

Udacity Data Analysis Nanodegree Project 01:

Exploring weather trends

SQL Query was used to **Extract the data** from the database that contains yearly average temperature of the city 'Berlin' and the global.

Then the data has been analyzed using pandas library in python and plotted using matplotlib library in python.

Progress outline:

SQL query was used to download csv files that

- 1-Containing yearly global average temperature by using this query:

```
SELECT *
```

```
FROM global_data ;
```

- 2-containing yearly average temperature for the closest city to my country by using this query:

```
SELECT *
```

```
FROM city_data
```

```
WHERE city = 'Berlin'
```

Moving averages:

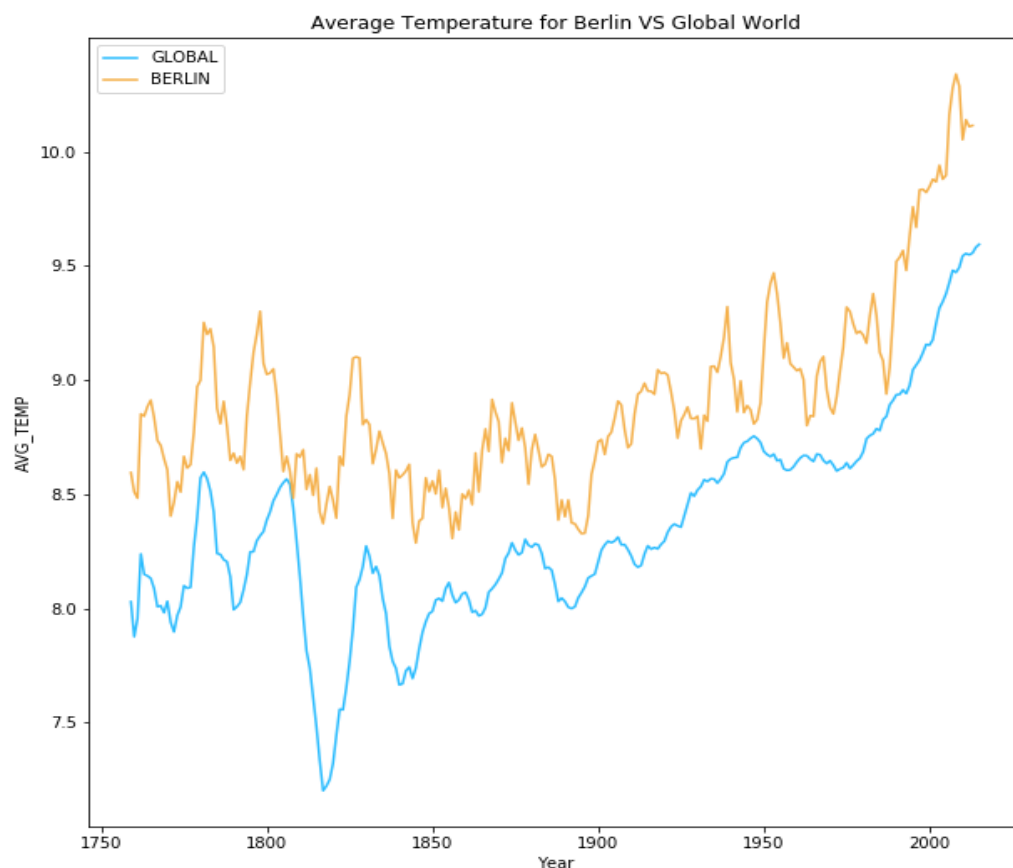
- Moving averages are used to smooth out data to make it easier to observe long term trends and not get lost in daily fluctuations.
- By using python I calculated the moving averages by the built in Function 'rolling'.

The python code:

```
In [9]: df_global['new_avg_temp'] = df_global['avg_temp'].rolling(10).mean()  
df_city['new_avg_temp'] = df_city['avg_temp'].rolling(10).mean()
```

The line chart for the data:

```
In [33]: plt.figure(figsize=(10,10))  
plt.plot(df_global['year'],df_global['new_avg_temp'],color='#2CB0FE',label='GLOBAL')  
plt.plot(df_city['year'],df_city['new_avg_temp'],color='#F5B14C',label='BERLIN')  
plt.xlabel('Year')  
plt.ylabel('AVG_TEMP')  
plt.title('Average Temperature for Berlin VS Global World')  
plt.legend()  
plt.savefig('Temp.png')
```



Observations:

- 1- The Chart is showing the temperature in global world is raising over years.
- 2- Berlin city is getting hotter over time.
- 3- The change of the temperature between Berlin and global world very small and both of them are raising.
- 4- The chart show that the temperature in Berlin is hotter comparing to temperature in global world.
- 5- The difference between year 1920 and 2020 in temperature in global world is about 1.5 degree raising.
- 6- The difference between year 1920 and 2020 in temperature in Berlin city is about 2 degree raising.

Conclusion:

There is obviously raising in the temperature over the world due to climate change.