

Hydroinformatics

Individual Learning Opportunity 3

Google Fusion Tables and Visualization and Mapping in Excel Tools for Interactive Mapping and Sharing your Data

Due Date: September 27th

Learning Objectives

1. Organize tabular observation data in a Excel or Google Spreadsheet environment.
2. Create interactive maps and data visualizations from tabular data.
3. Share maps and data with other potential users in an online system.

Computer and Data Requirements

1. Data: This exercise requires use of USGS data from the National Water Information System (<http://nwis.waterdata.usgs.gov/nwis>).
2. Software: if you choose use Esri Maps for Office exercise, you will need ArcMap 10 and Excel 2010, as well as the Esri Maps for Office extension and an ArcGIS Online user account.
3. Software: if you choose to use Google Fusion Tables, you will need any computer with a web browser, and a Google account.

The Problem

You have been assigned to explore the USGS water data collection network in the State of Utah to ultimately be able to make recommendations about placement of new water data collection sites. To begin, you must find and create a series of maps of all historical time series streamflow record sites available for the state in the USGS NWIS system. The maps could show/indicate the density of sites throughout the state, the number of observations of peak flow data, the number of observations of water quality data and/or the number of years of data collected. Exploratory graphs comparing number of observations to other parameters such as drainage area are also required to help further understand the nature of the Utah data collection network.

Deliverable

Provide a one-page briefing report together with numbered figures (in appendices) with the required maps and figures. You may make the maps and figures using EITHER Google Fusion Tables OR Excel + Esri Maps for Office. In presenting your report:

1. Describe the process used to create the maps and figures and discuss the advantages or disadvantages of using your chosen technology as compared to the alternative technology.
2. Provide some interpretation of the maps and figures, explain any patterns or observations in the data.

Suggested Approach

The approaches to using Google Fusion Tables and Esri Maps for Office were both presented in class and are available to review as videos of the class lectures.

The data you will analyze and visualize for this exercise will come from the USGS NWIS system. It is recommended that you use the following steps to retrieve the data for the project:

- Open the USGS NWIS site in an internet browser (<http://nwis.waterdata.usgs.gov/nwis>)
- Click the Surface Water link
- Click the Historical Observations link
- Check “State/Territory” in the Site Location box and click “Submit”
- On the next page under “Choose Output Format” select the “Site-description information displayed in table format” radio button, and choose all of the fields that you want in your resulting table of site information. Click “submit”
- This should show a long table of all NWIS sites available in Utah, including columns of descriptive data that you can use in your analysis. At this point you can copy the data into Excel to “clean it up” into a format for use in Google Fusion Tables, or for analysis together with Esri Maps for Office.

Update

The assignment asks you to work with data from the USGS NWIS system. However, in the spirit of making this a truly "Individual Learning Opportunity" I would like you to consider using a different data set OF YOUR CHOOSING. The data set you choose should meet some minimum characteristics:

1. It should include spatial data that can be viewed on the map, as well as attribute data that you can analyze in a graphing or mapping environment
2. It should include data that is related to your discipline or research area.
3. I believe that many of you have access to interesting spatial/observational data sets that you would find to be more compelling to work with than the USGS NWIS.