Tutorial 3: Spatial Joins – Quantum GIS

This tutorial will introduce you to the following:

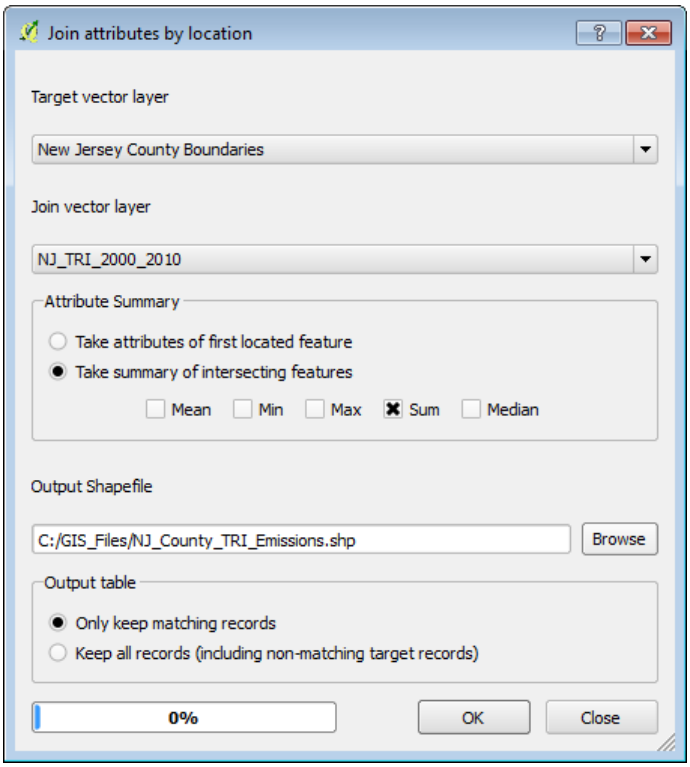
- Spatial Joins – Summarizing and Generalizing Point Data
- Influencing Visual Presentation of Data Using Different Classification Schemes
- Trying it on your own!

This tutorial expands on work done in Tutorial 2. Open your Quantum GIS project from Tutorial 2, and continue learning GIS, by working with spatial joins in the following steps.

Part 1. Spatial Joins

Spatial joins combine information based on the location of two data layers. A common use for spatial joins is to summarize information at a different scale. For example, we have data on TRI releases between 2000 and 2010 for point locations in New Jersey. It might be useful to know the total change in emissions for each county as a whole. A spatial join will help us find this information.

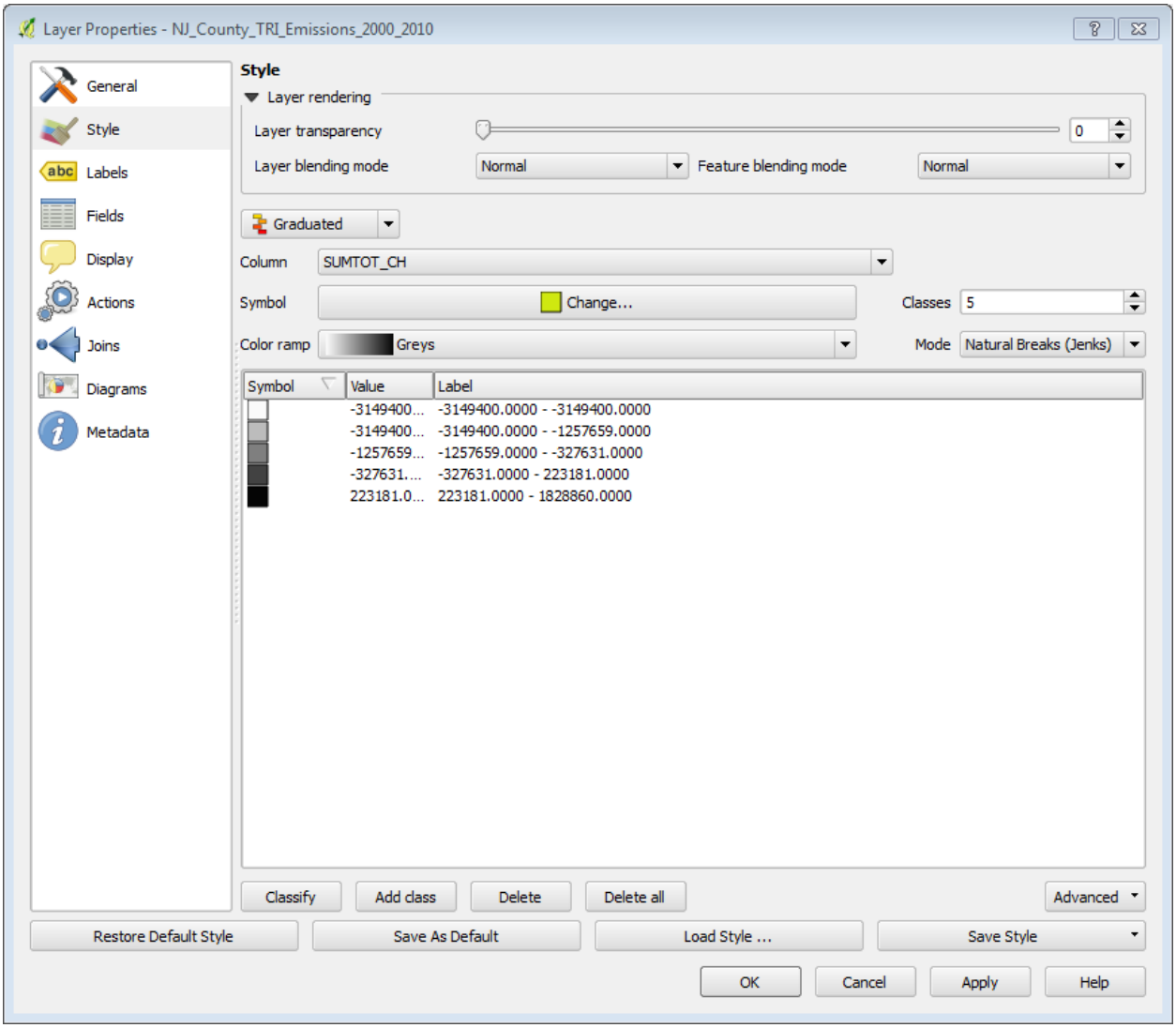
To create a spatial join between TRI facilities that have changed in the last decade and New Jersey counties, select Vector (from the top menu) > Data Management Tools > Join attributes by location. Follow the dialog box below, selecting NJ county boundaries as the target vector (it may still be called co_xxx.shp, from last tutorial, but it should be the file that contains counties), and the join vector layer as the state TRI facilities, selected for non-negative toxic release emissions. Summarize the intersecting features using Sum. This will total the total emissions from the facilities for the entire county. Save the output with a name and location that you can remember, and click OK.



Agree to add the new layer to the table of contents, and WGS 84 as the coordinate reference system. Close the "join attributes" dialog box. Then, double click the new layer to change the layer properties.

Part 2. Influencing Visual Presentation of Data Using Different Classification Schemes

In the last tutorial, we discussed different visualization techniques for the point data symbols. The following dialog box illustrates a way to visualize the counties, using graduated colors, and the new data obtained from the spatial join.



In this example, graduated symbols were chosen to display the SUMTOT_CH variable, which takes the decade change from 2000-2010 in toxic release emissions, and totals them for each county. Again, negative values indicate an overall decline in emissions for that county. Positive emissions indicate an overall increase in emissions. Classes were changed to 5 and the mode was changed to Natural Breaks (Jenks). The color scheme chosen uses grays (press the "Classify" button to view changes). Then, click OK.

What you have created is a thematic map of toxic release emissions, by county, for New Jersey. The spatial join allowed you to summarize point data information from facilities for each county.

By updating the legend and map items in the print composer used in Tutorial 2, a new thematic map for TRI releases can be created that includes summary information about releases in each county (see image below).

Change in Toxic Release Inventory (TRI) Emissions for New Jersey, 2000-2010