Explore Weather Trends

Steps taken to prepare the data (data preprocessing)

1. First of all, I've used following SQL queries to extract the data from database.

```
select * from global_data;

select * from city_data where city = 'Karachi';
```

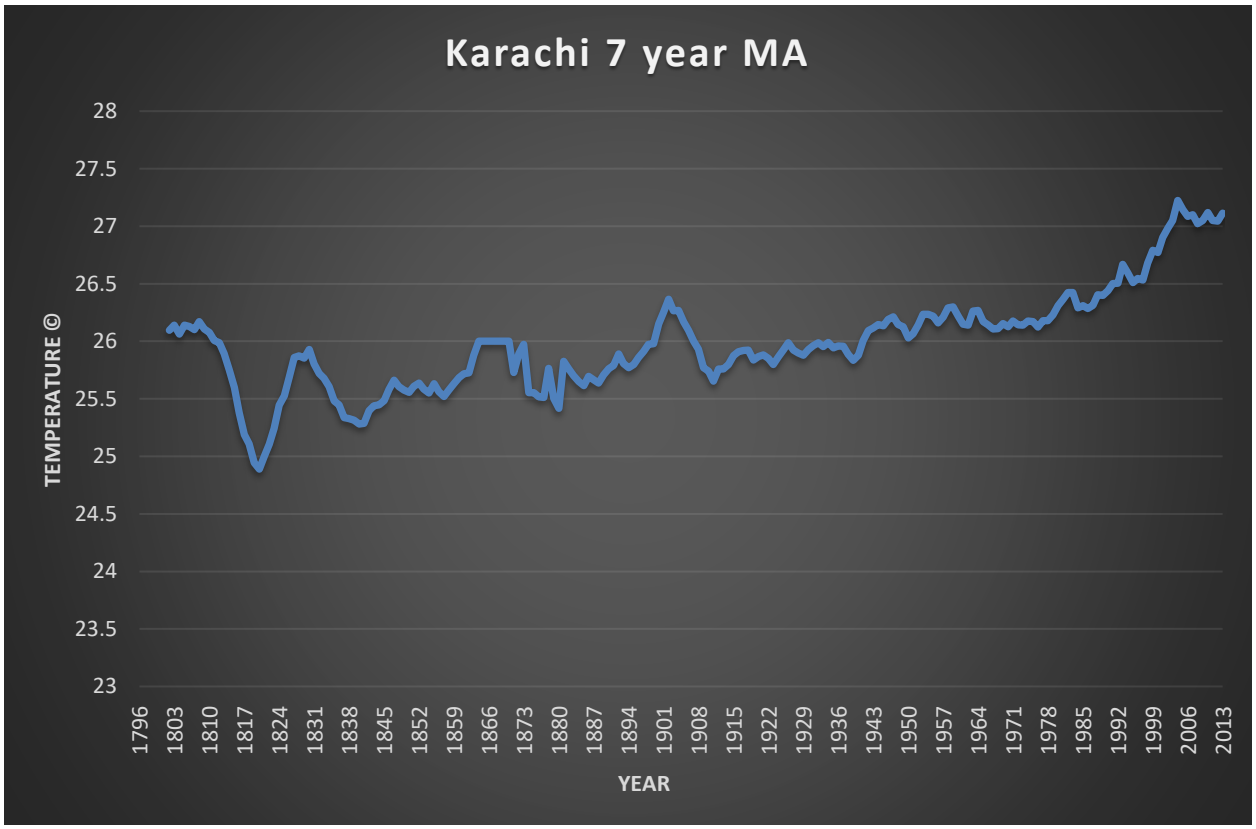
2. After Extracting the data, I have exported it to the CSV format.

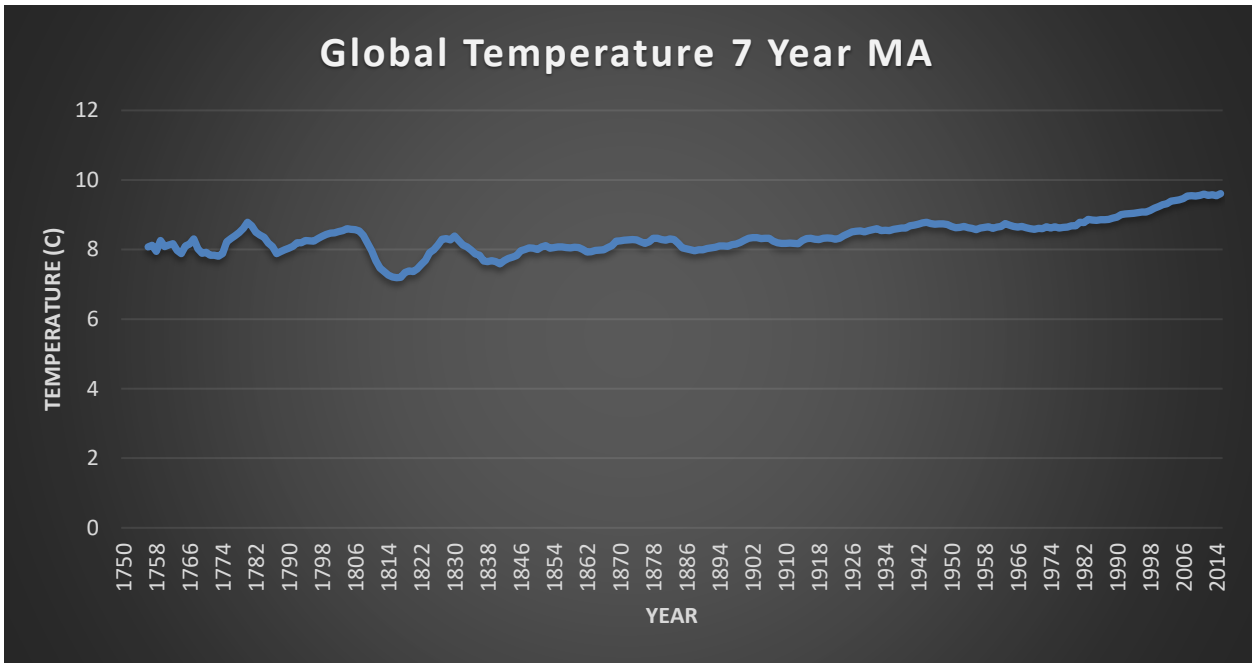
3. After analyzing the temperature data of my city (i.e. Karachi) I've observed there are some missing values for some years. So, I have used the mean of avg_temp to fill them out.

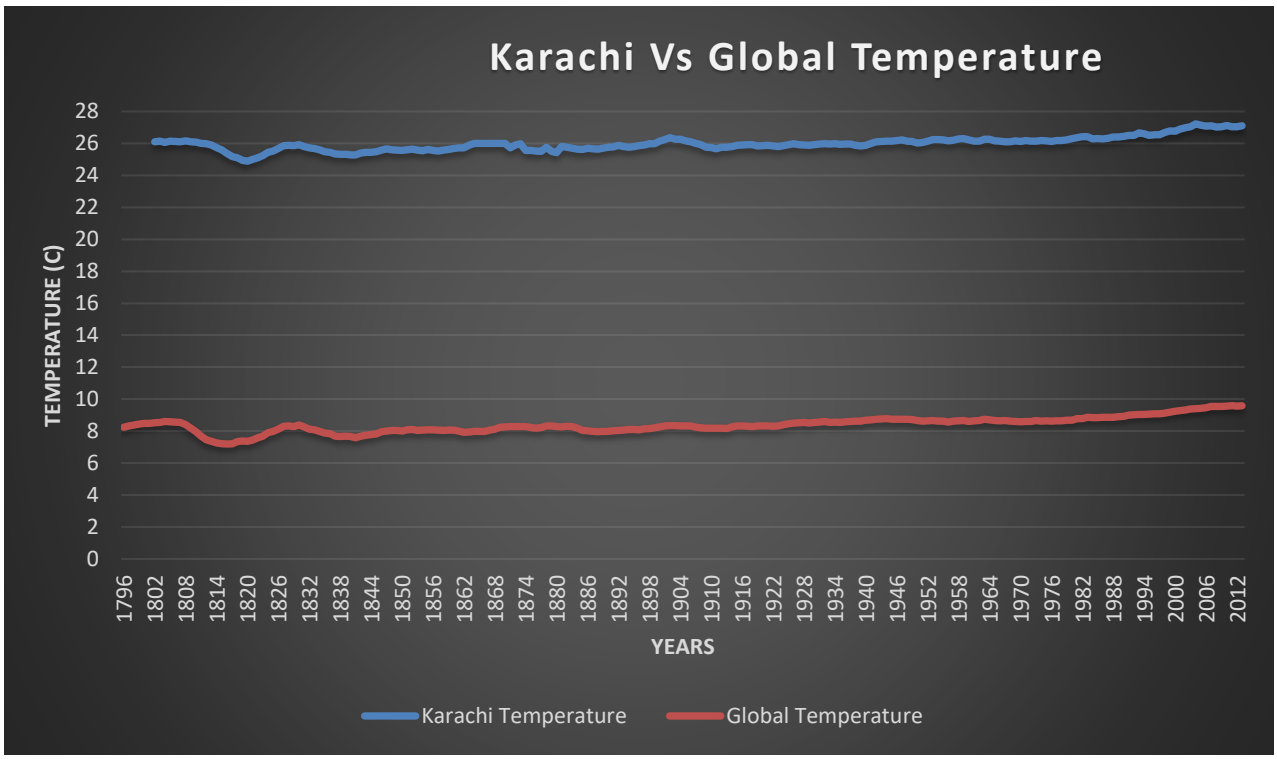
4. Tool I used to calculate moving average and to visualized the data is Excel.

5. Key considerations while visualizing the data were, first of all, we should have data of the same years for temperature for both (local and global). In my case, the local temperature data of Karachi was from the year 1796 to 2013 while global data contains temperature from the year 1750 to 2015. So, I have used and plotted the data for the years between 1796 to 2013 to avoid any miss leadings observations. Secondly, there were missing values of avg_temp for Karachi so I have used mean to fill them up as stated above.

Data Visualization




Global Temperature 7 Year MA
TEMPERATURE (C)
0
2
4
6
8
10
12
1750
1758
1766
1774
1782
1790
1798
1806
1814
1822
1830
1838
1846
1854
1862
1870
1878
1886
1894
1902
1910
1918
1926
1934
1942
1950
1958
1966
1974
1982
1990
1998
2006
2014
YEAR


Karachi Vs Global Temperature
TEMPERATURE (C)
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
1796
1802
1808
1814
1820
1826
1832
1838
1844
1850
1856
1862
1868
1874
1880
1886
1892
1898
1904
1910
1916
1922
1928
1934
1940
1946
1952
1958
1964
1970
1976
1982
1988
1994
2000
2006
2012
YEARS
Karachi Temperature
Global Temperature

Observations

- If we look at the line graph for Karachi only, we can see there is a drop of around 1-degree centigrade in the year 1820 then afterward there is a continuous upward trend till the year 2012.

- On the other hand, global temperature shows variations from the year 1757 to the year 1848 then it continues to rise to around 10-degree centigrade in the year 2009.

- We can see the temperature for Karachi is way above the global temperature that means Karachi is hot as compared to the global temperature.

- There is a difference of around 17-degree centigrade between both temperatures.

- Overall, we can see that there is a positive relationship between the temperature and the years. So, we can say the world is getting hotter year by year.