

Project 3

Climate Change Visualization Proposal

Overview

This project aims to present a visual representation of climate change by looking at the impact of climate change on the environment between 1992–2022 which includes, temperature, precipitation, and air quality. The project will include interactive maps, line graphs, and animated charts, providing users with an immersive experience and insight into the severity of climate change. We will visualize the climate change data through interactive maps, line graphs, and animated charts.

Three main aspects of this project will be visualization of Temperature, Precipitation and Air Quality Index (AQI). We also intend to create a Climate Event Map, which will include data from web scraping related to climate change events like floods, wildfires and, more.

For this project we will first collect the data from open sources. After the data collection, we will move on to back end ETL process using PostgreSQL/MongoDB, Python and Jupyter Notebook. After the ETL process has been completed, we intend to create the Visualization and Dashboard using Flask API, HTML and JavaScript libraries.

Temperature and Precipitation View

Temperature and Precipitation view will consist of a map with a slider to change year with auto-play animation, line graph and animated graph. These visualizations will show the rate of change in temperature and precipitation over time. We will also use Race Bar Chart to display our data with animated racing bars.

Air Quality Index View

Air Quality Index view will include a line graph that compares the air quality index with CO2 emissions, providing users with a visual representation of the relationship between the two factors. Additionally, we will create a scatter geo map of CO2 emissions, displaying the geographic distribution of carbon emissions.

Climate Event Map

The Climate Event Map is going to be a interactive choropleth map. The map will have pinned locations which will have exact climate information for the pinned location. We will use web-scraping to collect data related to climate change events.

Data Source

For data collection, we will use the following sources:

- Historical Temperature and Precipitation data: National Oceanic and Atmospheric Administration (NOAA) Climate Data Online API
- Historical Air Quality Data: OpenAQ API
- Historical CO2 Emission Data: Data on CO2 and Greenhouse Gas Emissions by Our World in Data (Hannah Ritchie, n.d.) collected from <https://github.com/owid/co2-data>

Collaborators: Group-2

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