

Exploring Weather Trends (Global vs Bangalore, India)

- **Extraction of Data –**

1. **SQL Query for list of cities -**

```
SELECT *  
FROM city_list;
```

2. **SQL Query for global temperature data -**

```
SELECT *  
FROM global_data;
```

266 entries were downloaded as csv file.

3. **SQL Query for Local (Bangalore, India) temperature data –**

```
SELECT *  
FROM city_data  
WHERE city='Bangalore';
```

218 entries were downloaded as csv file.

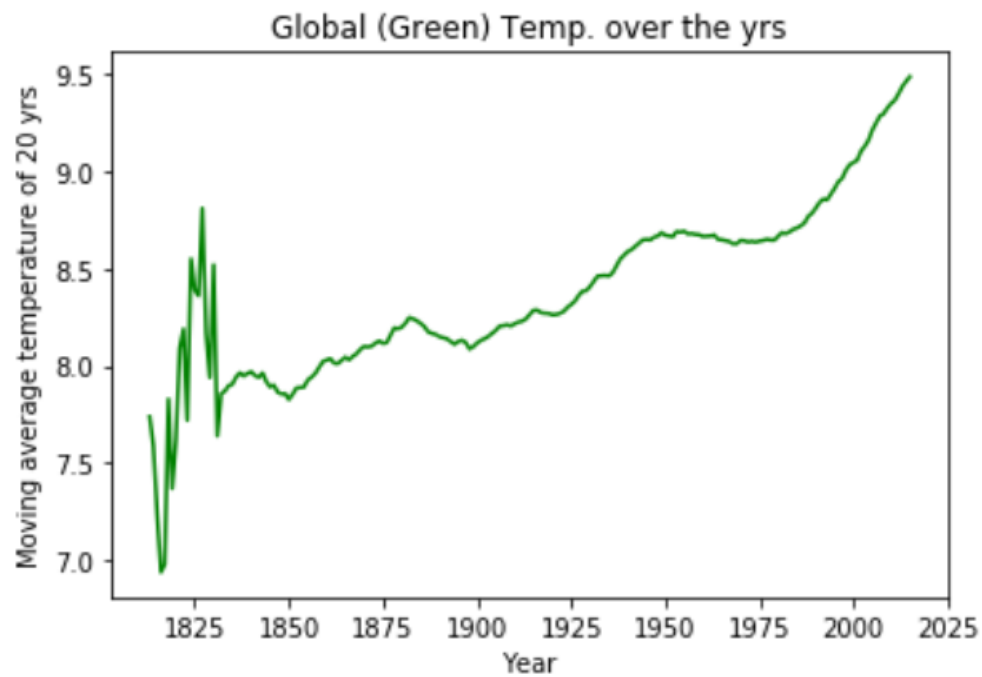
- **Opened up Csv file –**

I used excel to open the downloaded csv file.

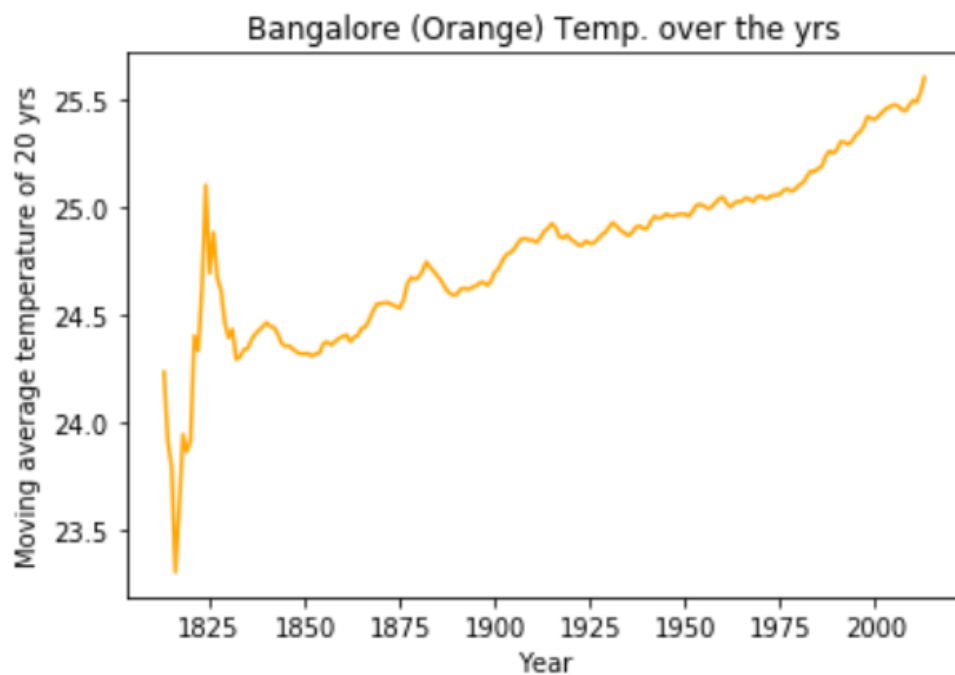
- **Creation of line chart –**

For creation of line chart is started with plotting the csv file directly but as already told us in the course the graph/chart looked very volatile hence, using a moving package I tried to smoothen the volatility. Starting from moving average over a period of 5 years, 10 years, 15 years and then finally I tried 20 years which decreased volatility a lot. So finally, I plotted total three line graphs –

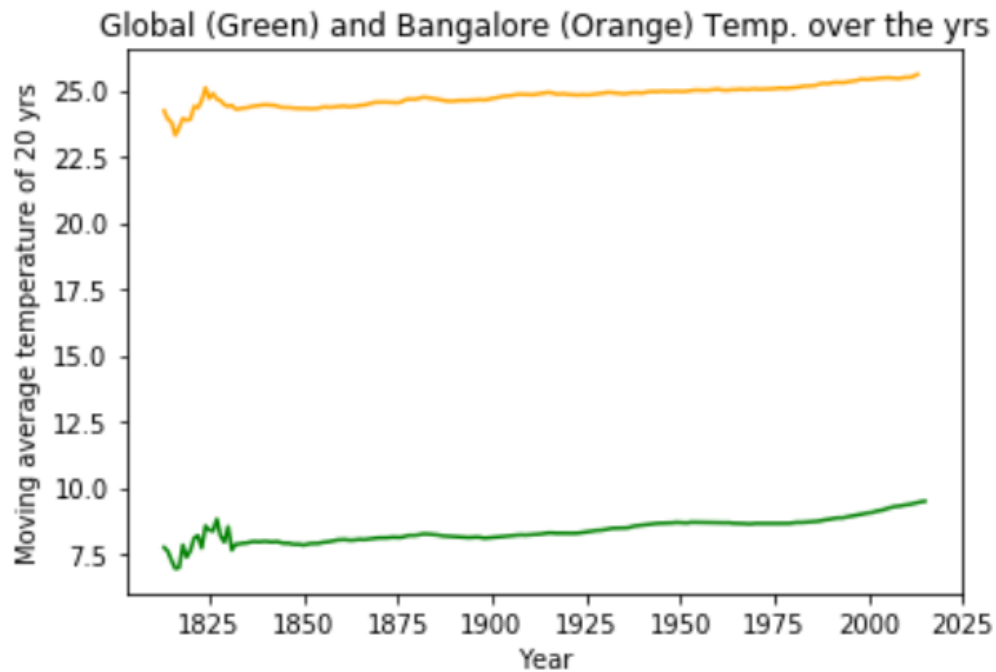
1. Global Temperature over the years –



2. Bangalore Temperature over the years –



3. Global and Bangalore Temperature over the years –



The breakage on orange line is due to absence of data during those years.

4. Moving Average Calculation Screenshot – Average of 20 years was calculated.

15	1826	Bangalore	India	24.88	24.88
16	1827	Bangalore	India	24.67	24.67
17	1828	Bangalore	India	24.61	24.61
18	1829	Bangalore	India	24.46	24.46
19	1830	Bangalore	India	24.39	24.39
20	1831	Bangalore	India	24.43	24.43
21	1832	Bangalore	India	24.66	24.289
22	1833	Bangalore	India	24.46	24.3005
23	1834	Bangalore	India	24.59	24.3345
24	1835	Bangalore	India	23.89	24.3395
25	1836	Bangalore	India	24.12	24.3805
26	1837	Bangalore	India	24.13	24.407
27	1838	Bangalore	India	24.29	24.4245
28	1839	Bangalore	India	24.24	24.4435
29	1840	Bangalore	India	24.24	24.46
30	1841	Bangalore	India	24.05	24.4425
31	1842	Bangalore	India	24.22	24.437
32	1843	Bangalore	India	23.99	24.4055
33	1844	Bangalore	India	24.23	24.362
34	1845	Bangalore	India	24.46	24.3505
35	1846	Bangalore	India	24.9	=AVERAGE(D16:D35)

- **Observations Made –**

1. After observing the data, it is clearly visible that Bangalore is hotter than the global average.
2. As Bangalore is very close to the equator, so it was expected that it will be hotter here.
3. Over the year, 1850 – 2000 to be specific the increase in moving average temperature is same in both Bangalore and global data. Hence there is not abnormality observed in the line chart of both the data.
4. It is also observed that looking at the overall trend that the world is getting hotter and the graphs looks to be quite linear over the span of last few hundred years.

- **Code for plotting the line graph –**

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

```
In [12]: df_global= pd.read_csv('global_avg.csv')
df_bangalore=pd.read_csv('bangalore_avg.csv')
global_year=df_global['year']
global_moving_avg_temp=df_global['moving_avg']
bangalore_year=df_bangalore['year']
bangalore_moving_avg_temp=df_bangalore['moving_avg']
plt.plot(global_year,global_moving_avg_temp,color='g')
plt.plot(bangalore_year,bangalore_moving_avg_temp,color='orange')
plt.xlabel('Year')
plt.ylabel('Moving average temperature of 20 yrs')
plt.title('Global (Green) Temp. over the yrs')
plt.show()
```