

UDACITY DATA ANALYST NANODEGREE

PROJECT 1 : EXPLORE WEATHER TRENDS



INTRODUCTION :

The project is related to exploring weather trends by comparing the local weather trend to the global weather trend. The project intends to map the dataset provided to a line chart that is smooth and depicting the trend over a period of time. Comparing the local and the global trends with the line charts visualized is the main aim of the project.

PROCESS :

1] SQL QUERY

Tool used : SQL

In order to extract the average local temperature data and global temperature data from two different tables, I used the following sql query :

```
select c.year, c.city, c.avg_temp, g.avg_temp as  
global_temp from city_data c, global_data g where  
c.city = 'Delhi' and c.year = g.year;
```

This creates a table (csv file) having the year, city, local average and global average from the provided schema. This table has all the relevant information to compare the trends.

2] CALCULATE THE MOVING AVERAGE

Tool used : Microsoft Excel

After the required extraction of the csv file, I calculated the moving average of the local average temperature as well as the global average temperature.

The calculation of the moving average is very important in order to ensure smooth trends that appear in the line graph.

Steps for calculating the moving average include :

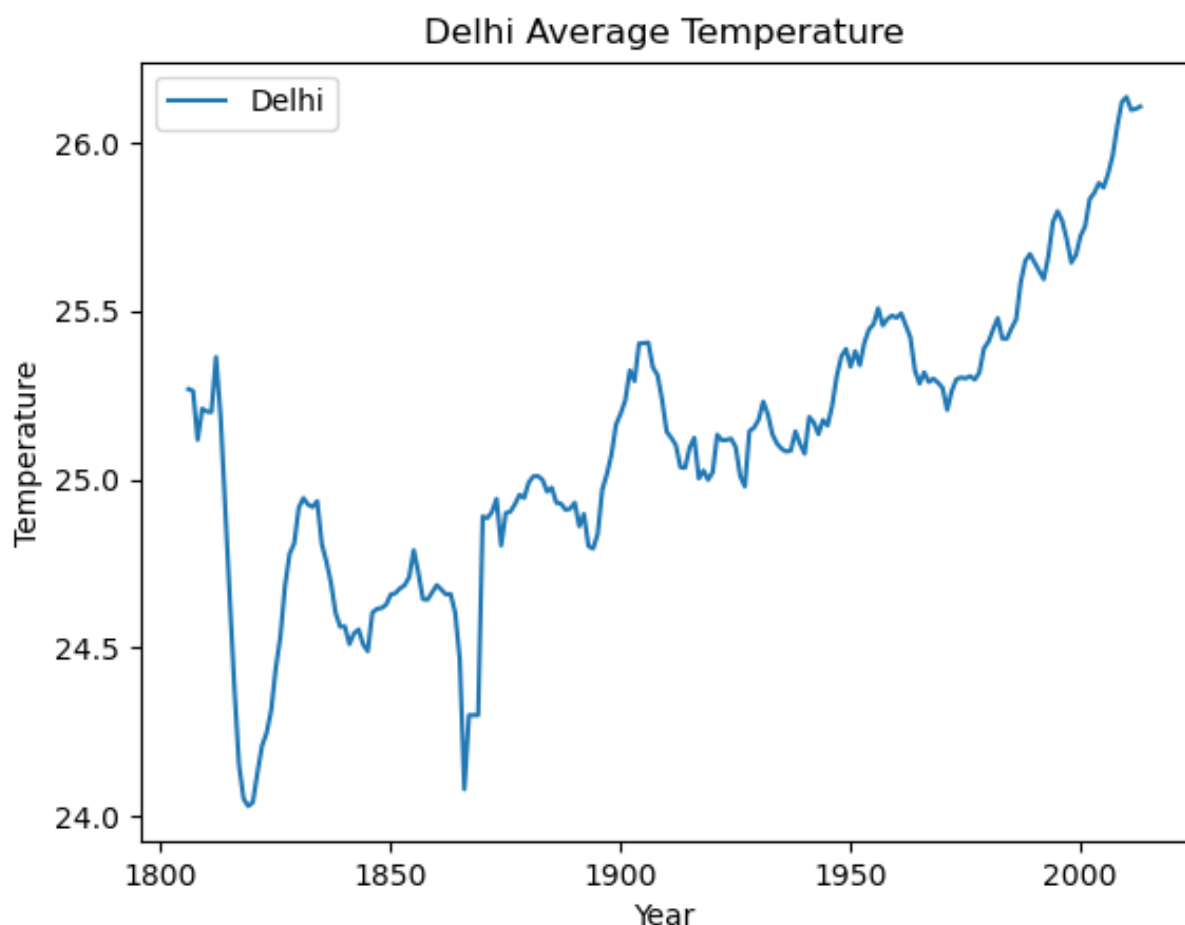
- 1] Select a period over which you want to calculate the moving average according to the data. Here, I chose 10 years as the period .
- 2] I used the AVERAGE() function to calculate the moving average of the first period.
- 3] Repeat the process for the next rows as well in order to get the moving average.

3] DATA VISUALIZATION

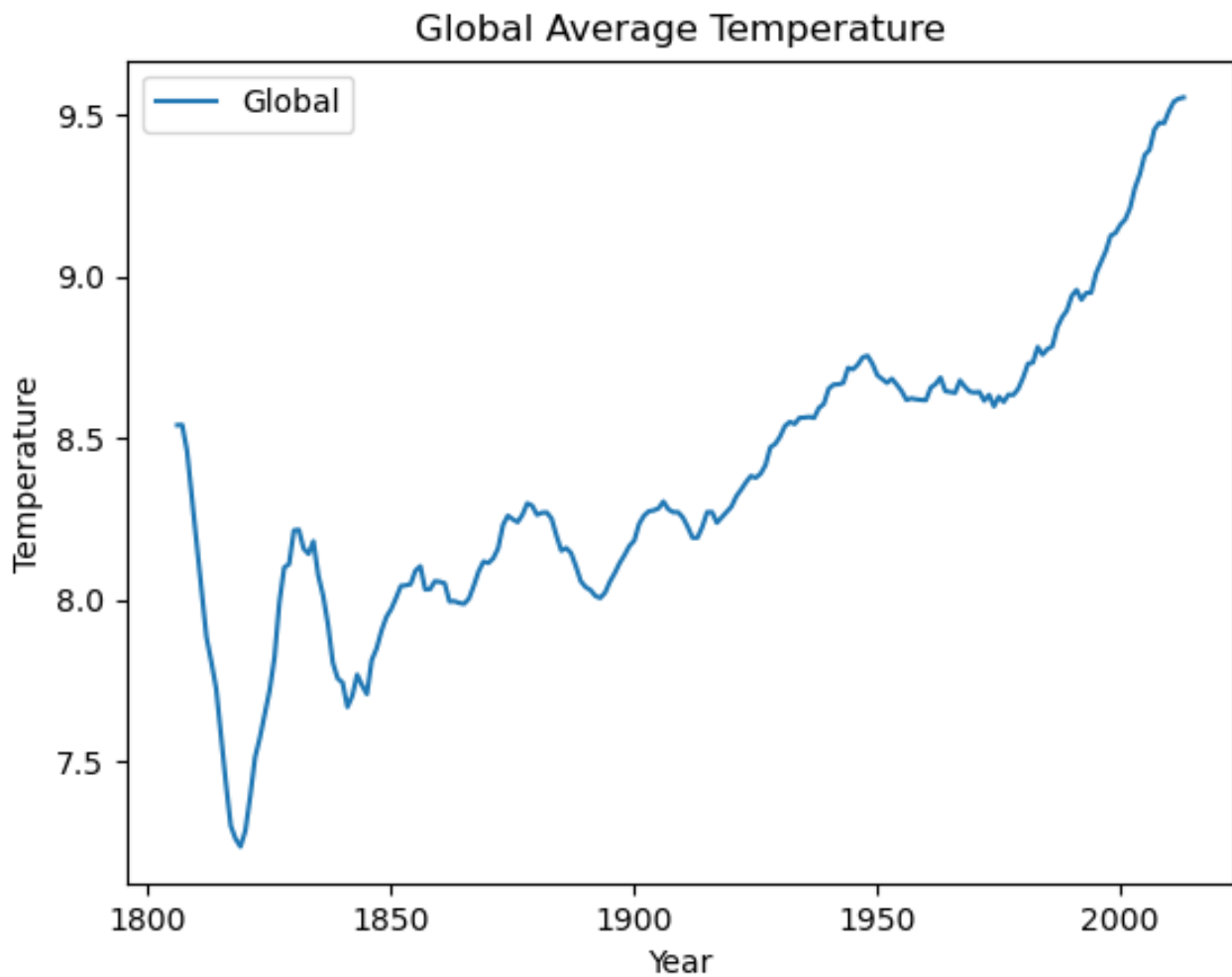
Tool used : Python

I used python's libraries such as pandas in order to work with the csv files and matplotlib to plot the line graph.

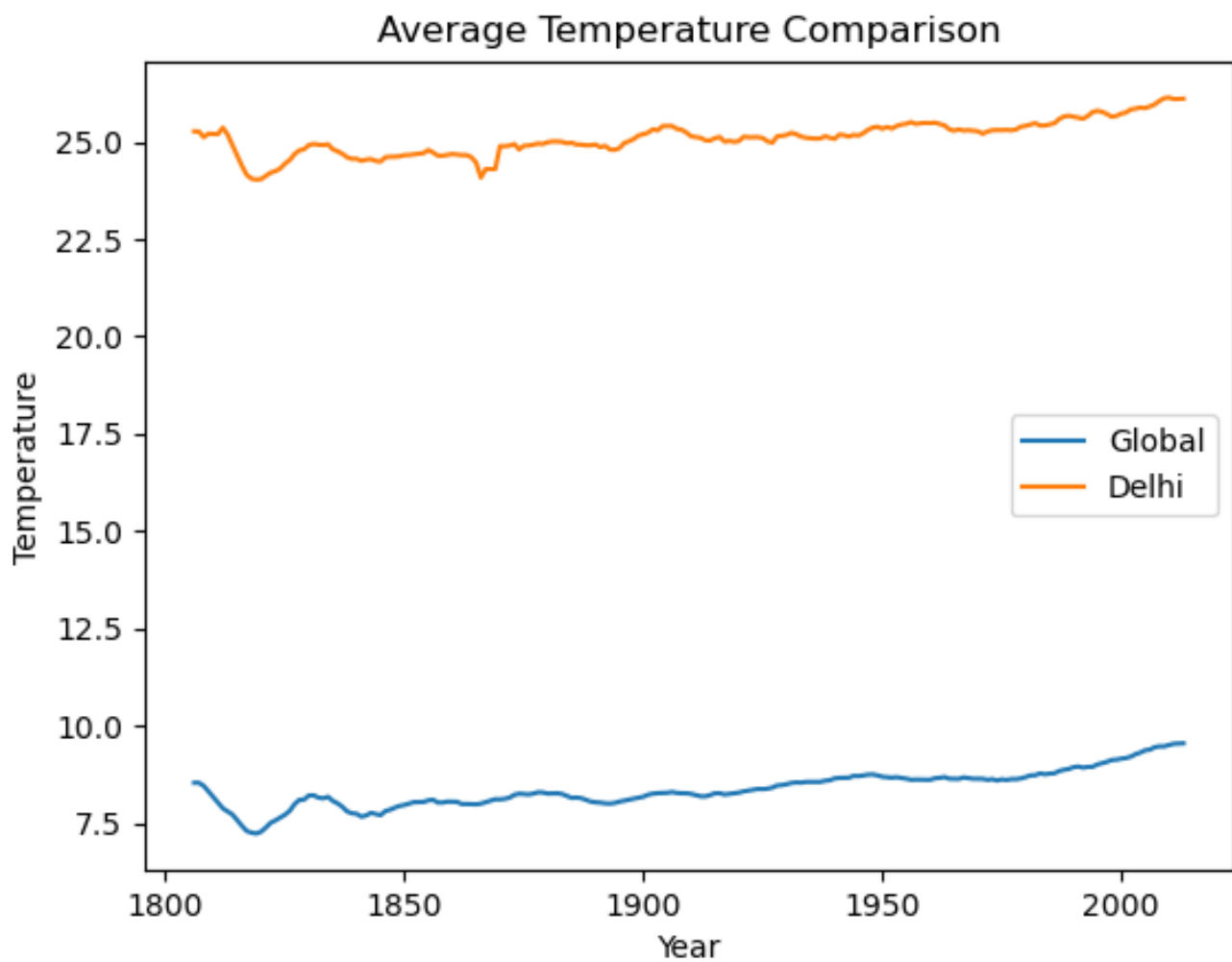
1] Following is the local average temperature line chart for Delhi :



2] Following is the global average temperature line chart:



3] Following is the average comparison temperature line chart :



OBSERVATIONS

1] The local moving average temperature has a range from 24 to 26 degrees.

2] The global moving average temperature has a range of 7 to 9.5 degrees.

3] When we compare these two moving averages we can infer that Delhi's moving average temperature is greater than global temperature.

4] The difference in the temperature is around 16 to 16.5.

5] The variations in the local moving average temperature are more as compared to the global temperature.

6] The local as well as global temperature has increased around 2 to 2.5 degrees in the long term.

CONCLUSION

Delhi is hotter than the global temperature levels.