Final Project

Storm Event Plotting Utility

Introduction

Using data obtained from https://www.ncdc.noaa.gov/stormevents/ftp.jsp we have produced a tool that gives the user access to several plots allowing them to examine the data more carefully. The following steps were take to enhance the viewing experience:

1. The data is prefiltered and cleaned to reduce load times.
2. The bokeh package is used to create sharp plots that update quickly.
3. A local bokeh server is run to quickly stream data to Javascript plots run from your browser, and reduce load times.

Plotting has been tested with Chrome on Mac OS and Windows.

Installation

Firstly, make sure you have a current Python installation (3.0) and the standard packages numpy and pandas (0.16.1 or later). In addition, we require the user to install bokeh, the plotting library we used. Newest installation information can be found at http://bokeh.pydata.org/en/latest/docs/installation.html, but we outline the simple steps below:

1. Install the package with "conda install bokeh" or "pip install bokeh" depending on your system.
2. We also require bokeh's built in sample data to produce maps. These can be downloaded by typing "bokeh sampledata" once bokeh is installed.

Layout

The code we have provided has the following layout:

1. The Data folder contains the raw goverment data.
2. The FilteredData folder contains our cleaned and filtered version. This was generated by running createFilteredData.py.
3. Our plotting code, in histogramPlot.py, mapEventPlot.py, and yearAggregatePlot.py.
4. The remain files are helper classes.

How To Use The Plots

Here we describe how to use each plot. In each case the plot is loaded in your browser and a local bokeh webserver is launched. To stop using the plot you can close the browser window and terminate the bokeh server. In all of the plots below there are tools on the side to zoom and pan or save the plot.

1. Histogram Plot: This plot shows the number of Hail, Thunderstorm Wind, or Tornado events for a given year as a histogram. To start this plot run "bokeh serve −−show histogramPlot.py". The plot will begin showing data when you click a selection from the two widgets. Note that the Event Types are multiselect, so you can choose any non-empty subset you like. Furthermore, note that the axes are rescaled upon your choice.

2. Year Aggregate Plot: This plot shows the aggregate number of injuries, and deaths, and total even count across the years 1955-2016. To start this plot run "bokeh serve −−show yearAggregatePlot.py". The plot will begin showing data when you click a selection from the widget.

3. Map Event Plot: This plot shows the location of each Hail, Thunderstorm Wind, and Tornado event for a given year. To start this plot run "bokeh serve −−show mapEventPlot.py". The plot will begin showing data when you click a selection from the two widgets. Note that the Event Types are multiselect, so you can choose any non-empty subset you like.

Scary Thing to Notice

When studying the data via the plots given, it is a bit startling to notice how much the storm activity has grown over the years. Even if we account for the lower quality of reporting technology in the early years of the data, we still seen a large jump in storm activity.

Data Missing: End of 2016

We do not have data yet for the end of 2016, as can be clearly seen in the plots.