Project 1 : Exploring Weather Trends

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1. Introduction

In this project, firstly, I used some SQL query to extract Data for analysis. Secondly, I used Python Programming Language using Jupyter Notebook to analyze the data. Finally, I observed some topic from line charts.

2. Outline

1. **SQL Part:**
   Extract city(Dhaka) data from the *"city_data"* table. My City is Dhaka and my country is Bangladesh. So, My SQL query is:

```
select * from city_data
where
city = 'Dhaka' and
country = 'Bangladesh';

```

   Extract global data from the *"global_data"* table. So, My SQL query is:

```
select * from global_data;

```

   After executing both SQL query the resultant value export as csv format respectively city_data.csv and global_data.csv.

2. **Moving Average**
   - Moving averages are used to smooth out data to make it easier to observe long term trends and not get lost in daily fluctuations.
   - Moving average is calculated for every 6 years to every single data - In Python, to calculate moving average there's have two built-in function *"rolling()"* and *"mean()"*

   In that case my code looks like:

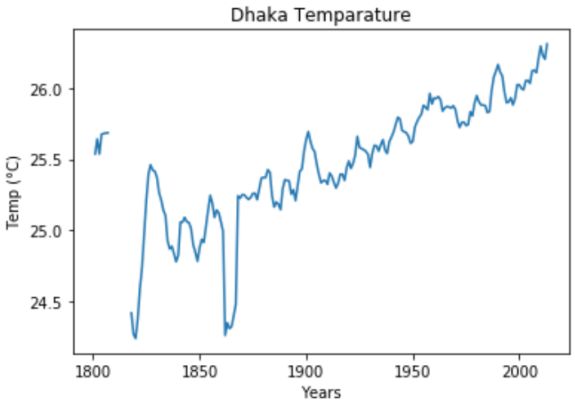
```
movAvgDhaka = dhakaTemp['avg_temp'].rolling(<year>).mean()
movAvgGlobal = globalTemp['avg_temp'].rolling(<year>).mean()

```

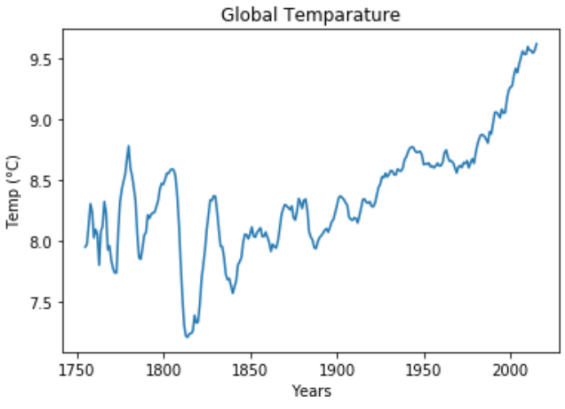
3. Python Code

```
#importing libraries
import matplotlib.pyplot as plt  #Deal with data visualization
import pandas as panda  #Deal with data

#Reading the data
dhakaTemp = panda.read_csv('Desktop/UdacityDataAnalyst/city_data.csv').
  #Read Local City Temperature Data File
globalTemp = panda.read_csv('Desktop/UdacityDataAnalyst/global_data.csv
  ') #Read Global Temperature Data File

#Moving Average Calculation (considering 6 years)
movAvgDhaka = dhakaTemp['avg_temp'].rolling(6).mean()
movAvgGlobal = globalTemp['avg_temp'].rolling(6).mean()

#Comparison Chart between Dhaka and Global
plt.plot(dhakaTemp['year'],movAvgDhaka,label='Dhaka') #Ploting local
  city line chart
plt.plot(globalTemp['year'],movAvgGlobal,label='Global') #Ploting
  Global city line chart
plt.legend()
plt.xlabel("Years")
plt.ylabel("Temp ( C )")
plt.title("Dhaka vs Global Temparature")
plt.show() #Visualizing the chart


```

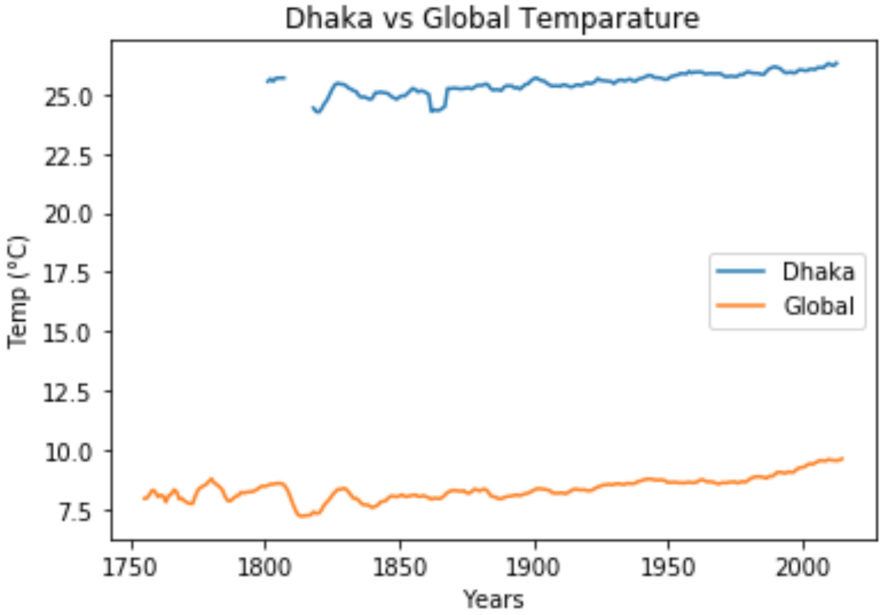
3. Line Chart

1. Fig: Temperature of Dhaka City and Global





2. **Fig: Dhaka vs Global Temperature**



4. Observations

1. My local city's(Dhaka) temperature is very hotter than global average temperature.
2. Since 1860(almost), the Dhaka city's temperature increasing.
3. Since 1810(almost), the global temperature increasing.
4. The climate is slightly changing for both Dhaka City and Global.
5. The average temperature of Dhaka City is almost 25.5C between 1800 to 2010
6. The average temperature of Global is almost 8C between 1750 to 2010
7. The Dhaka city's temperature difference is almost 2C between 1860 to 2013.
8. The Global Avg. temperature difference is almost 2C between 181- to 0013.