SOC 4650/5650: Week 16 ArcGIS Quick Reference

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May 2nd, 2017

Buffer Analysis

1. Identify feature or features that you would like to create a buffer around and isolate them in their own layer.
2. Geoprocessing ▷ Buffer
3. Select the features isolated in step 1 from the Input Features drop-down menu.
4. Select an Output Feature Class destination.
5. Select a buffer distance.
6. Choose OK.
7. Use the buffer layer to select features that fall within it (requires other geoprocessing tools like Select By, Intersect, or Clip).

Enable Spatial Analyst

Customize ▷ Extensions... ▷ check Spatial Analyst

Heat Mapping

Heat maps show the *density* of point data and provide you with an alternative way to visualize numerous point data (as opposed to aggregated them and creating a choropleth map). Creating heat maps in ArcGIS is a three or four step process.

a. Setting Processing Extent

By default, raster processing tools in ArcGIS are limited to the extent of the layer you are using. ArcGIS draws a rectangle around the maximum area that your data covers. If your data are concentrated in one part of an areal unit, you may need to change your processing extent to avoid cutting data off.

1. Add a *polygon* layer to your map with the maximum amount of area your data could apply to.
2. Geoprocessing ▷ Environments... ▷ Processing Extent
3. Select your polygon layer from the Extent dropdown menu. It will appear as "Same as layer `layerName`".
4. Choose OK.

b. Creating the Heat Map

1. ArcToolbox ▷ Density ▷ Kernel Density
2. Select your Input point data.[1]
3. Select a destination for your Output raster.
4. Adjust the Output cell size if you wish.
5. Choose OK.

[1] This process also works with *polyline data*, a data type we have not discussed this semester.

c. Clipping the Heat Map

The heat map data will cover the entirety of your processing extent (which you set in Part A above). Typically this is not a desirable way to visualize them. Instead, you will want to clip them to a polygon such a neighborhood, city, county, or state boundary.

1. ArcToolbox ▷ Data Management Tools ▷ Raster ▷ Raster Processing ▷ Clip
2. Select your Input Raster, which will be the heat map layer you've already created.
3. Select an Output Extent, which should be the a polygon layer that defines the region your data applies to.
4. Check the Use Input Features for Clipping Geometry checkbox.
5. Choose an Output Raster Dataset location.
6. Choose OK.
7. Re-symbolize the raster image, typically with 9 or so equal intervals.

d. Excluding '0' Values

You may not want to symbolize areas where the density is estimated to be zero. You can exclude zero values by right clicking on the raster layer, going to Properties ▷ Symbology ▷ Classify... ▷ Exclusion..., and adding '0' to the list of excluded values.