1. Introduction

Climate change is a unique issue on Earth due to many factors we can control, and many that we cannot. Accurate prediction models have become very valuable for governments to understand and detail the effects of climate change. The nature of climate change is constantly changing so the need for new models is always there. This has become a valuable tool for coastal cities to use as well, to determine the safety of the longevity of their homes, who are at risk of sea level rise taking their homes. In the next centuries, it will become a major issue for the world to consider, as sea levels rise and cities begin to be underwater, so doing our part now to help mitigate and contain the sea level rise is of the utmost importance.

1. Objectives

The goals for this project are:

* Visualize the region of interest for this project.
* Develop a system to predict the sea level rise data for this region and test it against current available predictions.
* Scale this model to predict any year and add the availability to check any location as well.

1. Scope

There is much data for the US that is available for use, however, outside of the US, there is not much data available, especially little prediction data. This can cause issues for testing the data, and bias in the data. This will attempt to be compensated for. The size of the data may cause some issues with this system. The nature of this data could become very large when considering the entire world, so it could become rather resource intensive, as well as possibly affecting times for modelling and prediction. The goal is to develop a system that predicts well, and quickly. Many people will lose interest if the predictions take too long to produce.

1. Data Sources

Data has been gathered through two NASA programs, The Intergovernmental Panel on Climate Change, and the Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force. The IPCC is the group assembled by the United Nations to monitor and assess all global science related to climate change. The Task force is used by the US Government to monitor and assist in all local areas of interest.

1. Methodologies

The aim of this is to use visualization software through the mapping toolbox from MATLAB, to visualize the elevation data of a local region and the sea level. From this point, we hope to develop a deep learning model to study the climate change data, as well as the current predictions as test values, to predict the changes in sea level rise for our mapped region. This will allow us to develop a system that will be able to predict any time and any region for a user, so the user may see the areas affected that they want to see.

1. Timeline

* Milestone 1: Visualized region data using elevation data. Estimated completion: 9/24
* Milestone 2: Develop a deep learning system to predict future sea level changes, using previous observed changes. Test against current available predictions. Estimated Completion: 10/24
* Milestone 3: Scale to allow a user to input any time of their choosing, and any region of their choice. Estimated Completion: 12/8