

Explore Weather Trends

DATA ANALYST NANODEGREE PROGRAM, UDACITY

Shahad Zaki Al-Khalifa

Introduction

In this project, I analyzed local and global temperature data and compared the temperature trends in Riyadh, Saudi Arabia, to global temperature trends. I used SQL query to download CSV files containing local and global data. The local data contained the yearly average temperature of Riyadh city in Saudi Arabia. The analysis and comparison were made using Python programming language in Google Colab, and the libraries used were Pandas for data processing and Matplotlib for data visualization.

Project Steps

1- Data extraction

For data extraction, SQL was used to download CSV files with the following queries:

- Local data:
`SELECT * FROM city_data`
`WHERE city = 'Riyadh'`
- Global data:
`SELECT * FROM global_data`

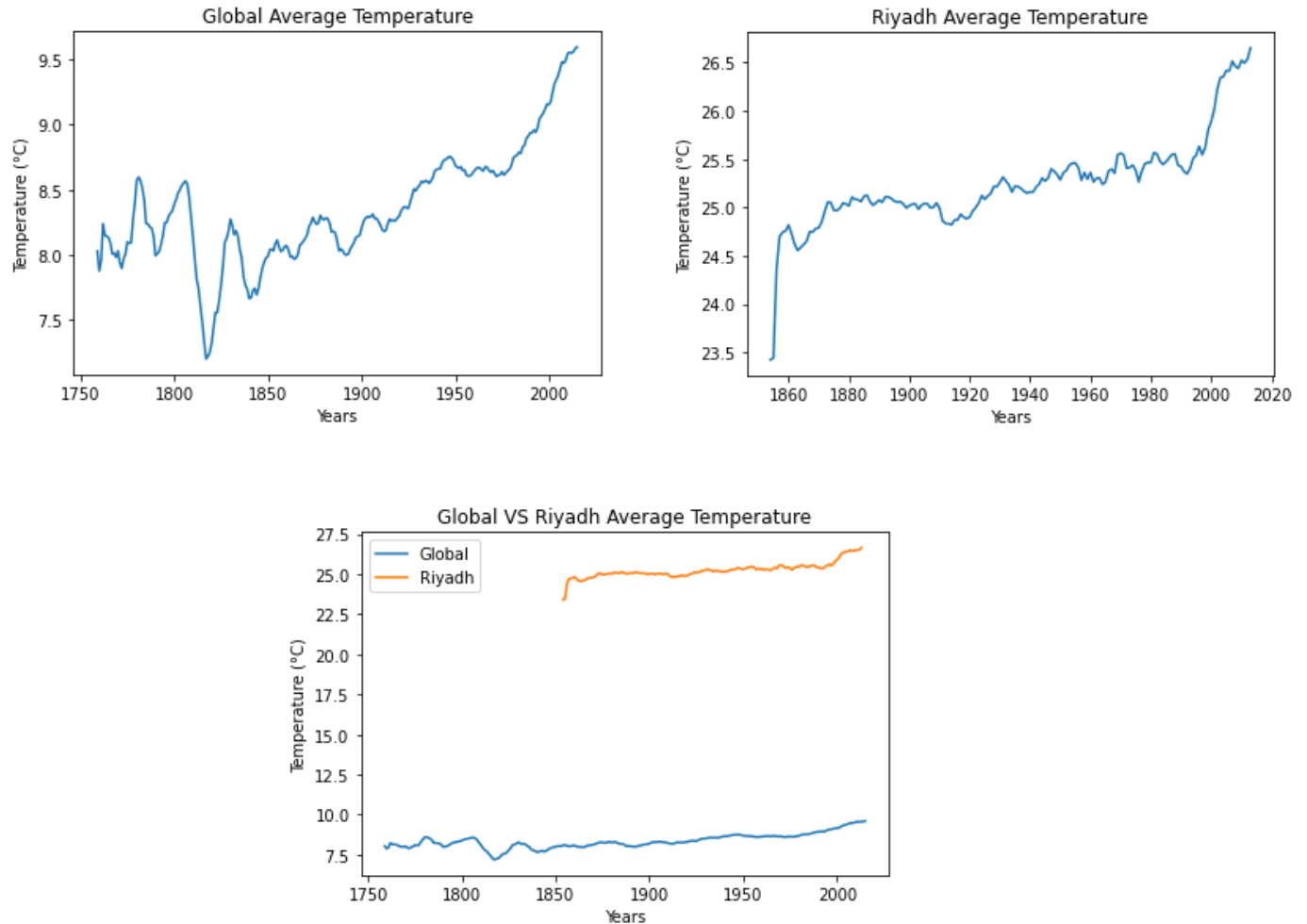
2- Data analysis and processing

For the data analysis and processing, I started by removing null values in the local data which resulted in two null values only. To find the moving average for Riyadh and global temperature, I used the *rolling* function in Pandas library and calculated the mean. The rolling function provides rolling window calculations by specifying the number of observations for each window. In my case, I chose 10 as the window size, which means the average will be calculated every 10 years.

3- Data Visualization

For the data visualization, I used Matplotlib library and plotted both global and local moving averages individually and together.

Observations and Results



- 1- Riyadh's average temperature is considerably higher than the global average. Also, the global temperature has risen exponentially since 1850. The reason might be due to climate change and overpopulation.
- 2- The global average temperature took a drastic decrease between 1800 and 1850, whereas there was no data on the local average temperature during that time.
- 3- The local average temperature has risen suddenly from 1850 to 1860, where it was at its lowest average of 23.5 °C and reached its peak at almost 24.9 °C. It is not considered a major change, but it shows that the temperature never reached 23.5 °C again.
- 4- Thus, it is obvious that the temperature is rising over the years, globally and locally, and will continue to rise if climate change is not controlled globally.