

Exploring Weather Trends

A Udacity Project Submission by Timothy Quan

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Outline

Tools Used

- Python (pandas and matplotlib)
- SQL – to extract the data from the provided workspace

```
-- just city data from bangkok:
-----
SELECT *
FROM city_data cd
WHERE city='Bangkok';
-----
-- just global data:
SELECT * FROM global_data
-----
```

- Excel – for inspection of the .csv files

Moving Average Calculation Methodology

Using Pandas, this project implements rolling averages by combining the `dataframe.rolling()` and `.mean()` functions.

By default, and as implemented in this project, the `.rolling()` function uses the preceding values, eg., with a 5 year window `.rolling(window=5).mean()` in 1754 will use data from 1750-1754 and so on:

year	avg_temp	Rolling Average (5 Year)
1750	8.72	
1751	7.98	
1752	5.78	
1753	8.39	
1754	8.47	7.868
1755	8.36	7.796

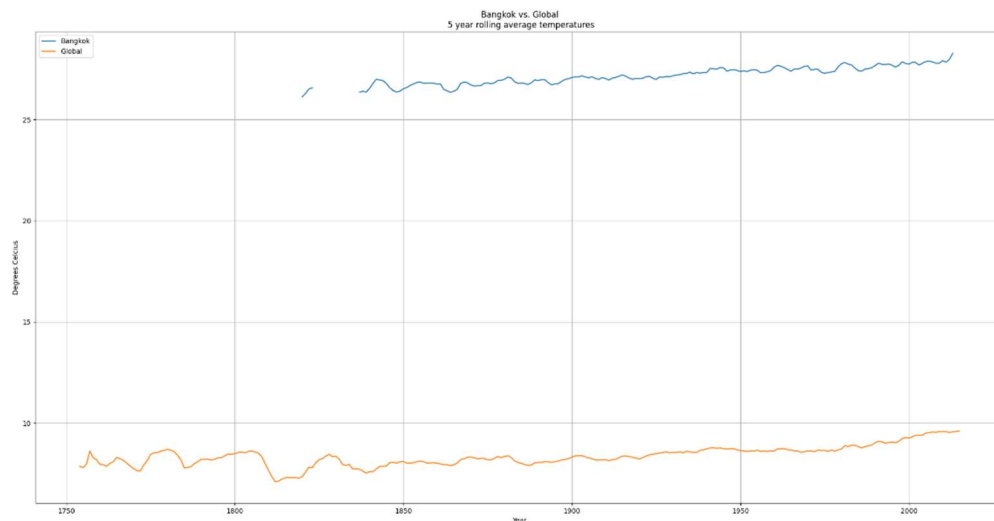
Key Considerations for Visualization

Foremost, the rubric specifies a line chart using rolling averages.

A 5-year rolling average appears to reveal the highest level of detail desirable considering the time span. 3 years shows too much detail to the point that there are no obvious trends; 10 years shows too little.

Python/pandas/matplotlib was chosen with the intent of practicing a somewhat new skill vs formula and chart generation in excel being already known.

Line Chart



Observations

- Bangkok is significantly hotter than the global average, generally around 20 degrees more.
- While Bangkok matches the overall global trend, at this time scale it is difficult to see if there are any other matching trends.
- The overall global and local trend is an increase in temperature at around 2-3 degrees over all time.
- There is no weather data for Bangkok before 1816, and missing from 1826-1833.

External Documentation

This project can be found on github; including `explore_weather_trends.py` (code to generate the line graph) and `extract_all_data.sql` (the sql queries to extract the necessary data for csvs).

https://github.com/timothyquan/Explore_Weather_Trends