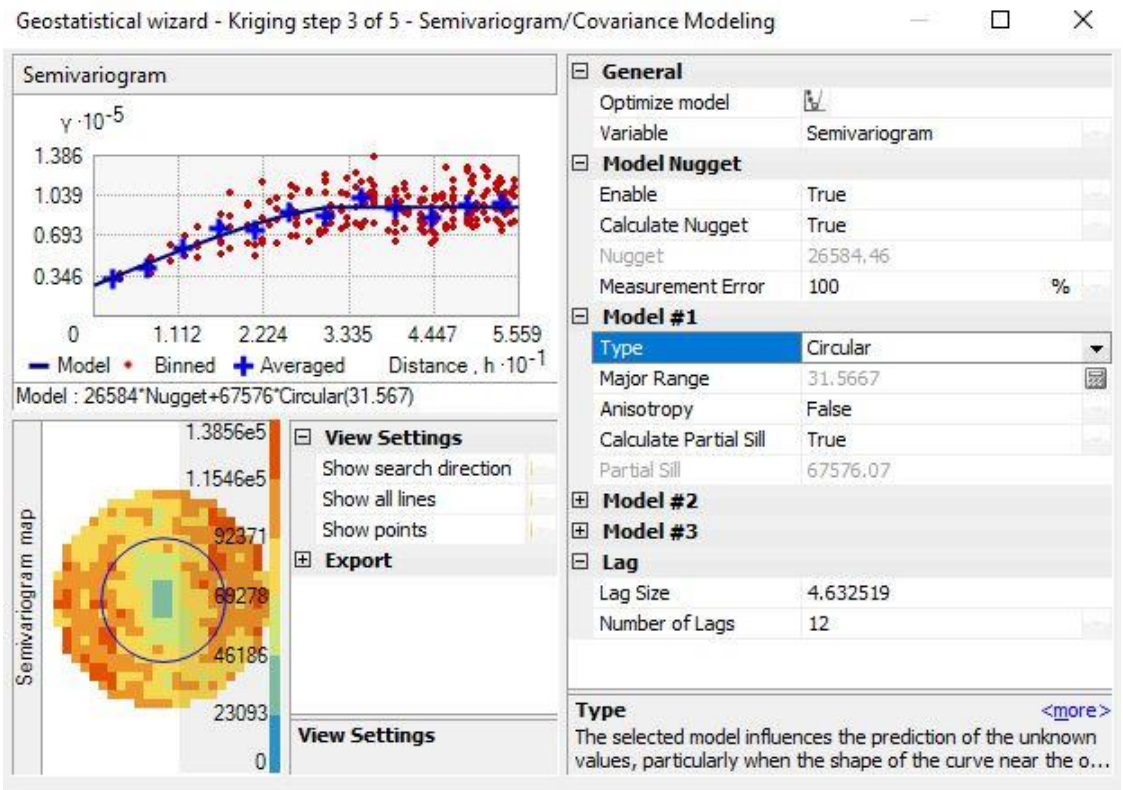
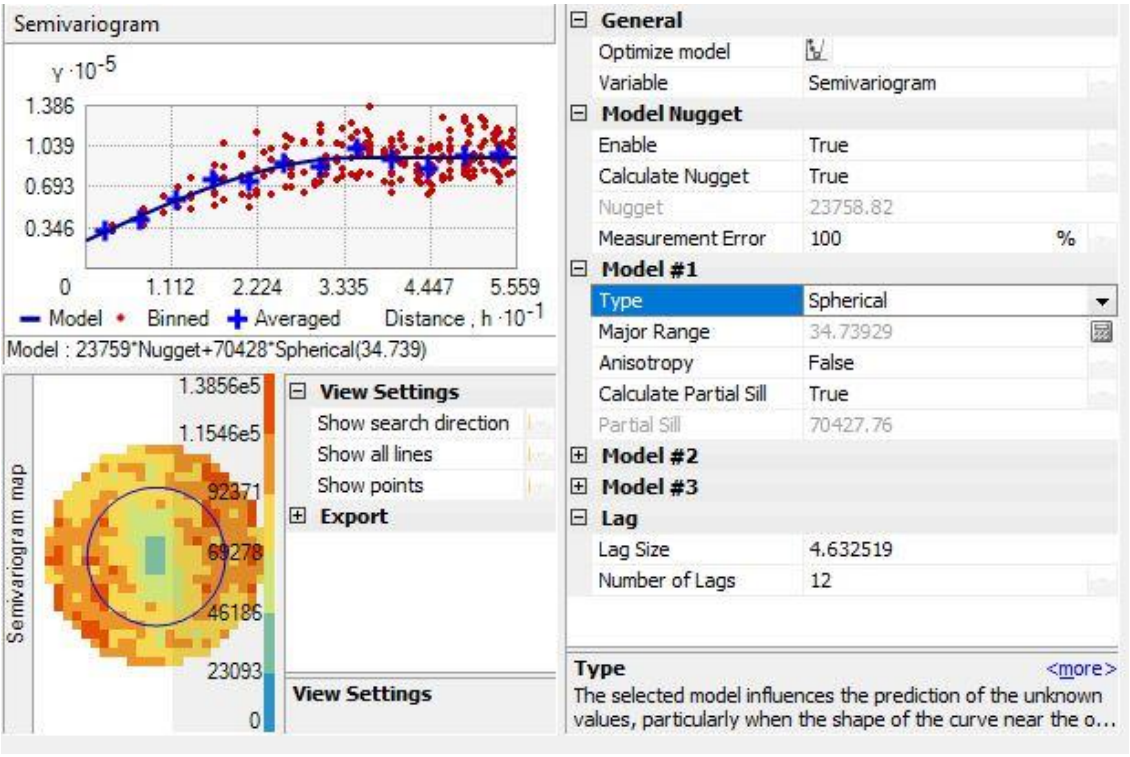
Jason Griffin
Geog 579
Lab 4
Aug 1 2021

1. The lag size is the size of distance where pairs of locations are grouped to reduce the large number of possible combinations. The number of lags specifies how many lags of the variogram will be used in the calculation. If the lag is too large, short-range autocorrelation is masked. If the lag is too small, there could be empty bins. The sample sizes in the bins will be too small to be representative averages for bins. The blue crosses and the model sill change with the lag number.
2. I have chosen the Circular and Spherical types as they are the ones that pass the closest to more of the averages and follows the trend best.





3. Changing the min-max neighbors restricts the number of points within the neighborhood that will be used in the prediction of the unknown location. The number and orientation of the sectors are changed by altering the sector type.
4. The predicted and error scatter plots for the circular model have similar clustering of points along the trend line. The predicted plot points are in a positive trend as the error is a negative trend. The predicted trend line begins at just above 0.118. The nugget is between 0 and 0.118. There is a grey line that starts at 0. Both lines intersect at just past .4 for the sill and range. The mean is 6.41 and the root-mean-square is 184.23. The points follow the trend pretty closely.
5. The maps do show the filled contours from the sample. The large clusters of points are shown as group of lighter/peach color area and where the test points should be is the dark red and would show emptiness or gap in the points.
6. The RMSE that I just finished for the circular and spherical type is about rounded up 137 while the RMSE from question 2 is 183. It is slightly lower than question 2 and is slightly better interpolation. After comparing to the interpolation, I believe that the circular and spherical types that I chose before are the best option.
7. The RMSE and ME between the default neighbor min/max and the new 5/10 are not that different. The RMSE of the 5/10 was 140 rounded up where the default was 137. The images are also very similar with just slight change in the groupings. There is slightly more areas in the mid-range presented in the new 5/10 neighbor map.

Default