VISUALIZING THE IMPACT OF CLIMATE CHANGE

Data Visualization Final Project

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OUR PROJECT

The project covers the cause and effect between climate change and the effects on the globe and specifically on the people of the United States.

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Introduction

WHAT WE ARE WORKING ON

Project

Climate Change and its effects simplified.

Impact

Helps bridge the gap in scientific and general understanding the effects of climate change.

Analysis

Various climate change factors: temperature, carbon emissions etc to make an interactive dashboard.

Motivations 02

Why make this project?

Fig: NASA's Climate Change Vital Signs Dashboard

- Our main motivation is to give a simplified explanation to the layman about the effects of climate change.
- We also aim to make a comprehensive dashboard to help understand complex relations between different attributes.
- Make everything transparent and easy to understand.

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Dataset

DATASET SOURCES

Dataset	Link
Temperature Change	https://climatedata.imf.org/pages/climatechange-data
Forest and Carbon	https://climatedata.imf.org/pages/climatechange-data
GCB Emissions	https://www.kaggle.com/datasets/thedevastator/global-fossil-co2-emissions-by-country-2002-2022
Disaster Frequency	https://climatedata.imf.org/pages/climatechange-data
Melanoma	https://ephtracking.cdc.gov/DataExplorer/
Extreme Precipitation	https://ephtracking.cdc.gov/DataExplorer/
Heat Related illness and mortality rates	https://ephtracking.cdc.gov/DataExplorer/
Exposure to UV	https://ephtracking.cdc.gov/DataExplorer/

109,833

Total Rows

199

Total Columns

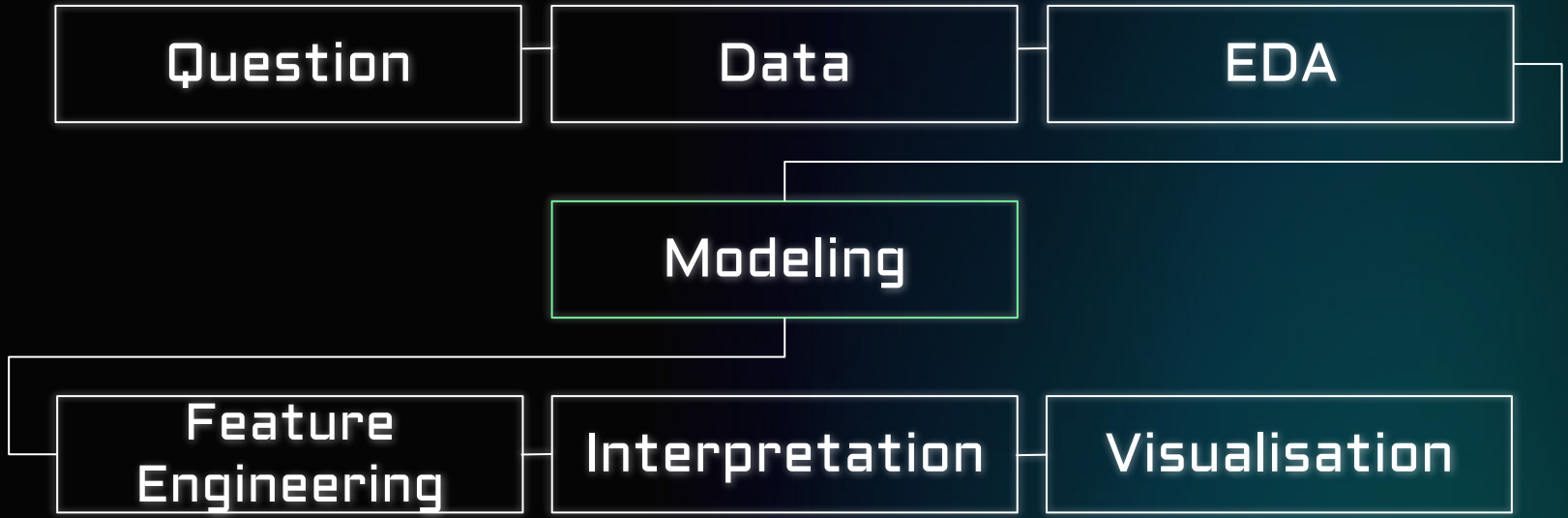
8

Total Datasets

Project Plan 04

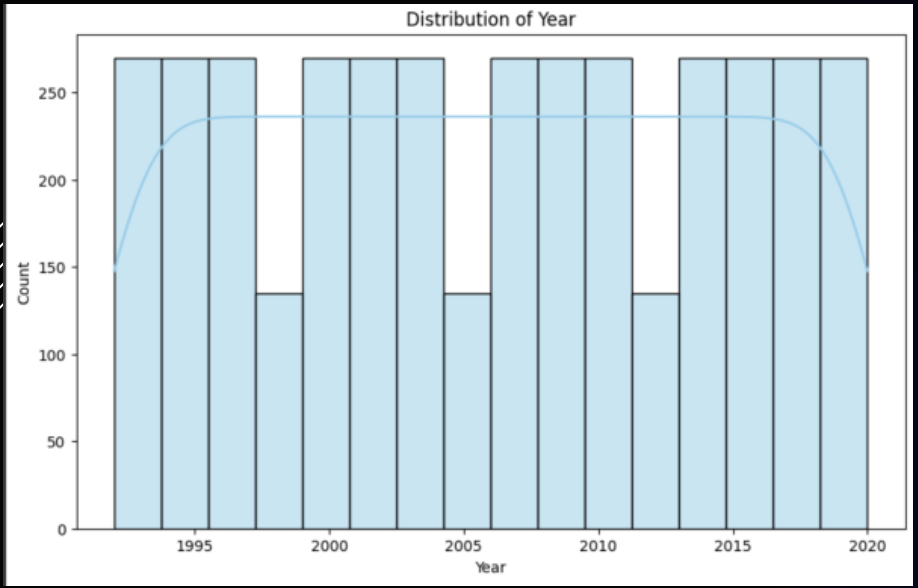
What did we use in this project?

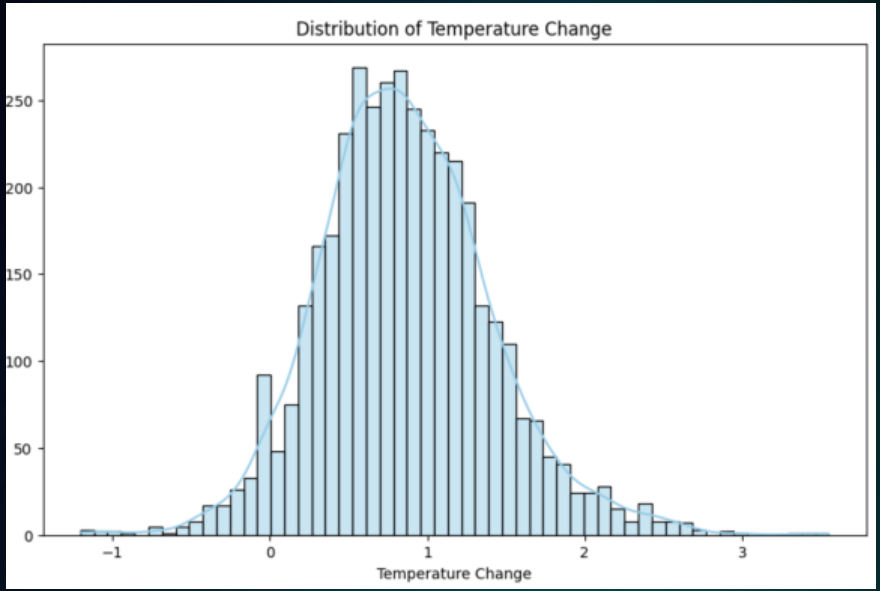
DATA PROJECT ARCHITECTURE



EDA

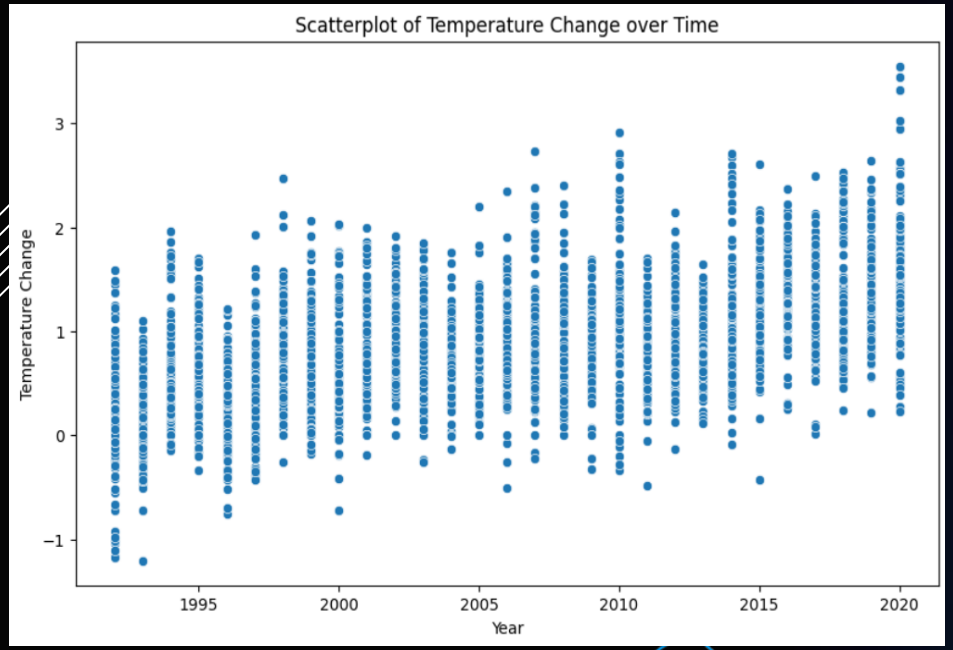
Distribution of Data

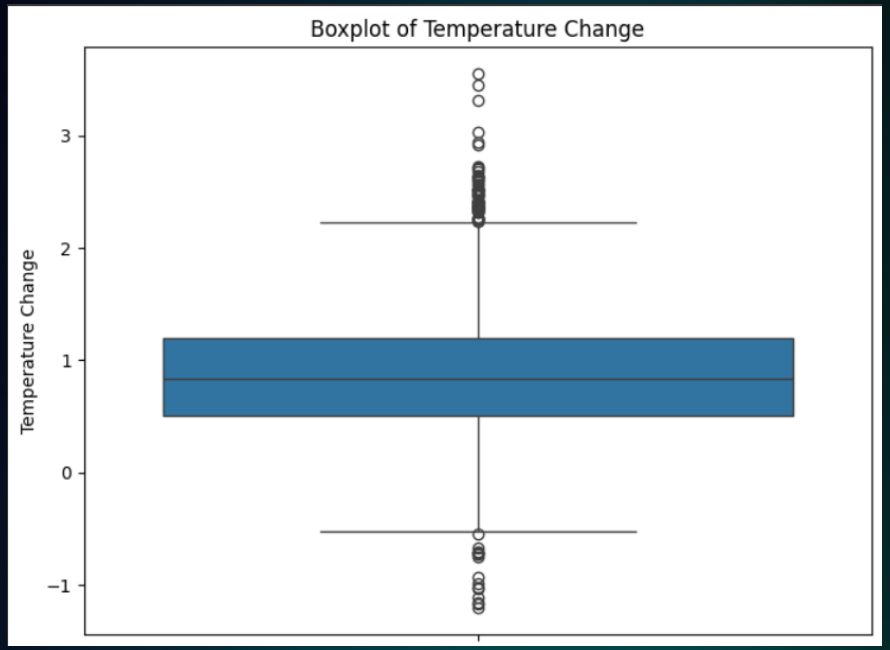




EDA

Outlier detection





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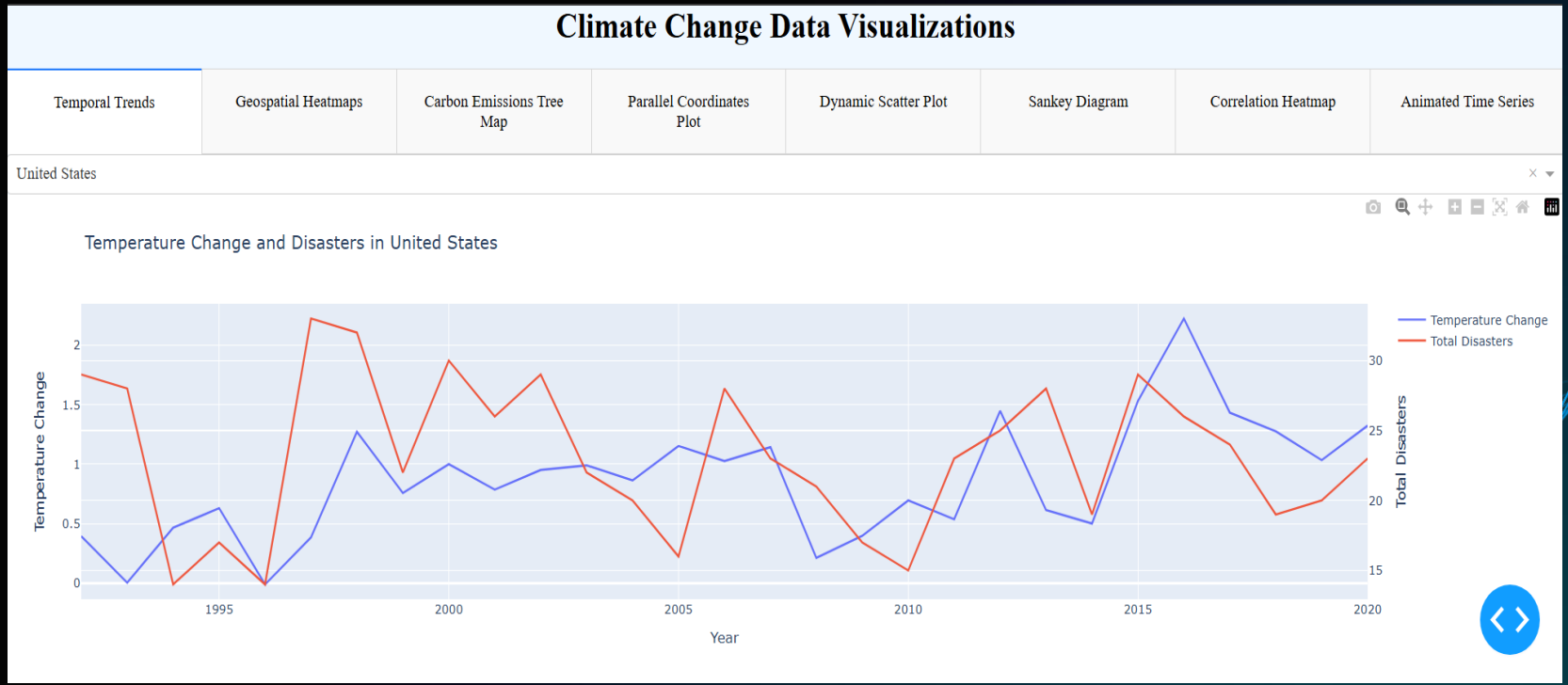
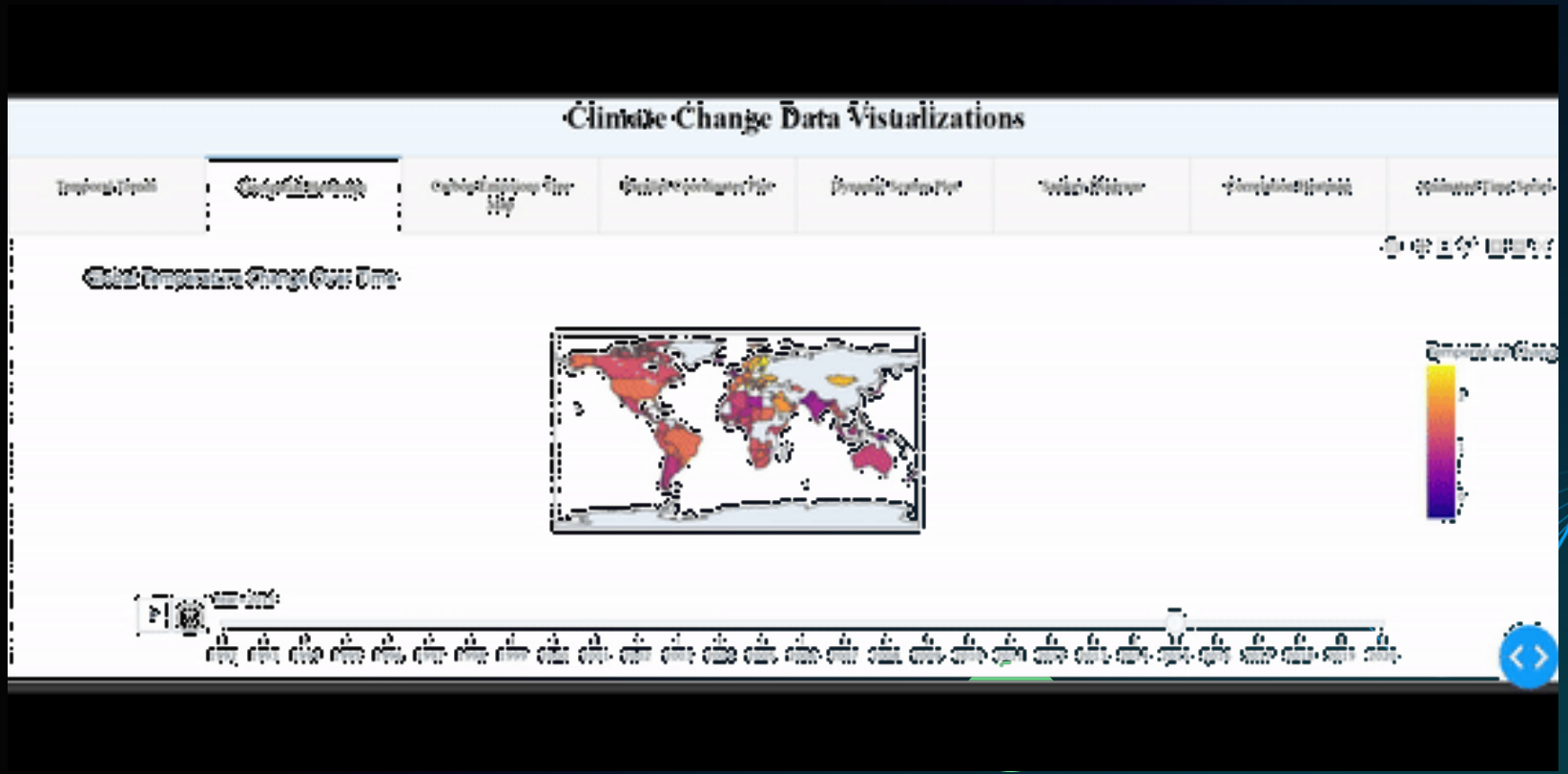
Data Visualisations

Temperature change and disaster frequency vs years



Temperature change vs years

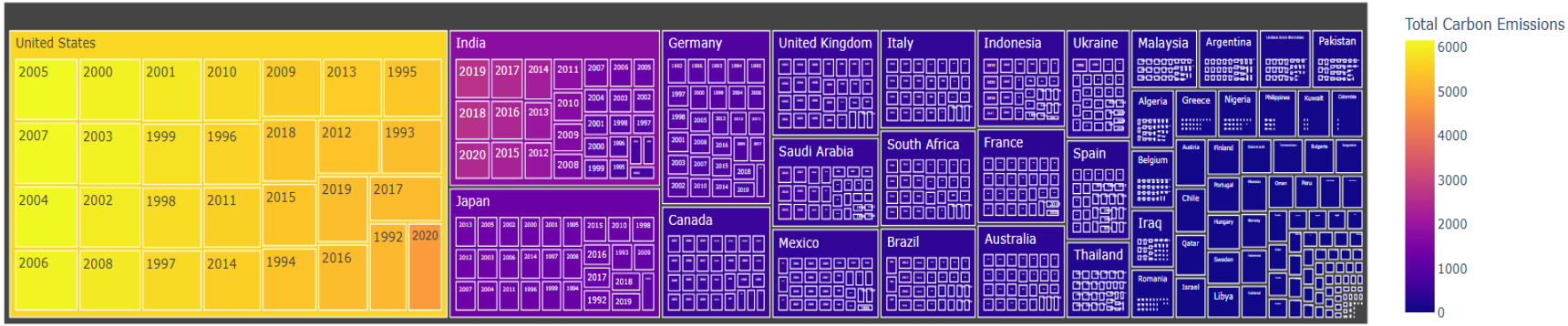


Country-wise Total Carbon Emissions across the years (1992-2020)

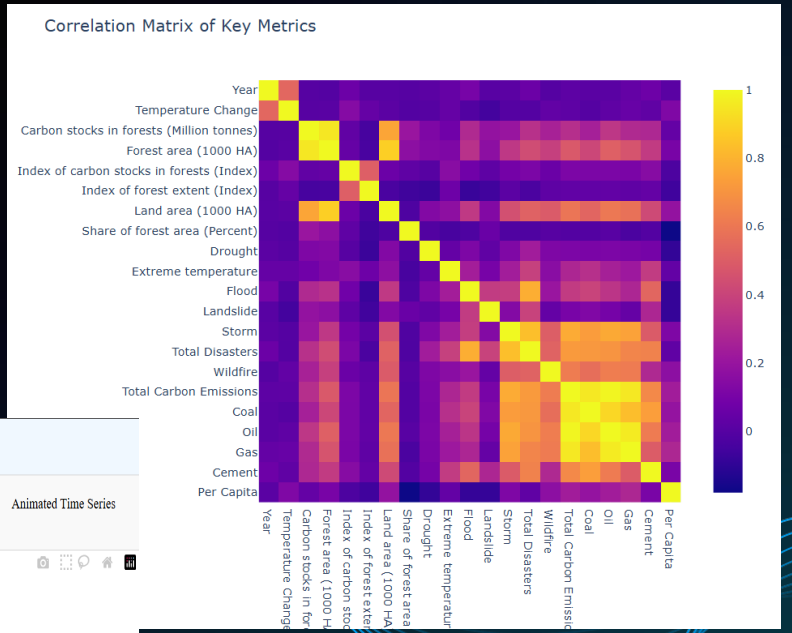
Climate Change Data Visualizations

Temporal Trends | Geospatial Heatmaps | Carbon Emissions Tree Map | Parallel Coordinates Plot | Dynamic Scatter Plot | Sankey Diagram | Correlation Heatmap | Animated Time Series

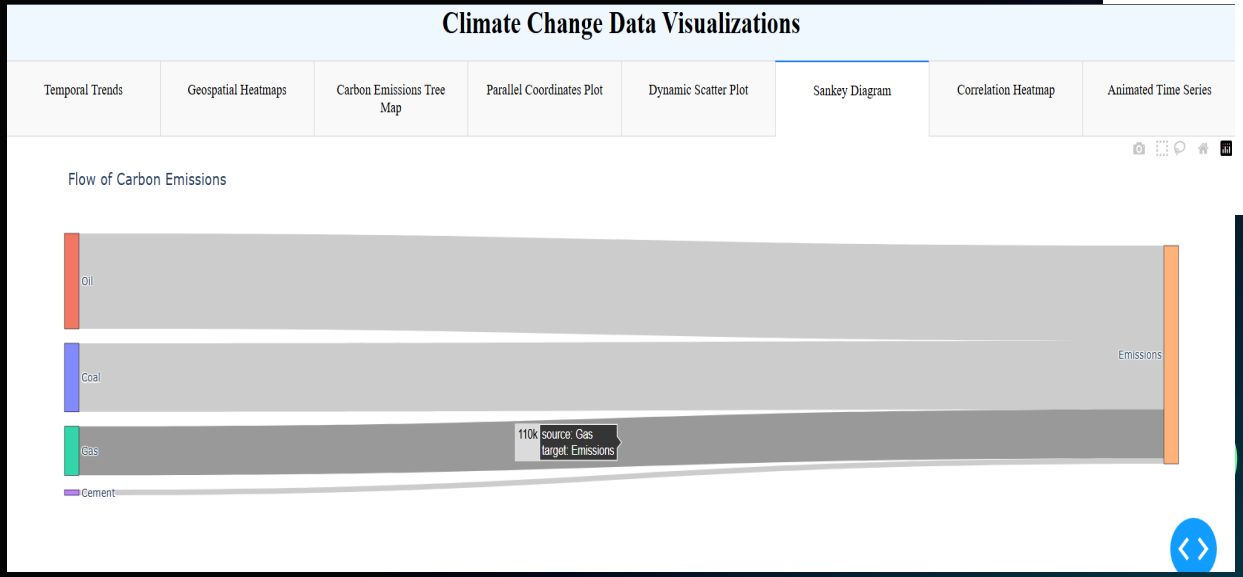
Carbon Emissions by Country and Year



Correlation Matrix



Total Carbon Emissions by different sources

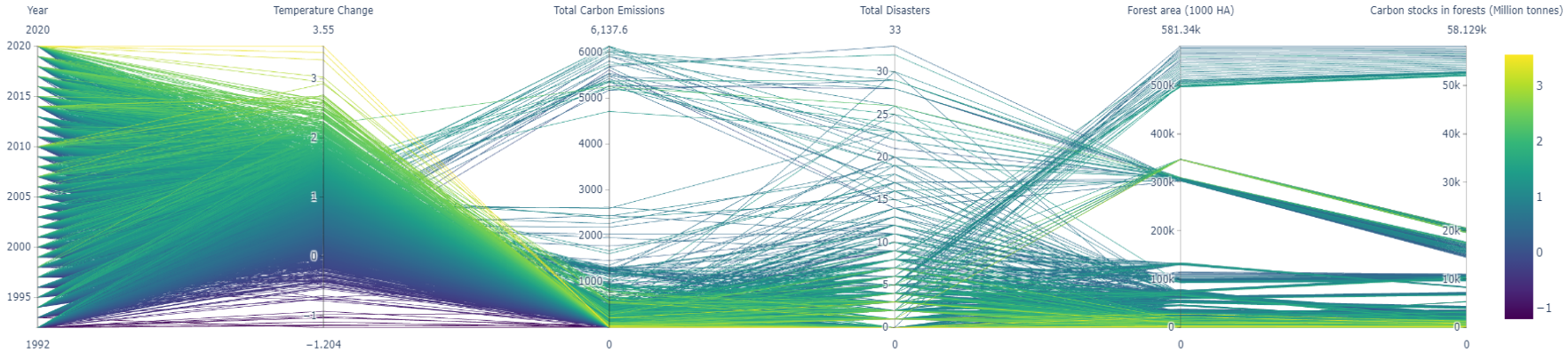


Analysis of Temperature, Carbon Emissions, Carbon Stocks, Disasters and Forest cover across the years

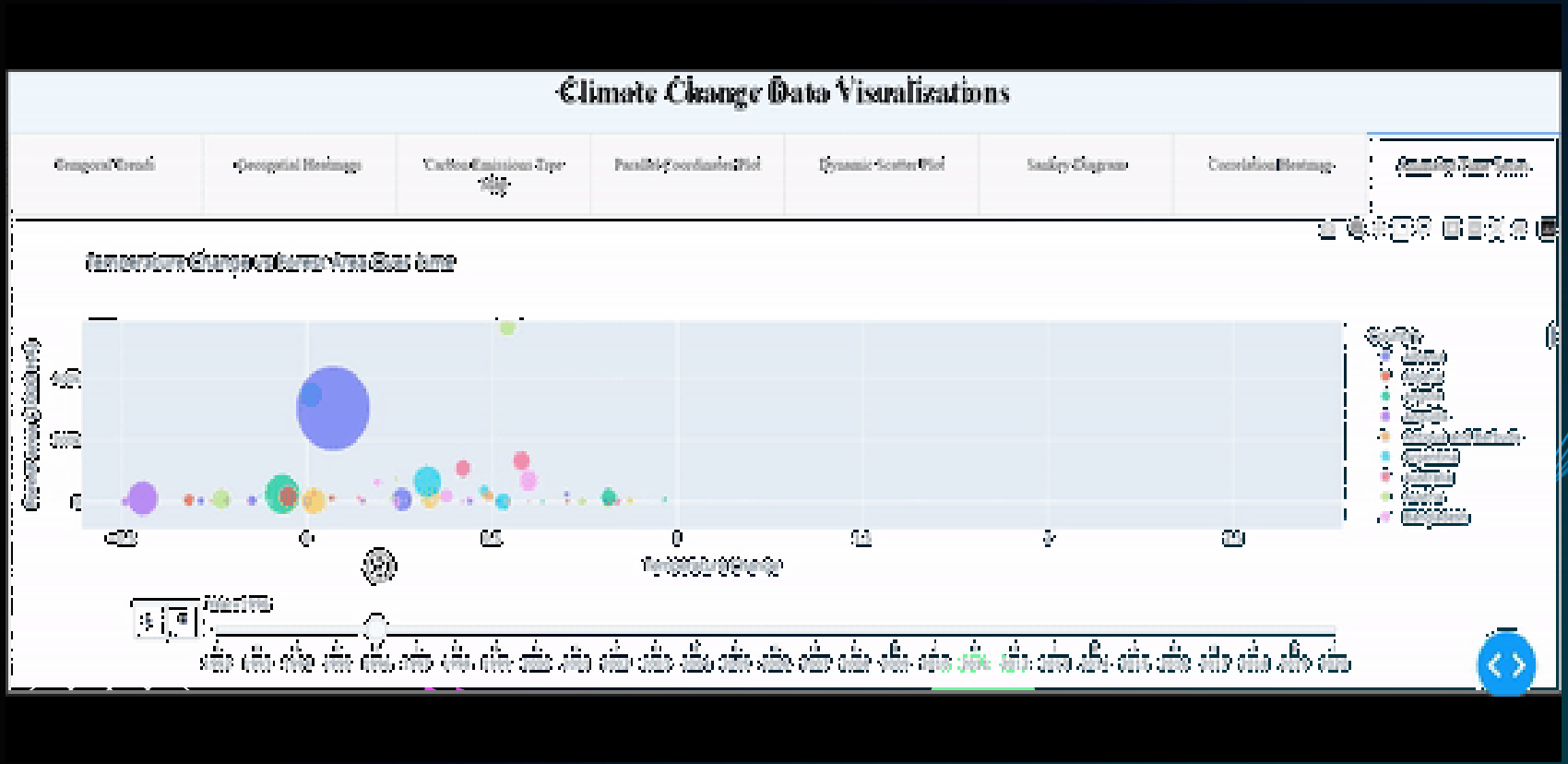
Climate Change Data Visualizations

Temporal Trends | Geospatial Heatmaps | Carbon Emissions Tree Map | **Parallel Coordinates Plot** | Dynamic Scatter Plot | Sankey Diagram | Correlation Heatmap | Animated Time Series

Climate Variables Parallel Coordinates Plot



Temperature change vs Forest Area over time for all countries



Case Study

United States

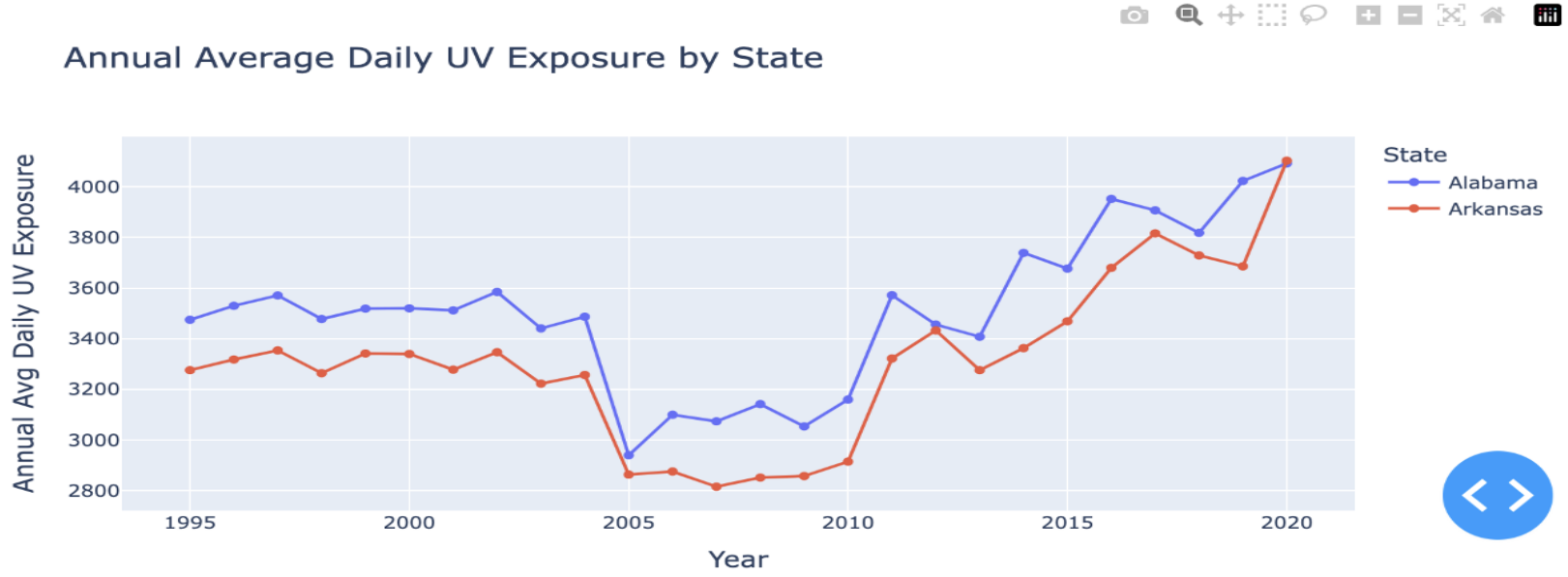
The U.S. presents a unique and highly relevant case study for climate change due to its diverse geography, varied climate conditions, Policies, Public awareness, Data Availability and significant contributions to global greenhouse gas emissions.

UV Exposure Analysis

Tempora Trends | Geospati Heatmap | Carbon Emission Tree Map | Parallel Coordina Plot | Dynamic Scatter Plot | Sankey Diagram | Correlati Heatmap | Animate Time Series | UV Exposure Trends | Melanon Trends | Extreme Precipita Map

elect State(s):

× Alabama × Arkansas

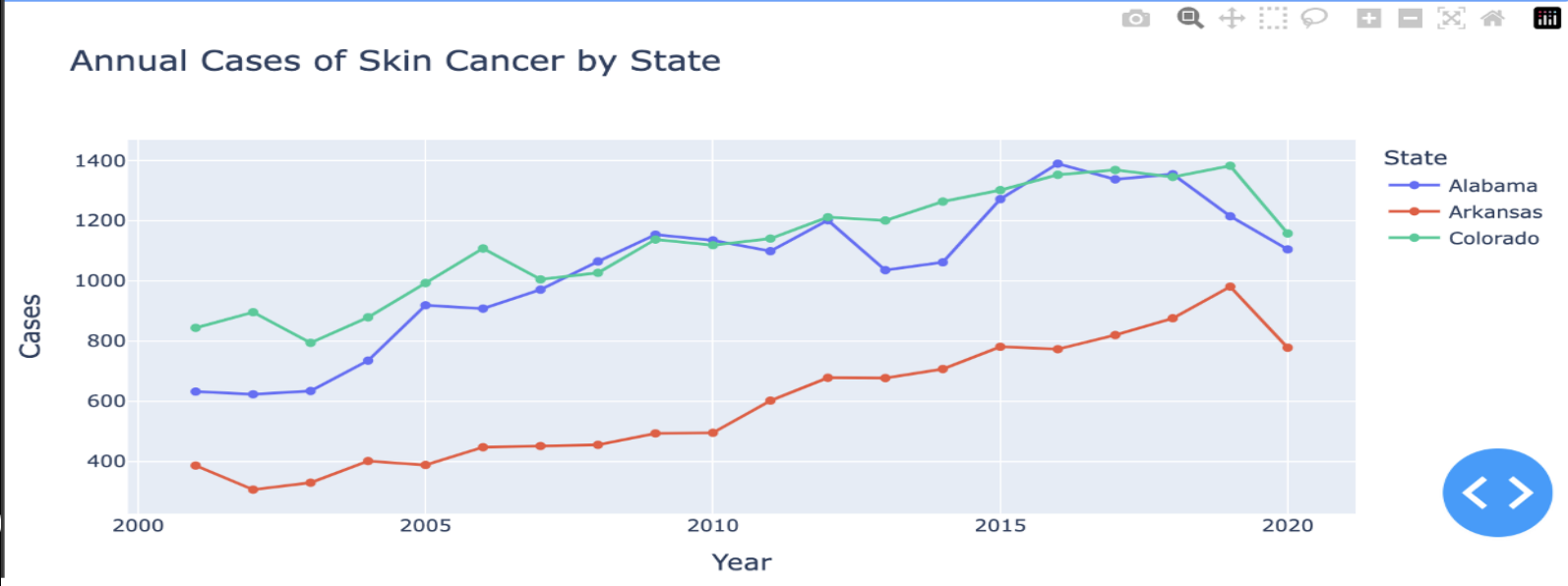


Skin Cancer Analysis

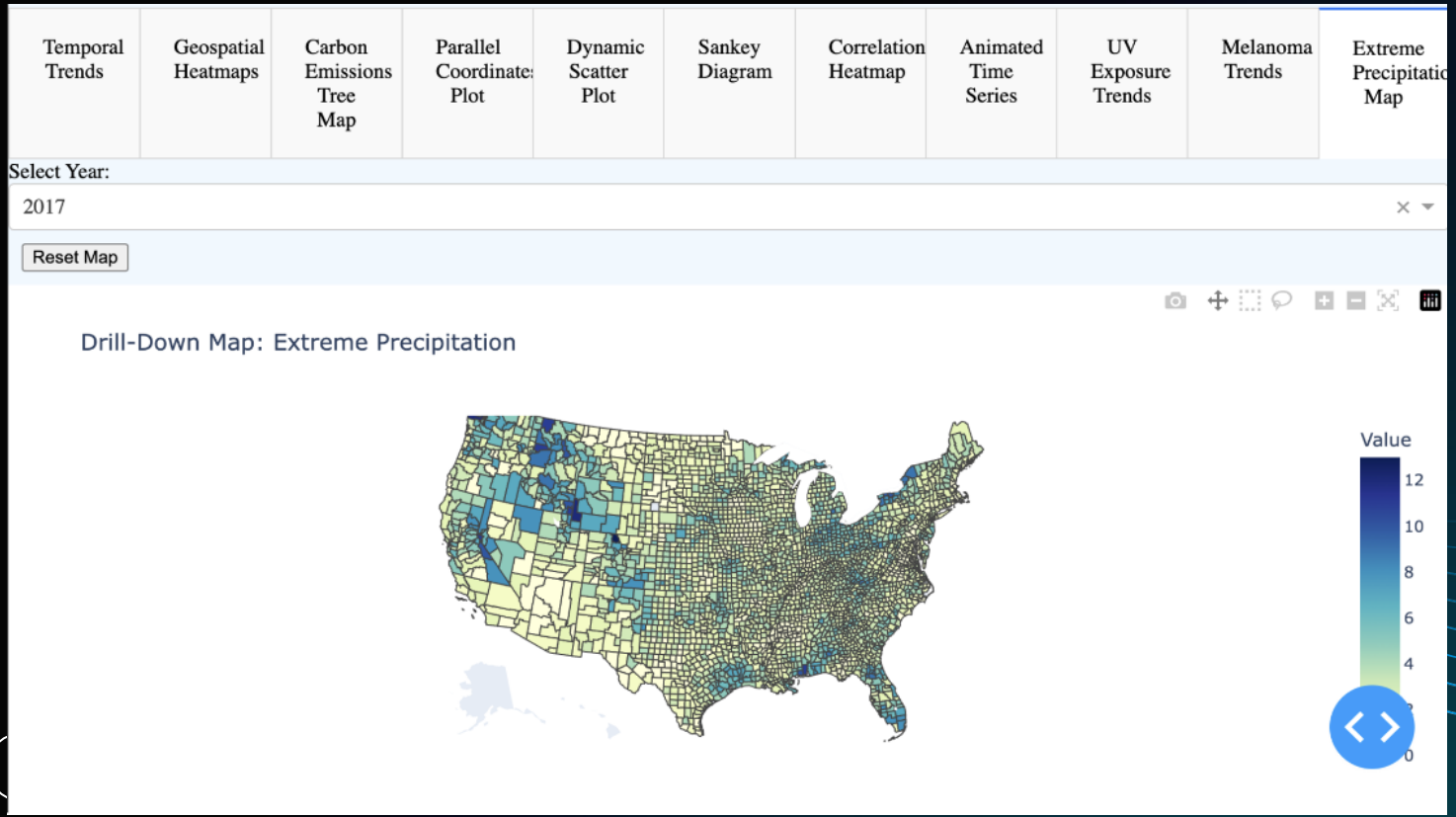
Tempora Trends | Geospati Heatmap | Carbon Emission Tree Map | Parallel Coordina Plot | Dynamic Scatter Plot | Sankey Diagram | Correlati Heatmap | Animate Time Series | UV Exposure Trends | Melanom Trends | Extreme Precipita Map

elect State(s):

× Alabama × Arkansas × Colorado



Extreme Precipitation - Choropleth Map



Conclusion

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Takeaways

- World Data:
  - As temperature change increases, frequency of disasters also increases.
  - As carbon emissions increase, the forest cover decreases.
  - More the forest cover, more is its capacity to have carbon stocks.
  - Forest cover decreases as Temperature Change decreases.
  - Different Types of Carbon Emissions are weakly but still correlated with disasters such as droughts, floods etc as they affect the climate in the long run.
  - The actual relationship between climate change, forest cover and natural disasters is way more complex than it seems.

Takeaways

- US Data:
  - The choropleth map illustrates that counties experiencing extreme precipitation were primarily located on the west coast initially. Over time, however, the areas receiving extreme precipitation have shifted towards the eastern part of the USA.
  - Melanoma, a type of skin cancer, is caused by UV exposure. With the increase in UV exposure, primarily due to climate change, the number of skin cancer cases has also risen across various states.
  - We analyzed 20 years of UV exposure data across different states in the USA. The trend reveals a significant increase in UV exposure from 2000 to 2020.

THANK YOU


WHEN YOU
THOUGHT YOU HIT A DOG
BUT IT WAS JUST
CLIMATE CHANGE PROTESTE

OUR VIDEO LINK

Link - https://youtu.be/4HLkfctFBoE