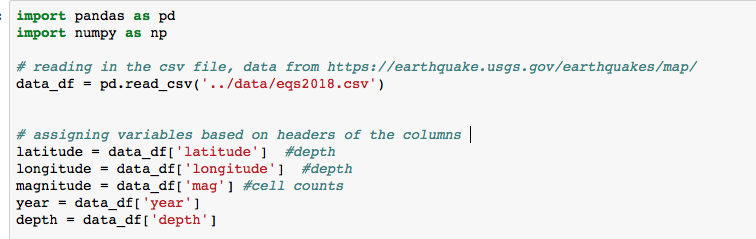
Maddy Fasca

Motivation:

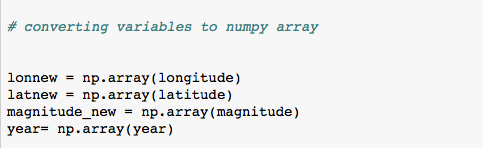
Earthquake data was collected from <https://earthquake.usgs.gov/earthquakes/map/> . This data included earthquakes occurring from the years 2000 to present. The only earthquakes in the dataset selected were those that had a magnitude greater than or equal to 6.0. With this data I performed a statistical analysis and also represented the data on a map.

Code Description:

* Importing the pandas and numpy libraries
* Reading in the csv file. The csv contains all earthquake events (magnitude ≥ 6.0) that occurred from the years 2000-2018
* Variables were assigned based on their headers in the columns



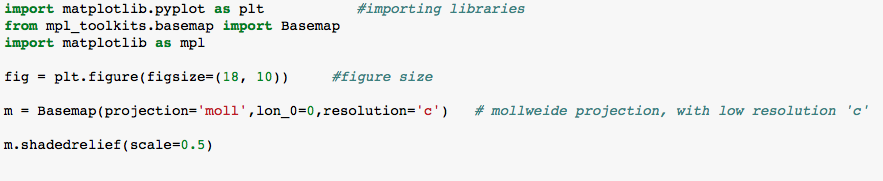
* Converting variables to numpy array



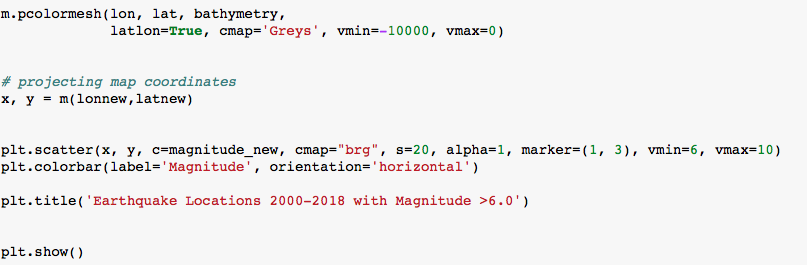
* Reading in NetCDF grid file from <https://www.gmrt.org/GMRTMapTool/> , grid file obtained from here was in a lower resolution (my computer unfortunately didn’t like using the higher resolution).
* Variables were assigned and converted to numpy array



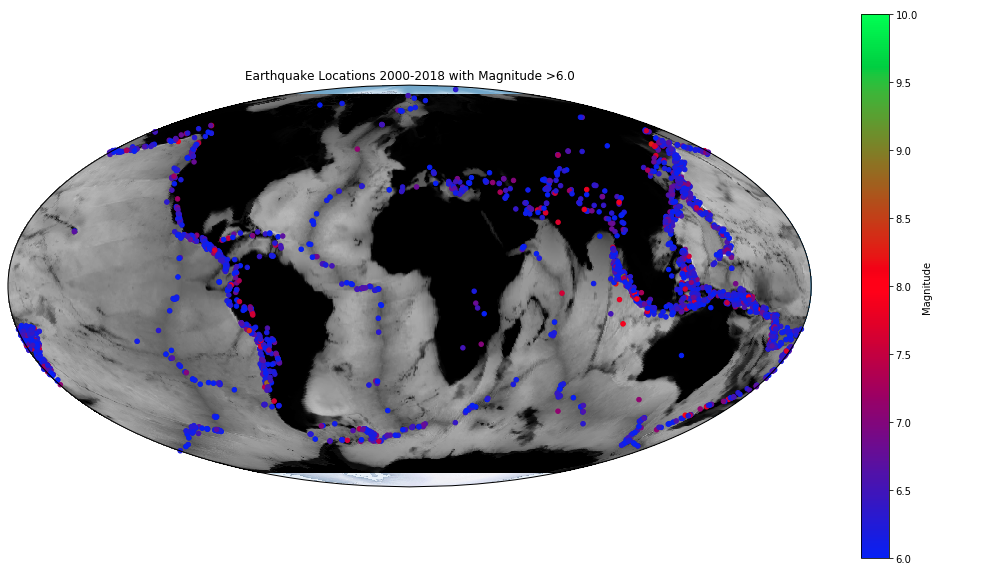
* Importing libraries
* Assigning figure size
* Using a mollweide projection with a crude resolution



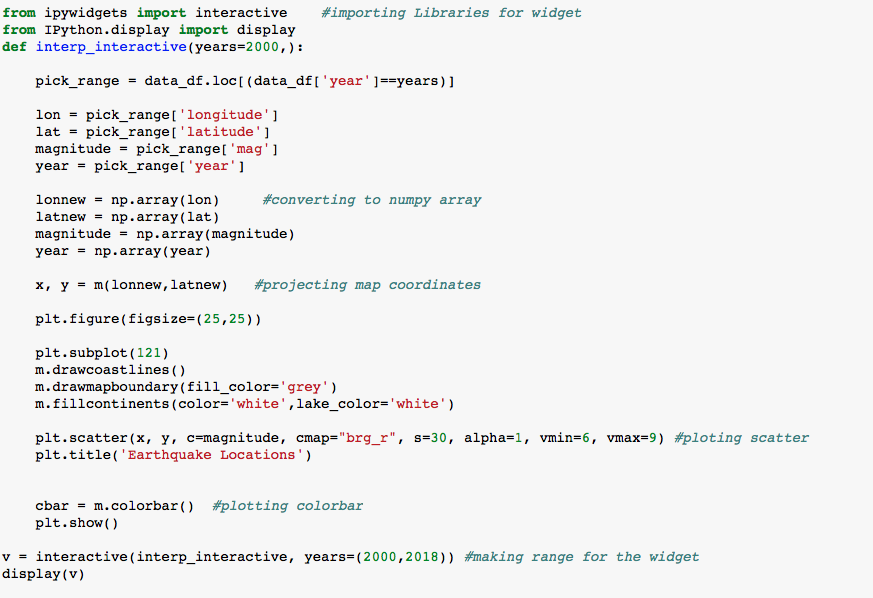
* Using pcolormesh for the base map
* Computing the map projection coordinates
* Plotting a scatter with magnitudes distinguished by color, points in blue are magnitudes closer to 6, and points closer to green are higher than magnitude 8



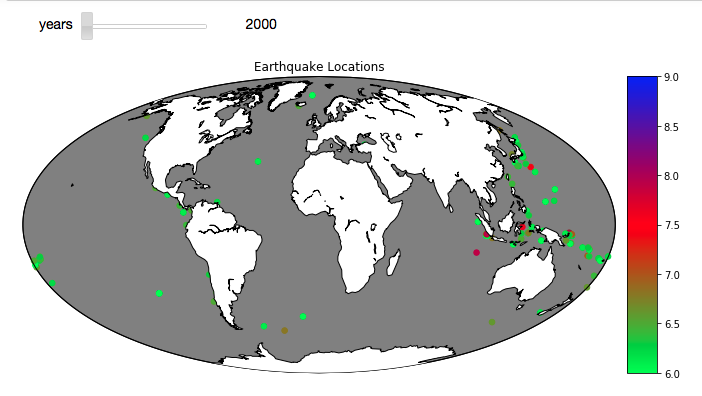
* Below is the base map with the earthquake locations, colored by magnitude



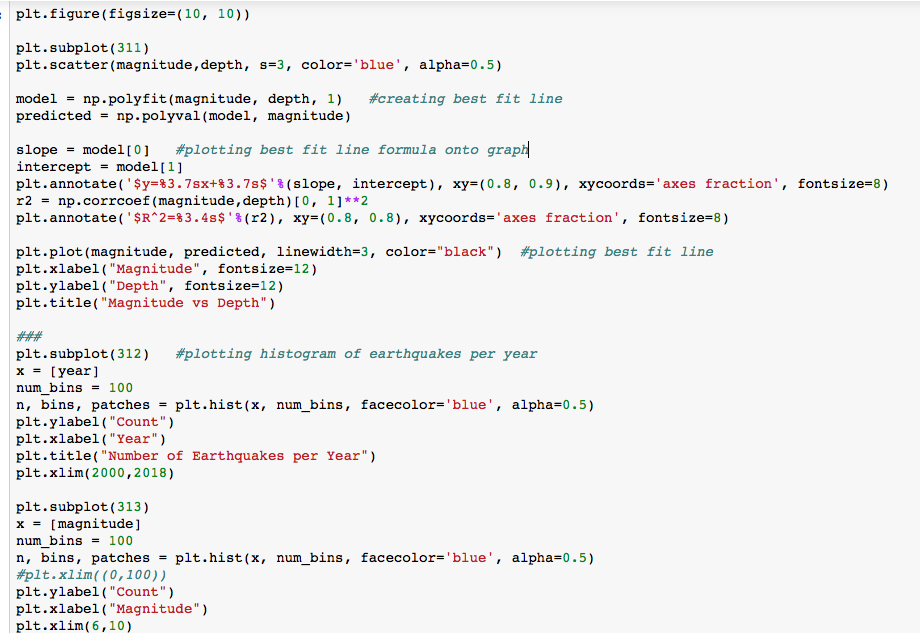
* Below is the code for making the widget
* The slider will display the earthquakes per year
* Import libraries used for widget/slider
* Using pick\_range for variables
* Converting variables to numpy array
* Projecting the map coordinates
* Plotting scatter and accompanying color bar that displays magnitude

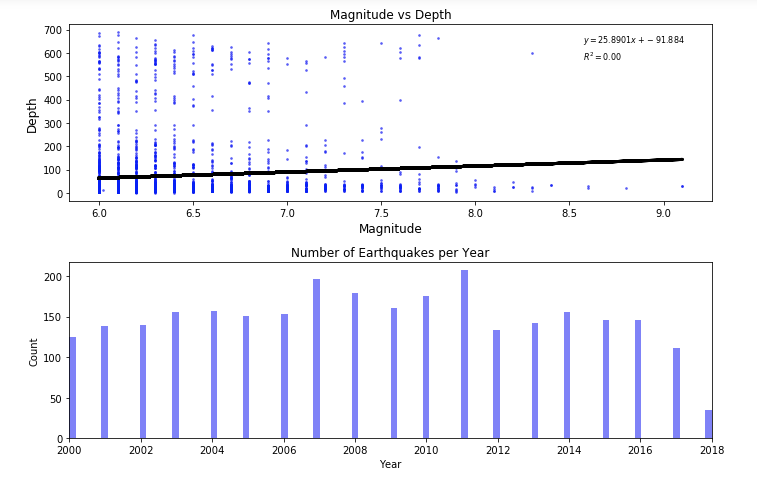


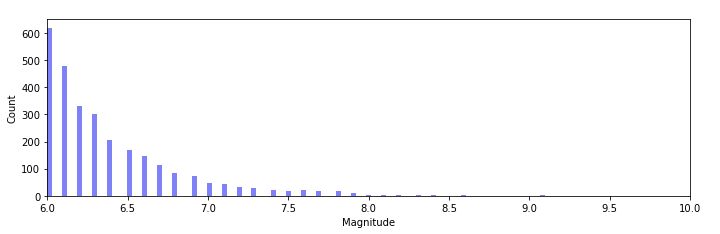
* Below is a figure of the widget



* For the rest of my code I did a statistical analysis of the data
* First graph is a scatter plot of magnitude vs. depth
* Second graph depicts the number of earthquakes per year
* Last graph shows the count of magnitudes







Interpretation:

On the map and on my third graph it is clearly shown that there have been more earthquakes with a magnitude less than 7.0 occurring between the years 2000 to present. The year that has the least amount of earthquakes occurring was in 2011. All of the other years have a very similar amount of earthquakes occurring. Excluded is the year 2018, this year shows the least amount of earthquakes, because the year has barely started. When comparing a relationship of the magnitude vs. the depth, no correlation was found. The data was very spread out.