***Database Information***

This data set contains information on longitude, latitude, altitude, and sea level rise, which were extracted from the IPCC-AR6 report[1]. The data set includes measurements for a single year and scenarios.

**Data Source:**

The data was extracted from the IPCC-AR6 report and includes measurements of longitude, latitude, altitude, and sea level rise for the following years: 2030, 2050, 2070, and 2100. For each year, data is provided for a best and worst-case scenario in which the best scenario is increasing temperature by 1.5°C and the worst scenario is 5°C. Sea level rise values are reported in millimeters (mm), while altitude measurements are reported in meters.

Altitude measurements were extracted using a digital elevation model (DEM) of the coastal area. By using this method, we were able to obtain accurate altitude measurements that could be used to assess the risk of flooding due to rising sea levels.

**Data Preprocessing:**

The data is available in a CSV and excel file and includes the following columns:

Row number: This column represents the number of rows in the CSV file.

Altitude: This column represents the altitude of the location in meters above sea level.

Longitude: This column represents the longitude of the location in decimal degrees.

Latitude: This column represents the latitude of the location in decimal degrees.

Sea level rise: This column represents the increase in sea level at the location in millimeters for the specified year and scenario.

In order to visualize the data, we used ArcGIS and created a fishnet to interpolate data. The fishnet method allowed us to divide the study area into smaller, more manageable grid cells and estimate values for data points that were not directly measured. This was necessary because the original data from IPCC-AR6 was based on point measurements, and we needed to transform it into a gridded data set to create a more accurate map of the study area.

**Data Visualization:**

The resulting data was visualized using ArcGIS, creating a detailed and accurate study area map. The map provides valuable insights into the impact of sea level rise on the environment for the specified years and scenarios. This can inform decision-making to mitigate these impacts.

**Limitations:**

It's important to note that the data has some limitations and uncertainties, particularly with regards to the accuracy of the altitude measurements and the interpolation method used to estimate sea level rise values. Users should also be aware that the sea level rise projections are based on certain assumptions and may not reflect actual conditions.

**Further Analysis:**

The data provided in this repository can be used for further analysis and research, such as modeling the potential impact of sea level rise on local communities or exploring different adaptation strategies. However, users should be mindful of the limitations and uncertainties associated with the data, and exercise caution when interpreting the results.

**Conclusion:**

This data set provides valuable insights into the impact of sea level rise on the environment for specific years and scenarios. Using a DEM of the coastal area to extract altitude measurements and transforming the original point measurements into a gridded data set using a fishnet and interpolation methods, we obtained accurate information about the potential risk of flooding due to rising sea levels. The use of ArcGIS has resulted in a more accurate map of the study area, allowing for better decision-making and planning.

Please note that while we have taken all possible measures to ensure the accuracy of the data, there is a possibility that errors may exist. Users are encouraged to exercise caution and undertake further verification as necessary before making important decisions based on the data

**References:**

[1] Garner, G. G., Hermans, T., Kopp, R. E., Slangen, A. B. A., Edwards, T. L., Levermann, A., Nowicki, S., Palmer, M. D., Smith, C., Fox-Kemper, B., Hewitt, H. T., Xiao, C., Aðalgeirsdóttir, G., Drijfhout, S. S., Golledge, N. R., Hemer, M., Krinner, G., Mix, A., Notz, D., … Pearson, B. (2021). IPCC AR6 Sea Level Projections (Version 20210809) [Data set]. Zenodo. https://doi.org/10.5281/zenodo.5914710