Midterm Report

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1 Introduction

1.1 Change of Topic

W̄e started out with a completely different data set, trying to use economic, social, and international factors to predict how many casualties will occur if a militarized dispute were to occur between two countries. We realized that we did not have enough data to make the predictions we would like.

A big factor that comes into play would have been the amount of violence within the countries at the time of the dispute. This could signalize the countries' disposition towards violence during the time of the dispute, but the problem we came across was that we only had specific enough data for the United States. Most of the military dispute data, however, did not involve the United States.

The other challenges we faced also involved a lack of relevant data. So, we decided that the best course of action would be to find a new problem and dataset that we are all interested in.

1.2 Topic

C̄oastal flooding is one of the major issues associated with climate change. As the sea level rises in many areas around the world. Coastal cities are becoming uninhabitable. Millions of people will be displaced. The change in mean global sea level is displayed on the next page in Figure 1, a graph created by NOAA.

If these cities are not prepared to move their people out or to change their landscape, the effects of sea level rise will be devastating. Our project hopes to create a more granular analysis and prediction model than we have seen before.

1.3 Purpose

W̄e are using data on the mean change in sea level in each body of water since 1992, international elevation data, sea level change observed in coastal cities, international flood data, and other water emergency data to try to predict which countries will be most at risk as sea levels change in the future.

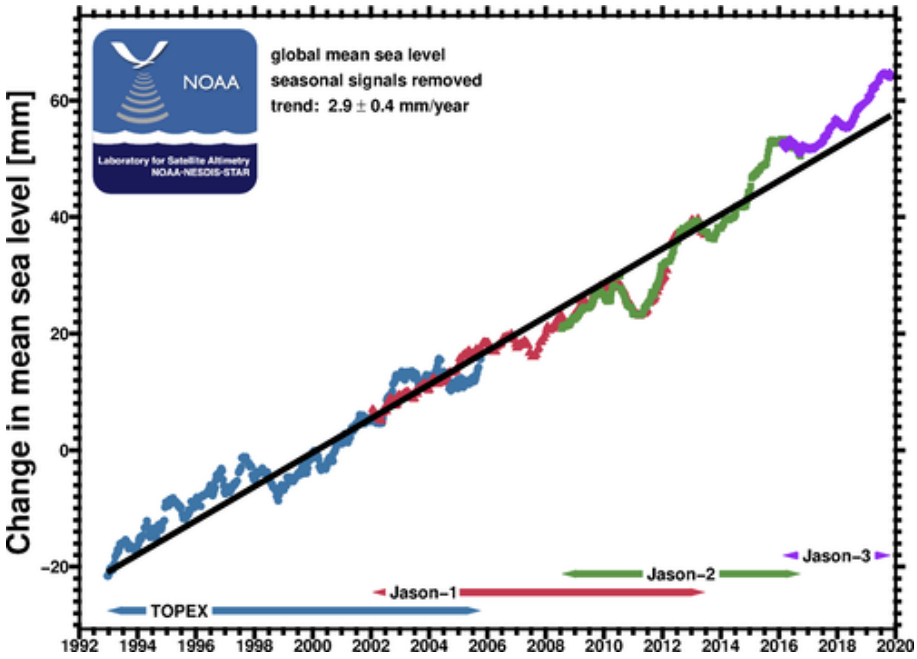

Figure 1: Global change in mean sea level from 1992 to 2018 by NOAA.

1.4 Why?

Ās mentioned before, we hope to be able to accomplish this with more granularity than we have been able to find online. Many of the reports we have read involve the average sea level across the entire planet, and then making generalizations based on the global sea level rise. While the change across the entire planet is important to note, this information would not be representative of many cities.

1.5 Progress

Ōur data is big, and very messy. The sea level change by body of water has been processed and cleaned up. The main issue there was that it came in a separate CSV for each body of water, and each file was of different lengths. There are also missing values where data was not collected. They were all collected over the same range of years, but different number of data points per year.

This data has been initially analyzed to find the trends per body of water. This following graph displays the trends per body.

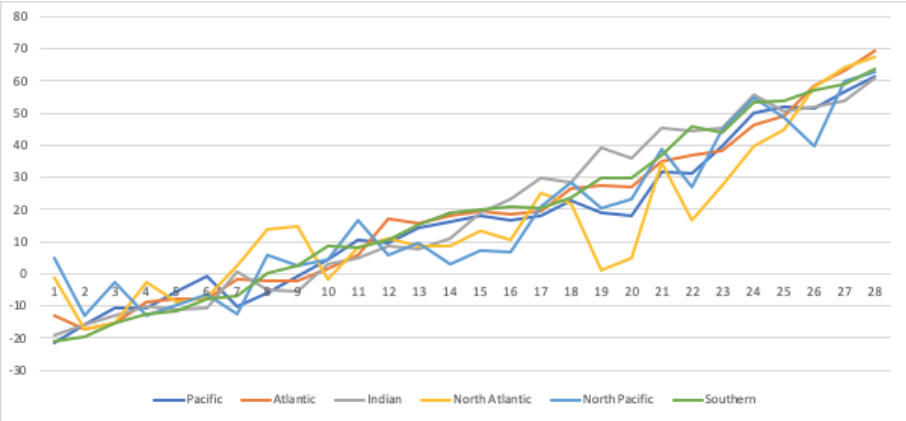

Figure 2: Regional sea level change.

W̄e have been working with QGIS to plot the rates of change on a the map to visualize. We have also been working on plotting the elevations in each city.

1.6 Data (Hyperlinked)

Regional sea level time series data
Global Flood Data
Global Sea Level Change Data

1.7 Looking Forward

W̄e recognize that we are a bit behind with the midterm report. We decided to make this topic change pretty late and know that we have a lot of work to do for the final report.

We hope to be able to predict flood risk and disaster risk for each portion of the coast and plot it all on a map of the world. The current QGIS file we have is the following figure.

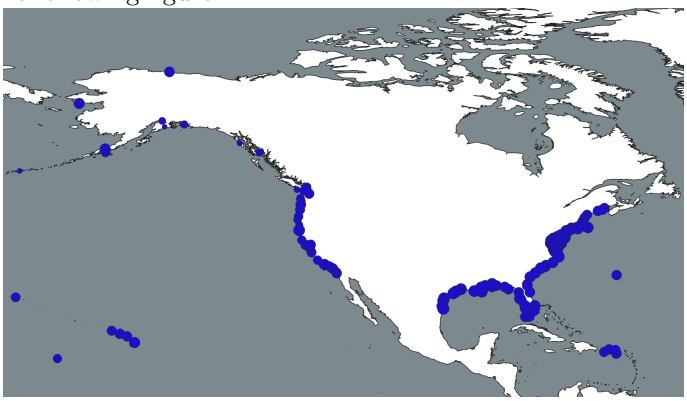

Figure 3: Current coastal cities that we are planning at looking at.