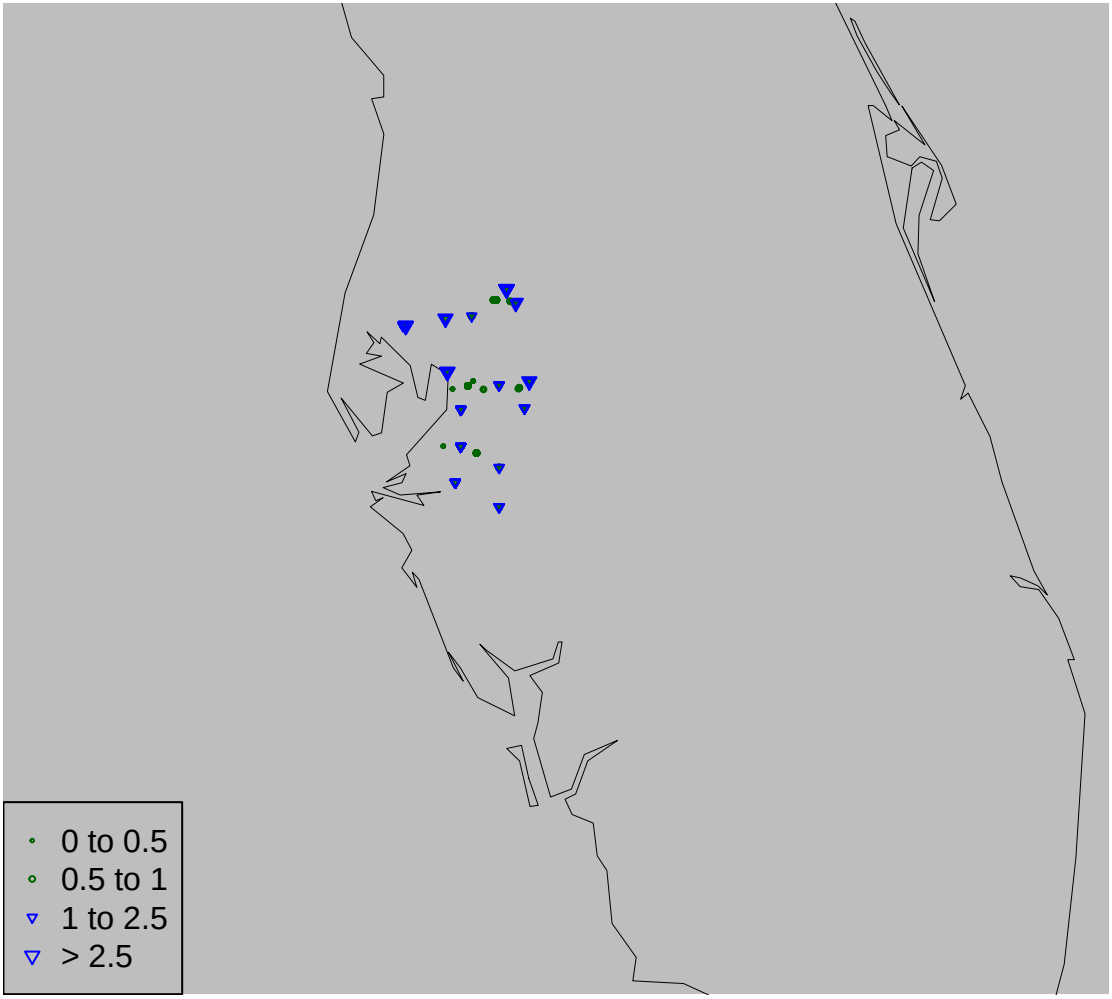
Model Simulation Log Residuals



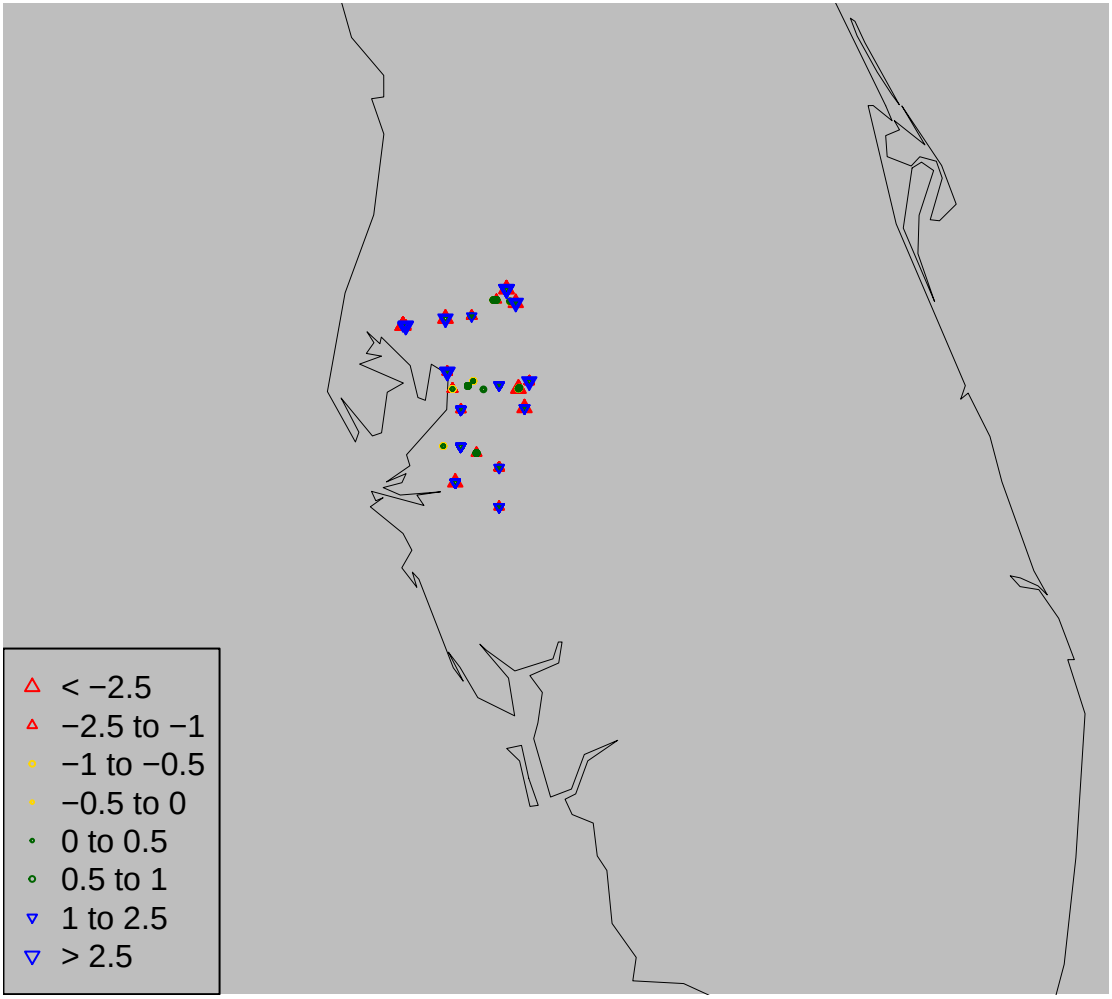
Model Estimation Standardized Residuals − Over Predictions − n=693



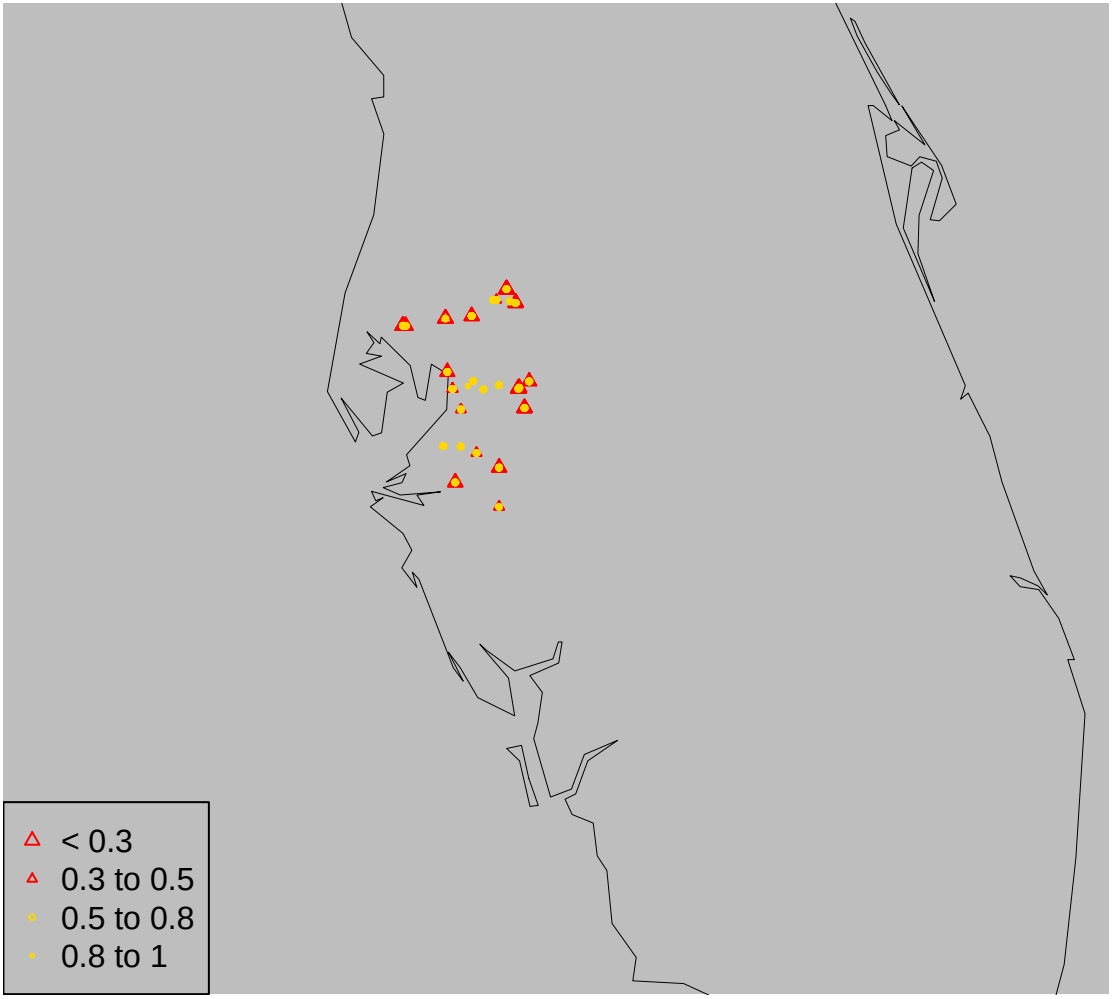
Model Estimation Standardized Residuals − Under Predictions − n=651



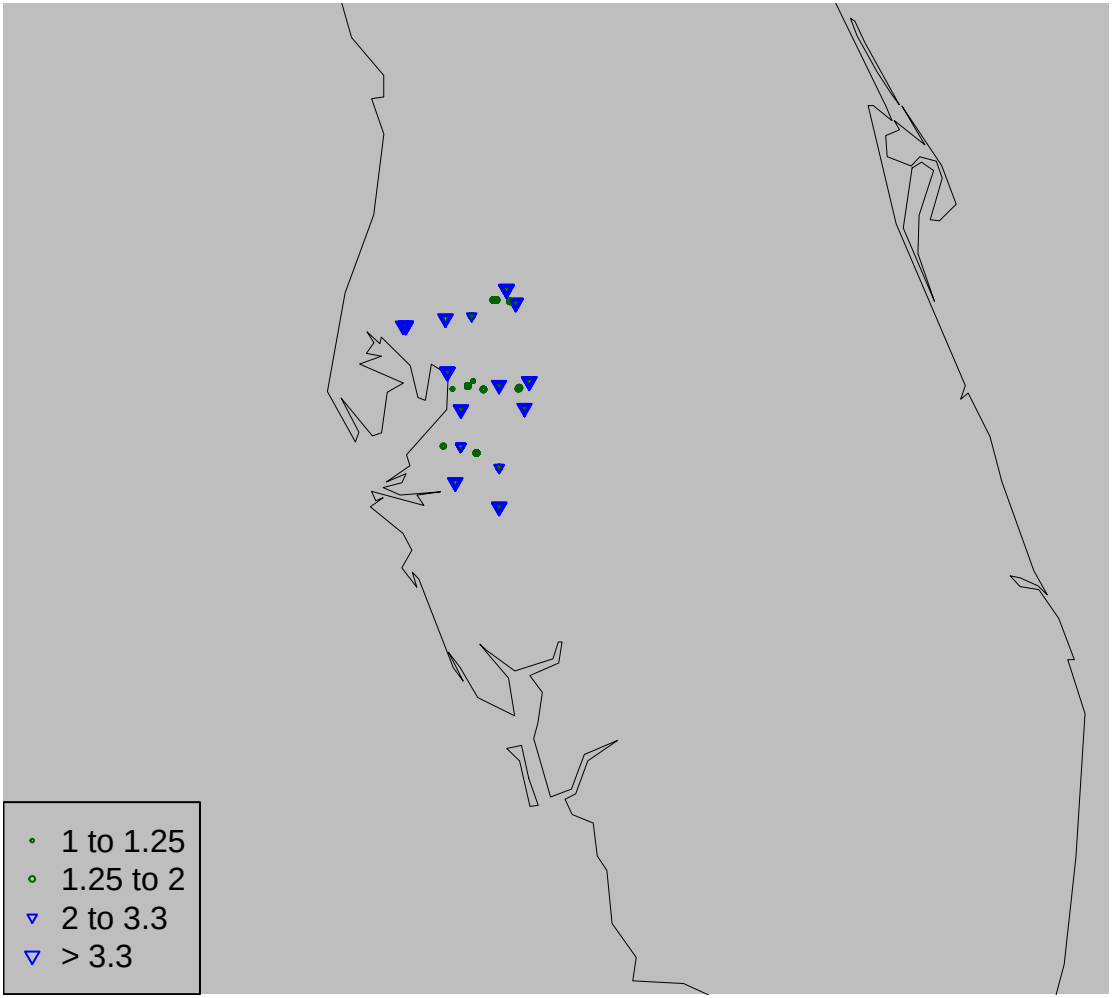
Model Estimation Standardized Residuals



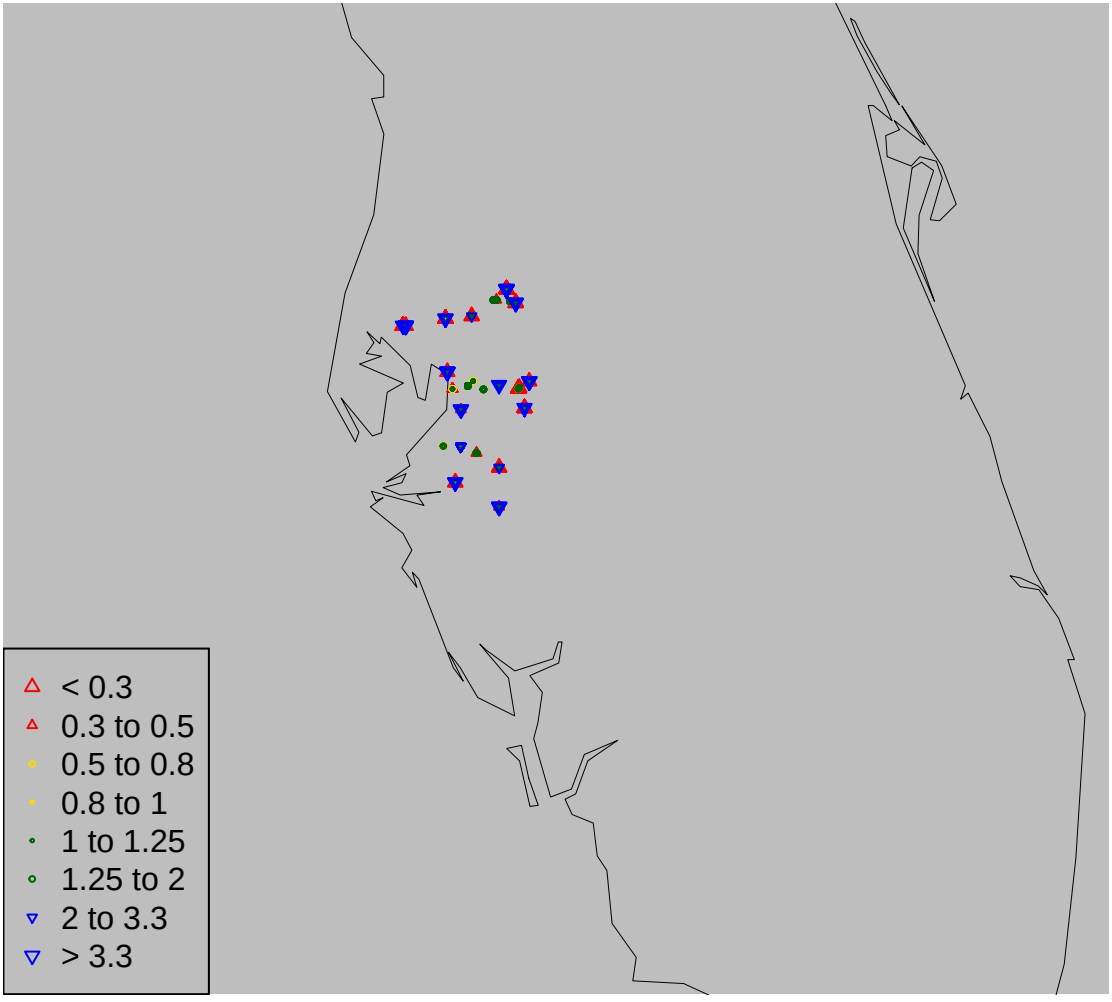
Model Estimation Obs/Pred Ratio − Over Predictions − n=693



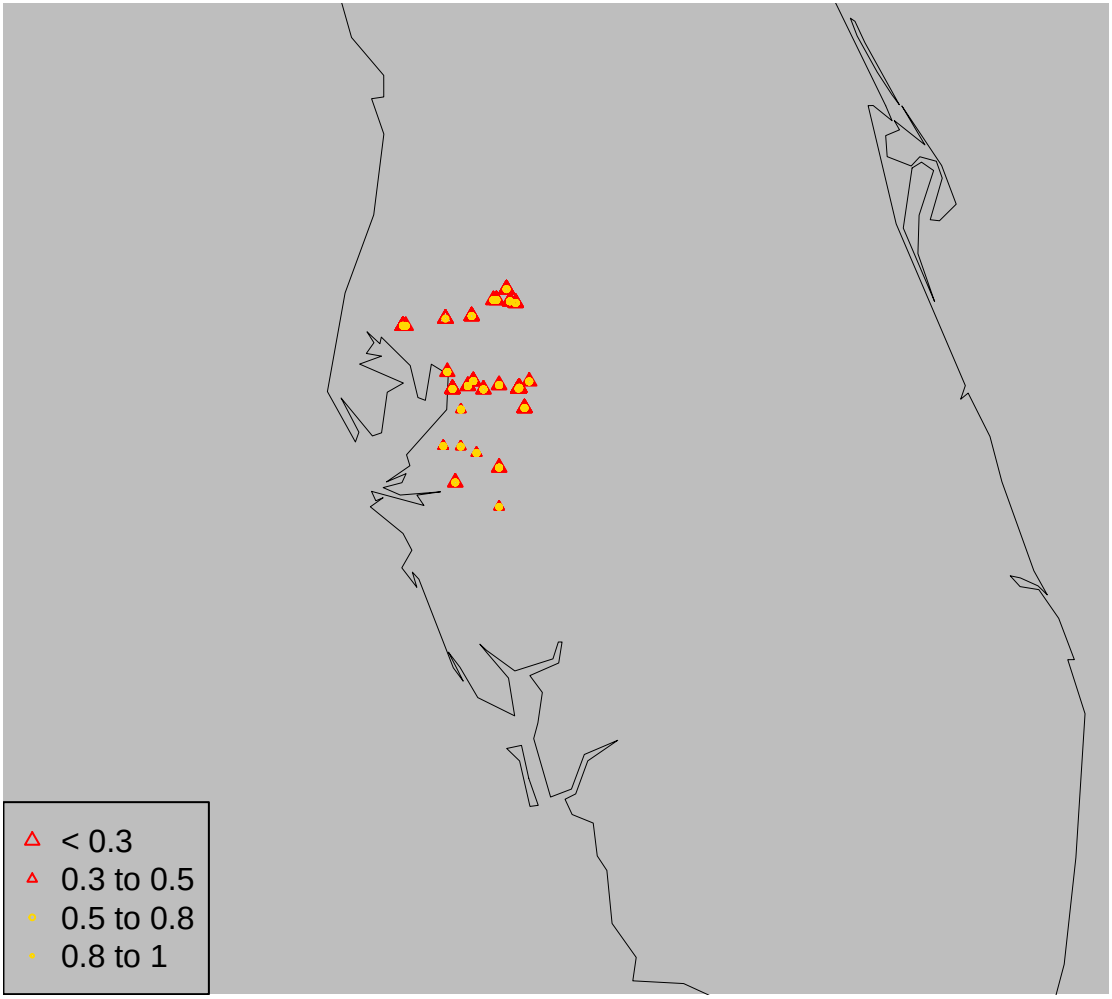
Model Estimation Obs/Pred Ratio − Under Predictions − n=651



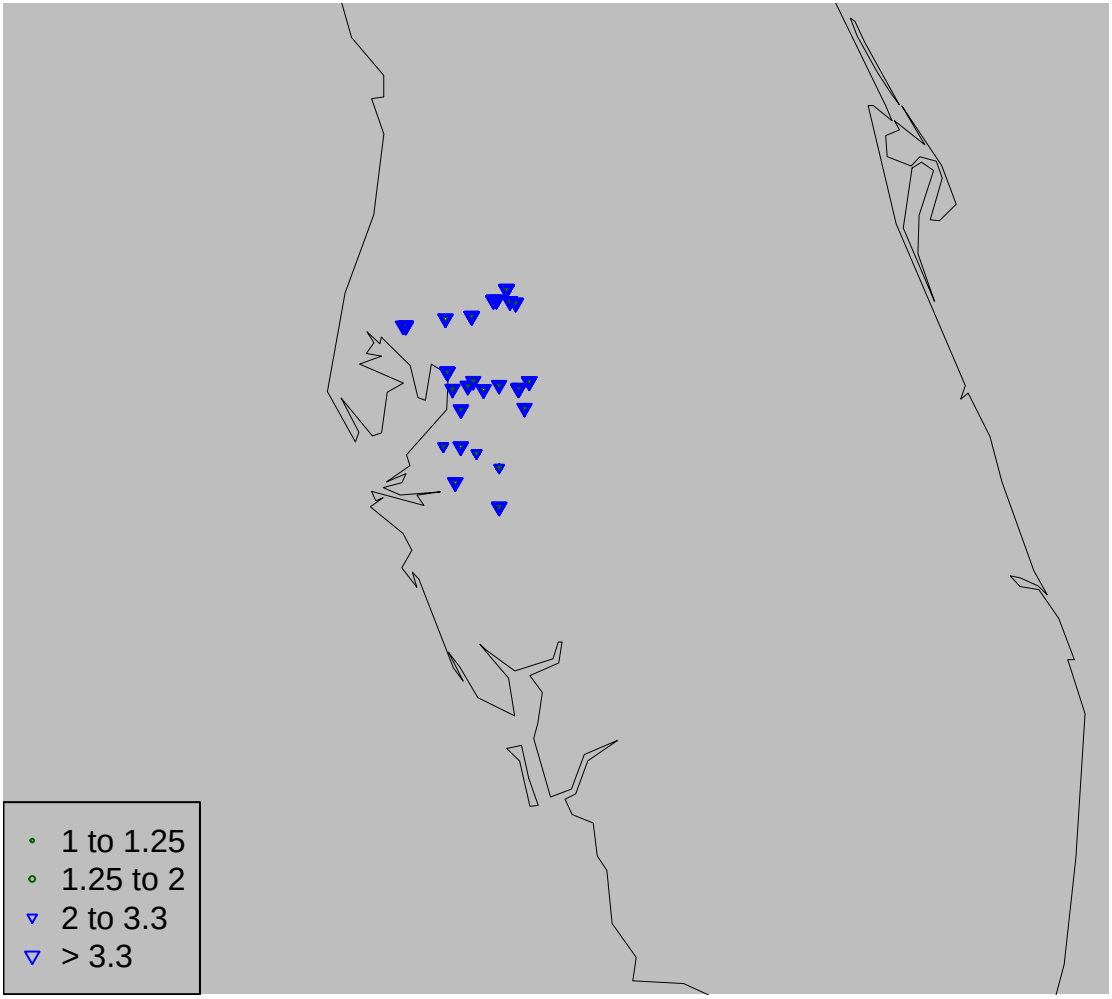
Model Estimation Obs/Pred Ratio



Model Simulation Obs/Pred Ratio − Over Predictions − n=682



Model Simulation Obs/Pred Ratio − Under Predictions − n=662



Model Simulation Obs/Pred Ratio