



# Big Data analysis for visualizing GHG emissions

## Final Pitch

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Shuo Chen  
Sivateja Maturu

# Visualization purposes

Public awareness



Political attention/  
awareness!!

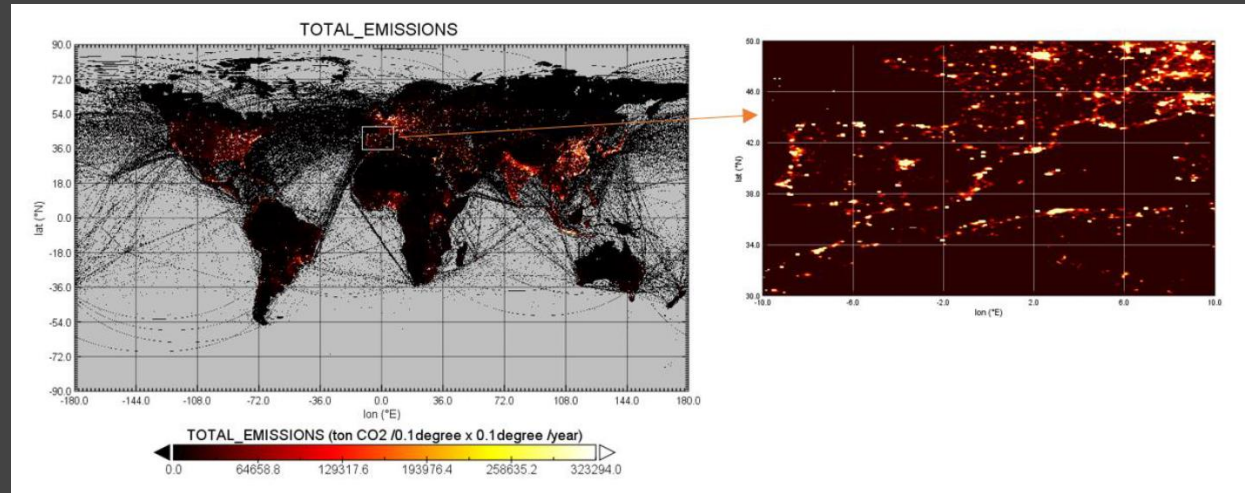


Scientific exploration



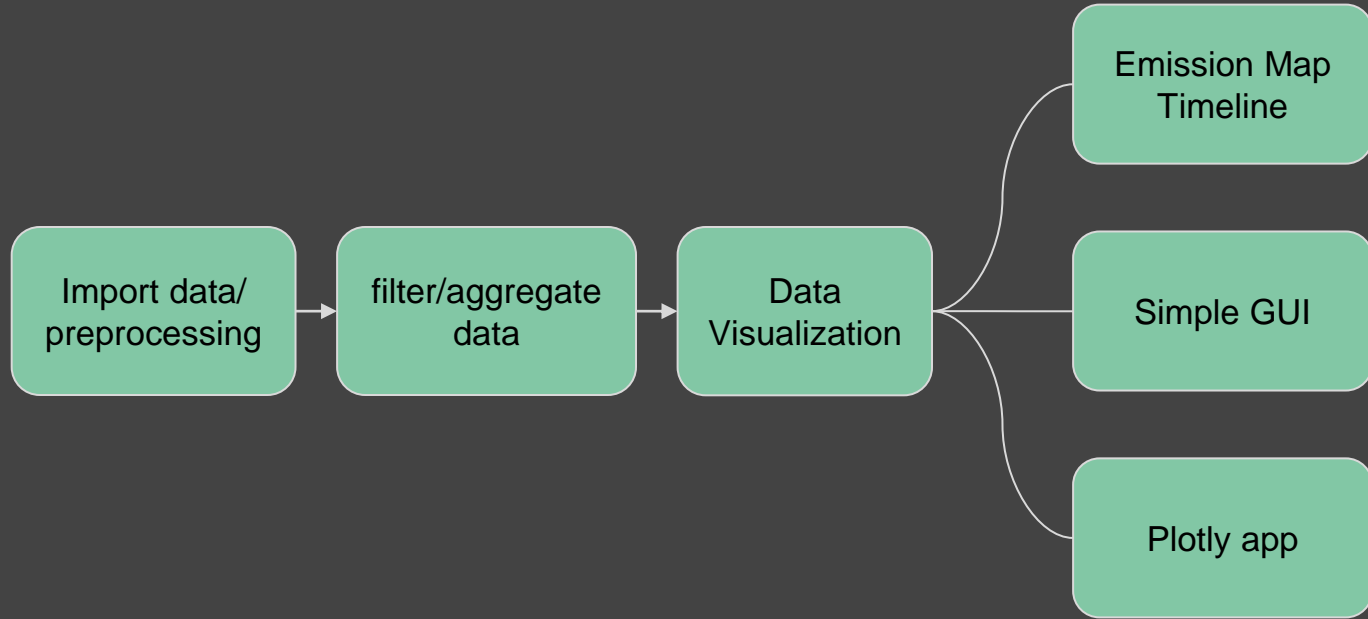
# Challenge Introduction

Develop a graphical user interface (GUI) which serves to display CO<sub>2</sub> emissions





# Our Tasks



# Difficulties

Around 23 GB  
zip file

More than 100  
.tif files



Different  
format type(.tif,  
.nc)

Each tif is  
around 3,5 GB



# Data

- EDGAR Data
  - 49 years of co2 emission data
  - Each grid is  $10 \times 10 \text{ Km}^2$
  - Data format is netCDF files (you can use netcdf4 package in python)
- ODIAC data
  - 18 years of data co2 emission data
  - Each grid is  $1 \times 1 \text{ Km}^2$
  - Data format is GEOTIFF file

# Difficulties

Sivateja

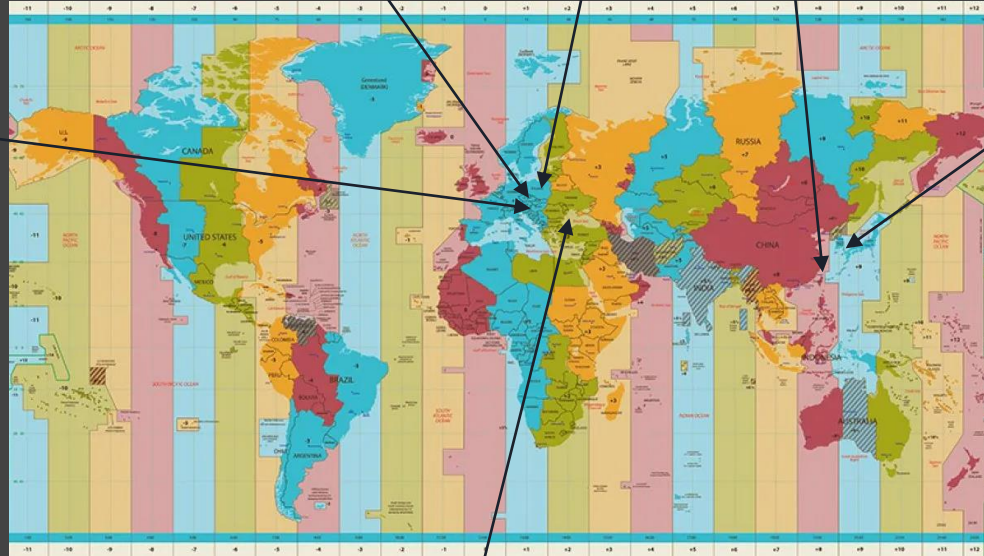
Nikolas

Faheem

Shuo

Seunghee

Amir



# Tech Stack



plotly | Dash



NumPy



pandas



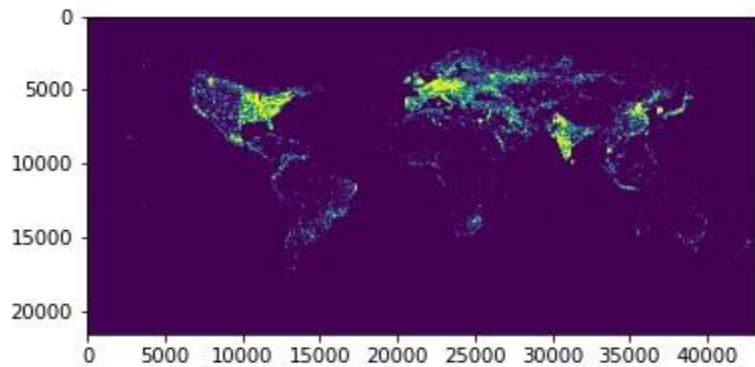


# Solution

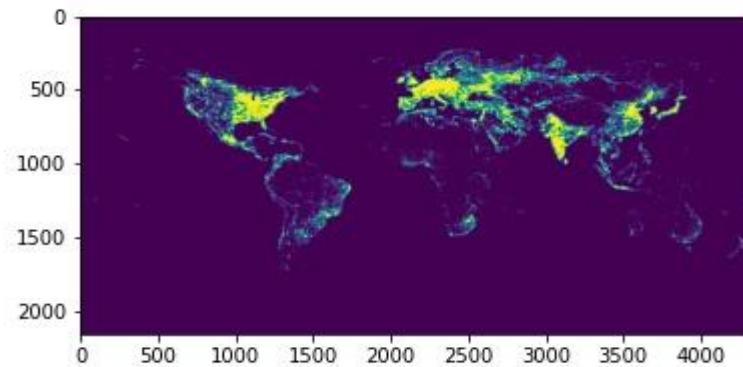


# Data aggregation

Original size (3.5 GB)



Aggregated data (35 MB)



# A Unified Platform

## VizKids Dashboard

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### Climate Change ☀️❄️

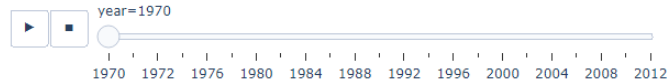
It is a crisis that needs no further introduction in our generation - and that strongly influences the public discourse for a good reason. To tackle this problem, 191 states have committed in the Paris Agreement to reduce their CO<sub>2</sub>-emission with the goal to keep the rise in global average temperatures below 2°C. Therefore, it is critical that precise and comprehensive data on the emission levels of individual countries are easily available for citizens, policymakers and scientists.

Our solution grants easy access to multiple datasets that measure global levels of CO<sub>2</sub>-emissions with a precision of up to 1km x 1km and over a timespan of more than 50 years.

[Learn more about the datasets...](#)

### Visualizing global CO<sub>2</sub>-emissions

☒ Timeline ☐ Heatmap



# A Unified Platform

## VizKids Dashboard

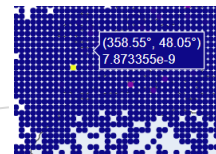
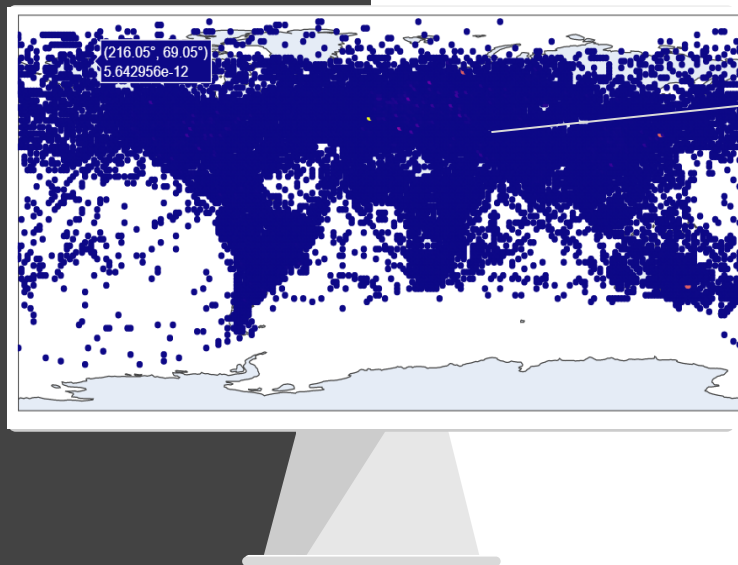
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### About

We are a team of six students from LMU and TUM who want to tackle one of the most pressing global problems. We think it's vital to have a transparent and accurate source of data available to inform policy and research decisions regarding CO<sub>2</sub>-emissions.

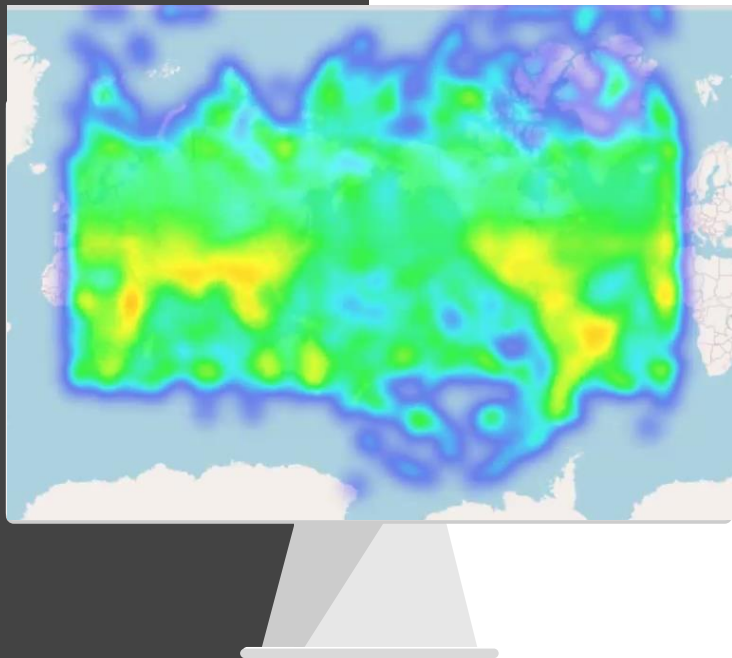


# Emission Data Visualization

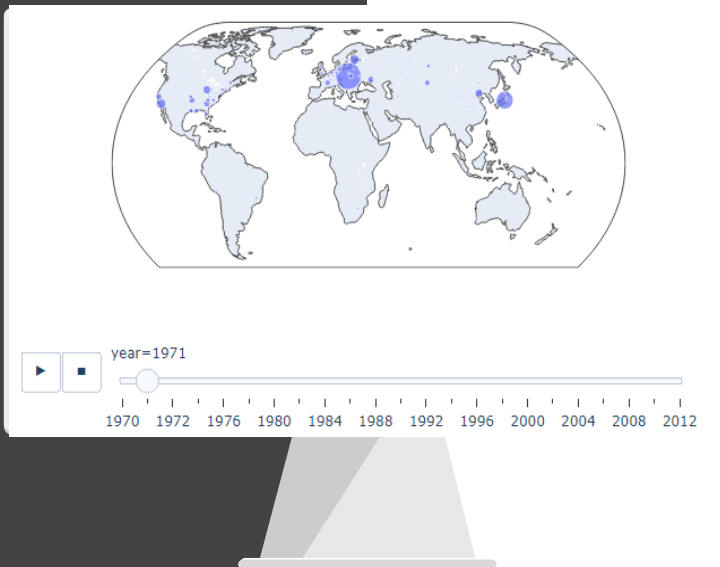


Data Visualization

## Emission data visualization



# Time series of emission data





# Thanks!

