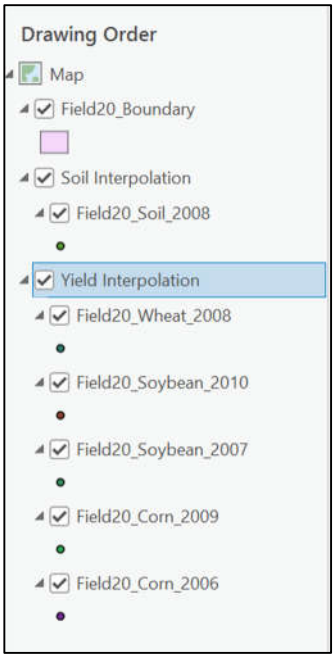
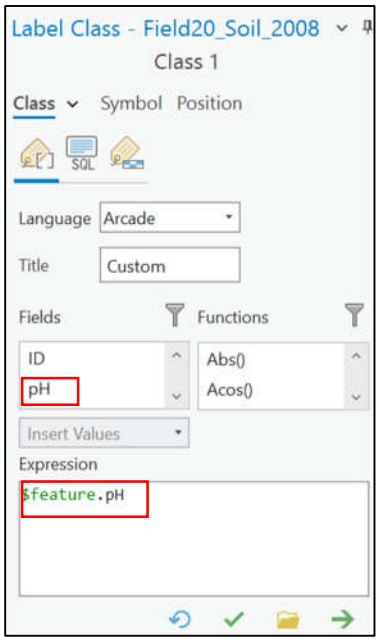
Lesson 2.1: Interpolating Soil Sampling Data

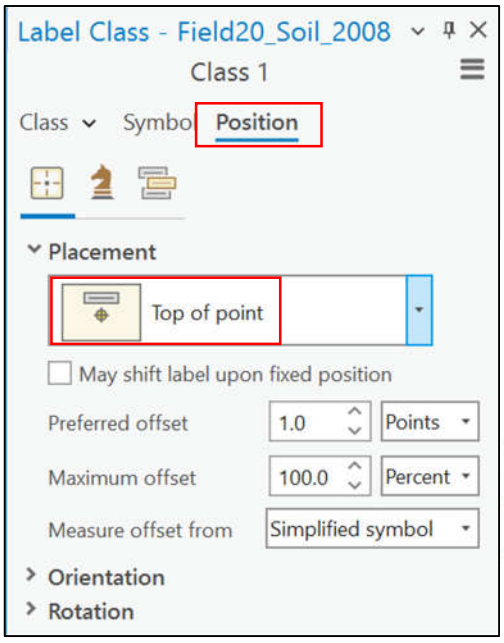
Data Source: *dataset2.zip*

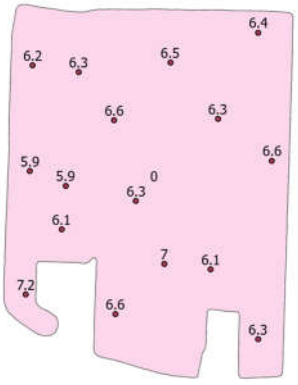


Part 1: Layer management.

1. **Importing Files**
    a. **Connect** *Dataset2.zip* to the catalog.
    b. **Drag** layers into the map: *Field20_Boundary.shp*
    c. Right click on **Map** to add **New Group Layer**, name it as "**Soil Interpolation**".
    d. Add another group layer and name it as "**Yield Interpolation**".
    e. Drag *Field20_Soil2008* to the "**Soil Interpolation**" group.
    f. Drag *Field20_Corn_2006*, *Field20_Corn_2009*, *Field20_Soybean_2007*, *Field20_Soybean_2010* and *Field20_Wheat_2008* to the group "**Yield Interpolation**".
2. **Labeling the Soil by pH**
    a. **Right click** on *Field20_Soil2008* **> Labeling Properties.**
    b. In the **Label Class** tab delete **$feature.Longitude** and select **pH** from the **Fields** drop down menu. In the **Expression** box it should now read **$feature.pH.** Select **Apply.**
    c. In the **Position** tab select **Top of point** from the drop-down menu.



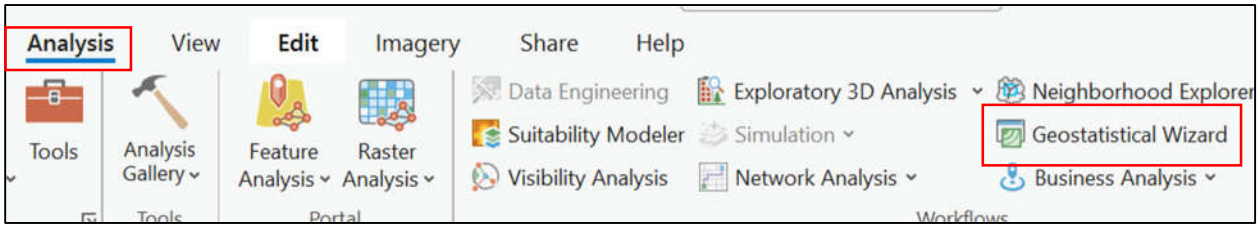




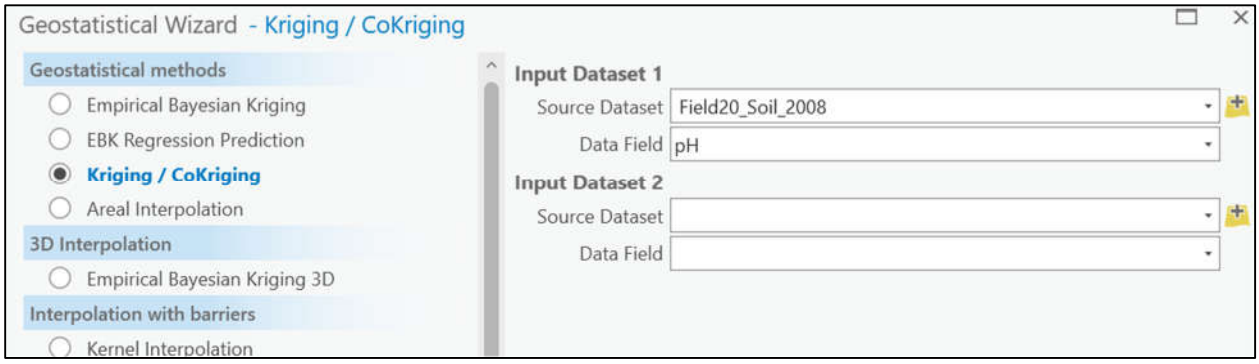
d. Right click on *Field20_Soil2008* > ***Label.***
e. You should now have a non-interpolated map that looks like the one above.

Part 2: Creating interpolated soil property map using Kriging method.

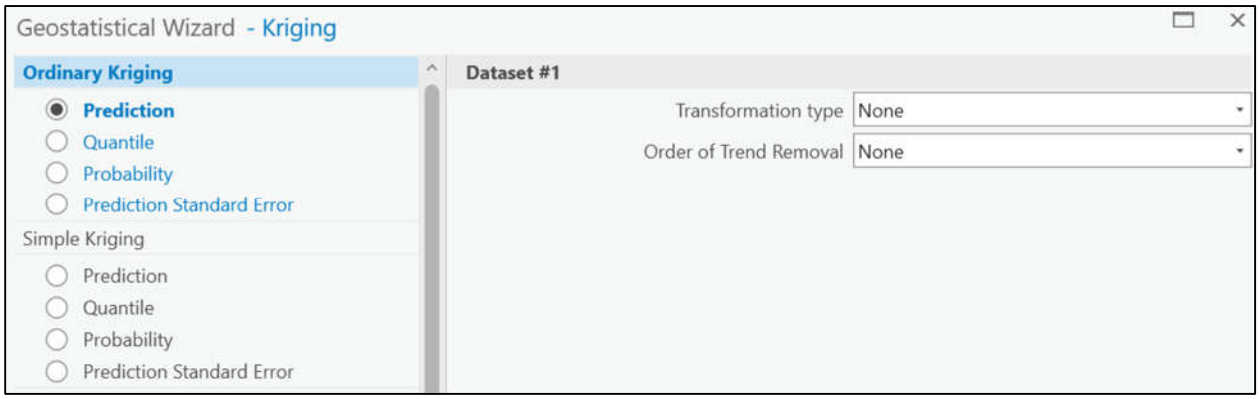
1. In the **Analysis** tab select **Geostatistical Wizard.**



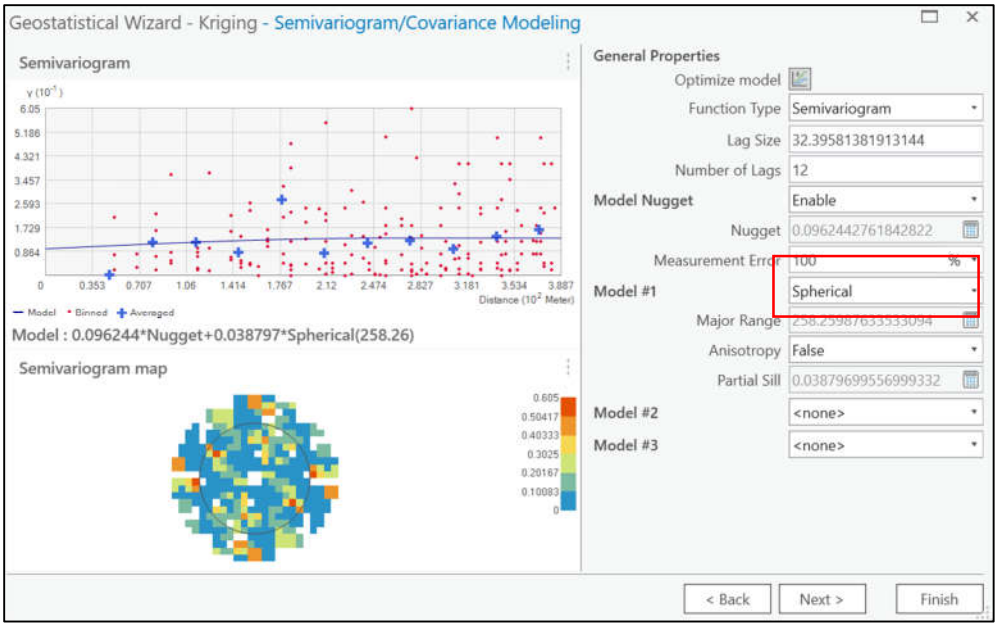
2. In Geostatistical Wizard:
   Choose **Kriging/CoKriging** method under **Geostatistical methods**.
   Source Dataset: *Field20_Soil_2008*.
   Data Field: **pH.**
   Click **NEXT**



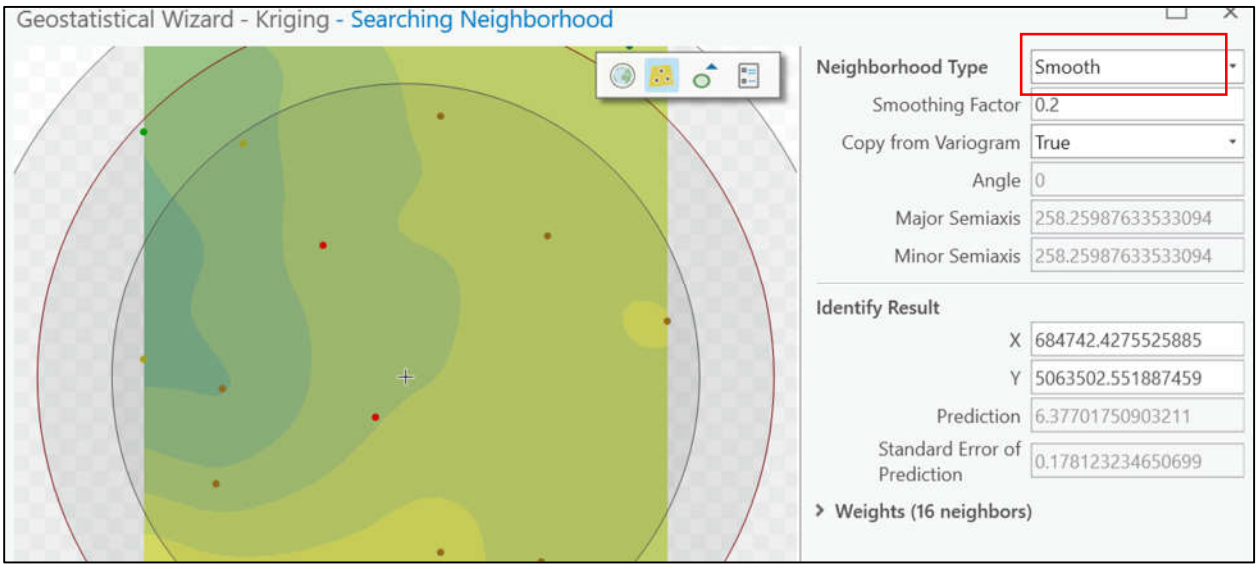
3. Change Kriging Type to **Ordinary Kriging (> Prediction)**, and click **Next**.



4. Model #1 -> Type = **Spherical,** and click **Next.**

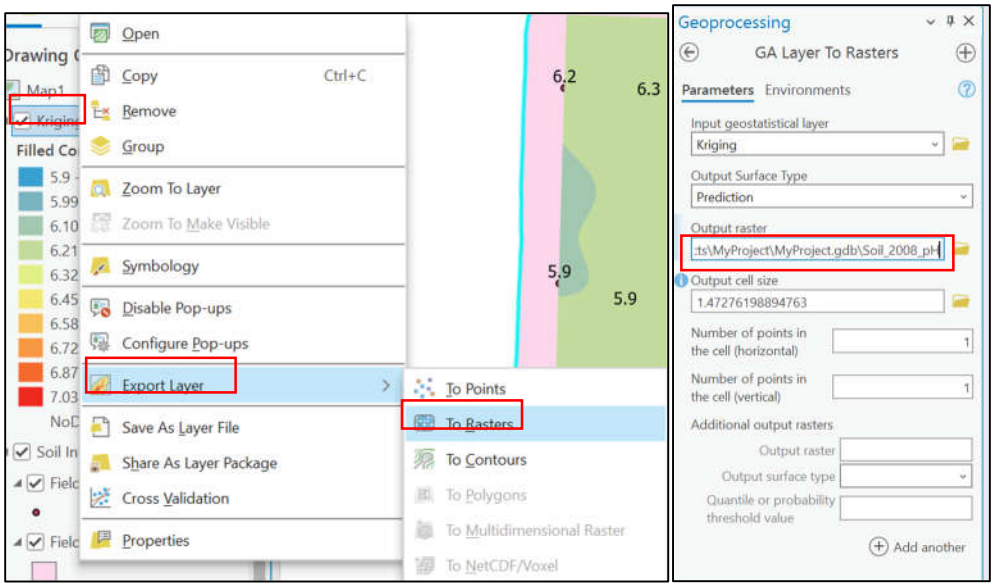


5. Neighborhood type = **Smooth**, and click **Finish**. Then press **Ok** for the method report.

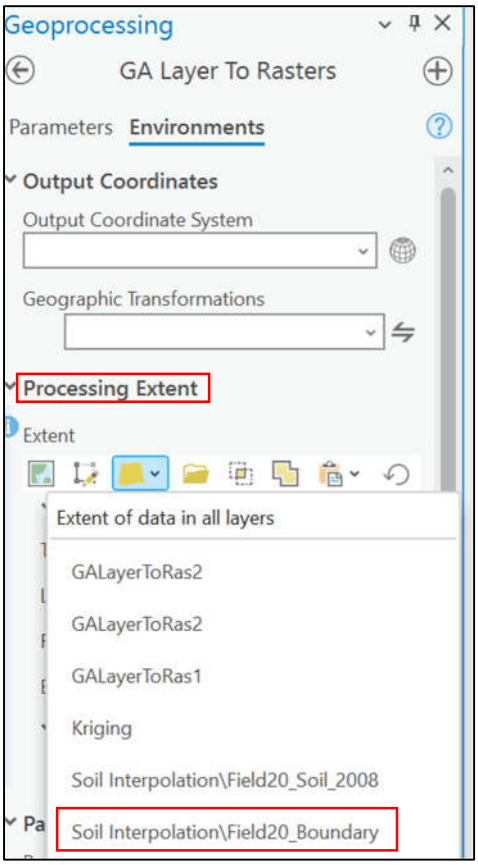


6. A temporal interpolated Soil pH raster is added to the map.

7. Right click on **Kriging** in **Contents** and select **Export Layer** and **To Raster.**



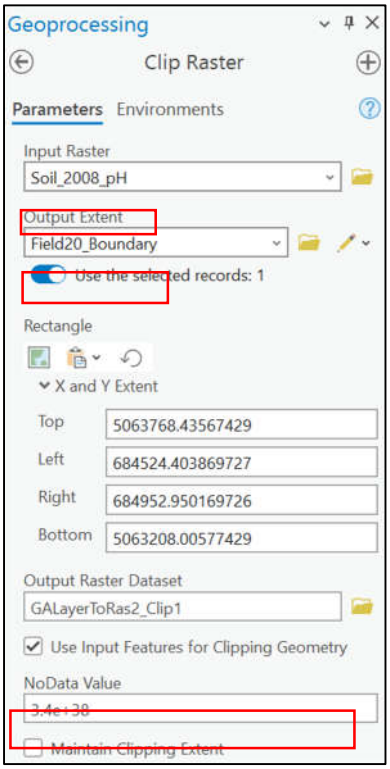
8. In the **GA Layer to Rasters** tab, make sure you have the correct input layer and **rename your output raster** to something meaningful. For example, Soil_2008_pH_Kriging_Interpolated.



9. In the **Environments** tab, in **Processing Extent** select **Field20_Boundary.** Hit **Run.**

10. The layer should appear in your **Contents** tab. If not, go to **Catalog > Databases > MyProject.gdb** and you should find your layer there. You can then drag it to your contents page.

11. Next, search **Clip Raster** in the search bar at the top. A window at the side should open like the one below.



12. Input Raster:
    Soil_2008_pH_Kriging_Interpolated

    Output Extent: *Field20_Boundary*

    Output Raster Dataset:
    Soil_2008_pH_Kriging_In_Clip

    Check **Use Input Features for Clipping Geometry**.

    Hit **Run.**

13. The resultant raster should be clipped to the Field 20 Boundaries.

Note - Repeat Part 2: Step 1 to 13 to generate maps for OM (Organic Matter), PAl (Ratio of Phosphorus to Aluminum), and K (Potassium) by using Field20_Soil_2008 as source layer and entering the Data Field values as “om”, “p_al_ratio”, and “k_ppm”, respectively.

The results of the four soil maps are shown below (exact symbology may be different but trends should be these).