Typhoons in Taiwan

Data Visualization Final Project

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Outline

01

Introduction

Why do I pick this?

02

Dataset

Typhoon data

03

Data Preprocssing

Using Python Pandas

04

Design

What interactions are expected?

05

Functions

Implementations

06

Demo

Live demonstration

01.Introduction

Introduction

I’m currently working on the precipitation dataset, and I was meant to use it; however, data i**tems of rain data is few**.
Since I have got TCCIP registration, I was searching for **proper one, typhoon dataset**, for this project.

02.Dataset

Dataset

Typhoon Precipitation

- Hourly accumulative precipitation of typhoons.
- Time interval: 1958~2021
- Amount: 421 text files
- Dim: 760,000 x 6

Typhoon Track

- Positions (latitude, longitude) records every six hour,
- Time interval: 1958~2021
- Amount: 421 text files
- Dim: 15,000 x 12

Map

- JSON files of map, mainly on East Asia regions.
- Two files:
  - Taiwan.json
  - East_Asia.json

03.Preprocessing

Data Preprocessing

Typhoon Precipitation

- Hourly accumulative precipitation of typhoons.
- Time interval: 1958~2021
- Amount: 421 text files
- Dim: 760,000 x 16

- Remove invalid values
- Keep needed 3 columns
- Sum up to total precipitation by each typhoon
- Dim: 372 x 3

Typhoon Track

- Positions (latitude, longitude) records every six hour,
- Time interval: 1958~2021
- Amount: 421 text files
- Dim: 15,000 x 12

- Take only the first record time.
- Push locations into an array as one column cell for each typhoon
- Dim: 420 x 4

Map

- JSON files of map, mainly on East Asia regions.
- Two files:
  - Taiwan.json
  - East_Asia.json

- No need to preprocess, planning to use them by geographical generator by d3.js module

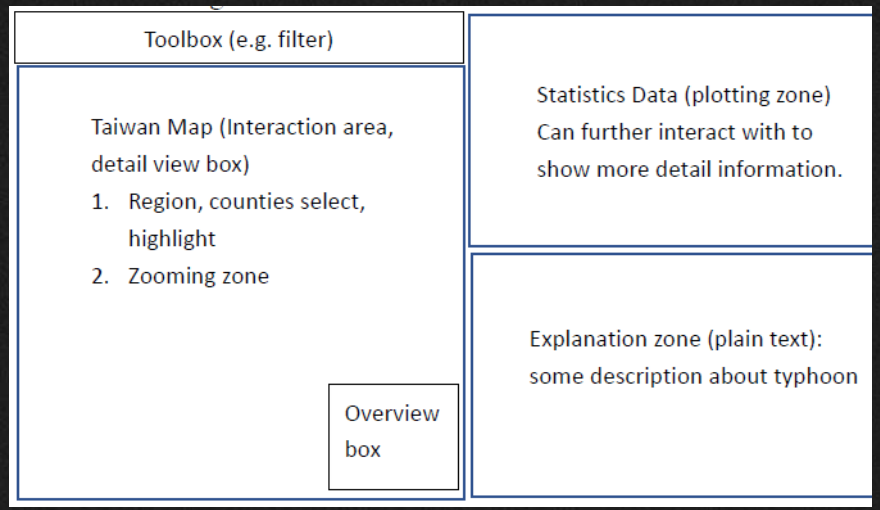
pandas

04.Design

Design

Originally designs in proposal:

- Accumulated precipitation of typhoons
- Accumulated precipitation in counties during the typhoon
- Classification of typhoons
- Typhoon traversal on map
- Total impacts of typhoon
- Find most similar path among typhoons



Design

Some problems while developing:

- The definition of category of typhoon is ambiguous.
- How to allow canvas function on the map layers
- Problem of defining “the most similar” paths, such as what if user only draws one point.
- Not enough experience of handling the asynchronous property of javascript
- Lack of time

Task	Start	Expected	Finished	Description
Collect Data	5/24	5/26	5/25	Typhoon data requires registration
Design webpage	5/28	5/31	-	Basic SVGs, etc. arrangement
Build functions	6/1	6/10	-	Core coding: interaction and plots
Final Report	6/11	6/12	-	Writing reports and video recording

Task	Expected	Actual	Delay
Collect Data	5/26	5/25	-1
Design Webpage	5/31	6/10	10
Build Functions	6/10	6/14	4
Final Report	6/12	6/14	2

05.Functions

Functions

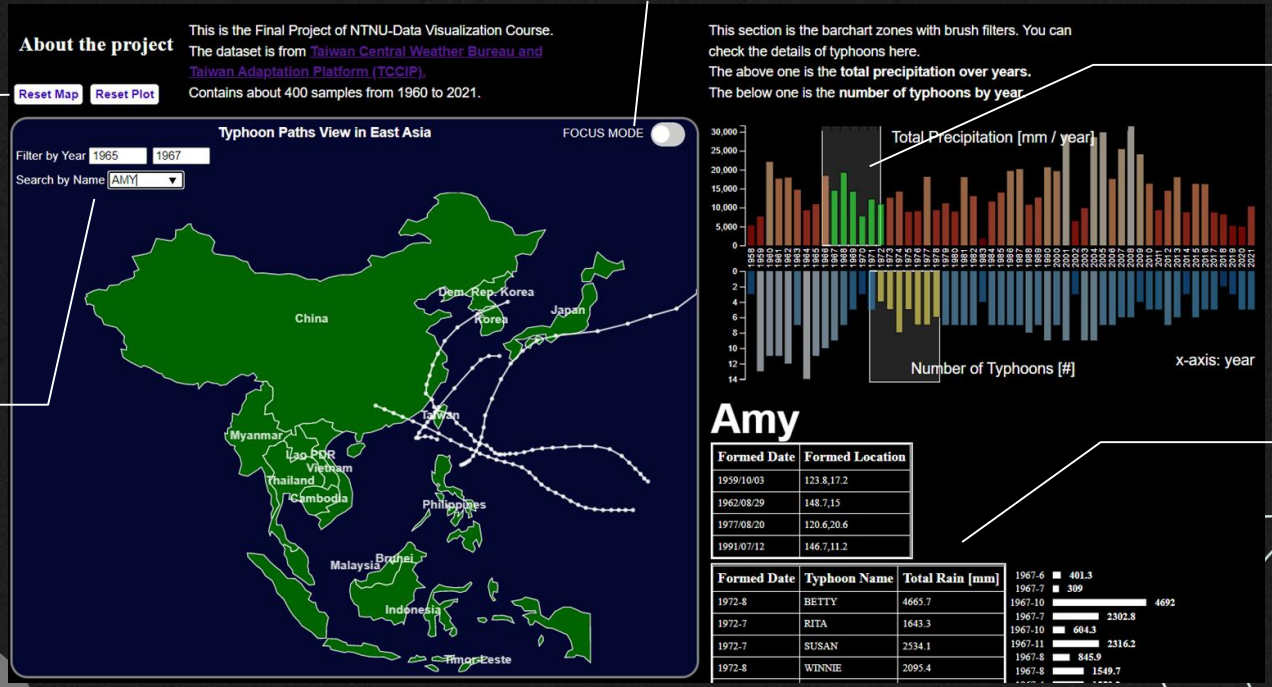
Reset Buttons

Focus Mode

Barchart Brushes

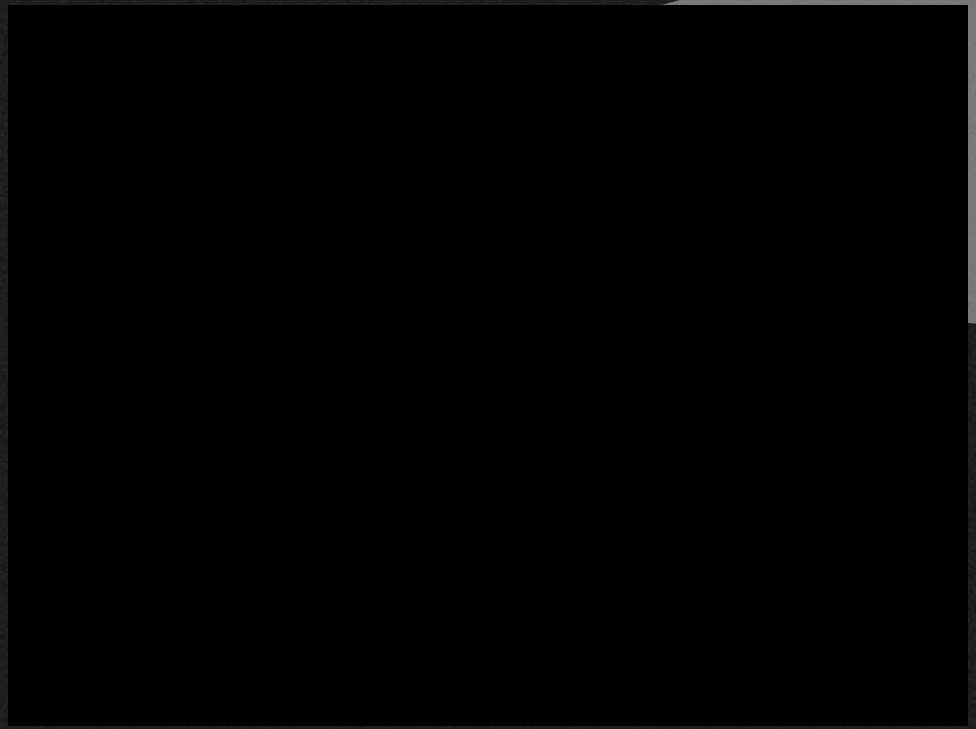
Path Filter by Year, Name

Detail Window



06.Demo

Demo



Thanks for listening