



---

# EXPLORE WEATHER TRENDS

---

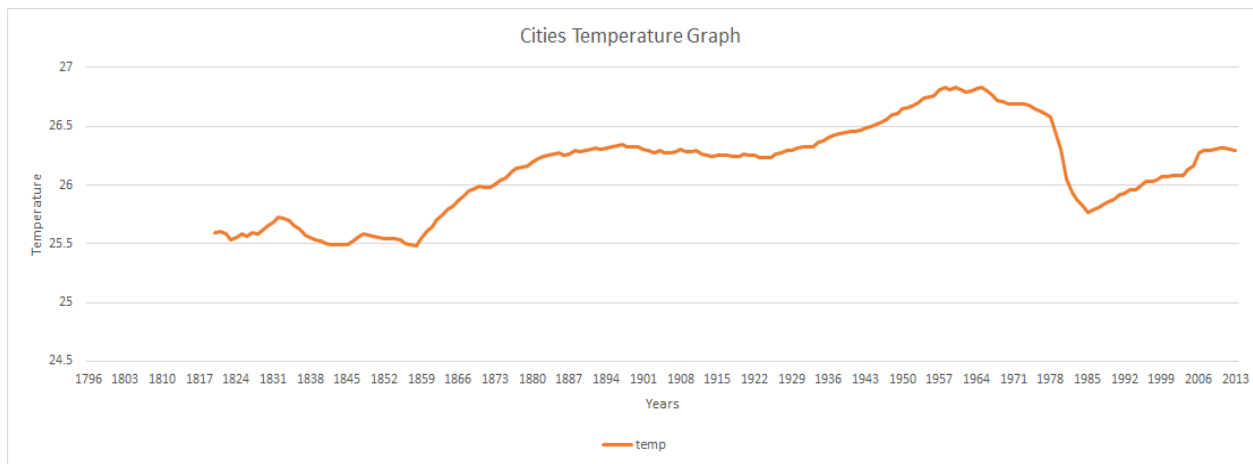
Project by Udacity



JUNE 15, 2018

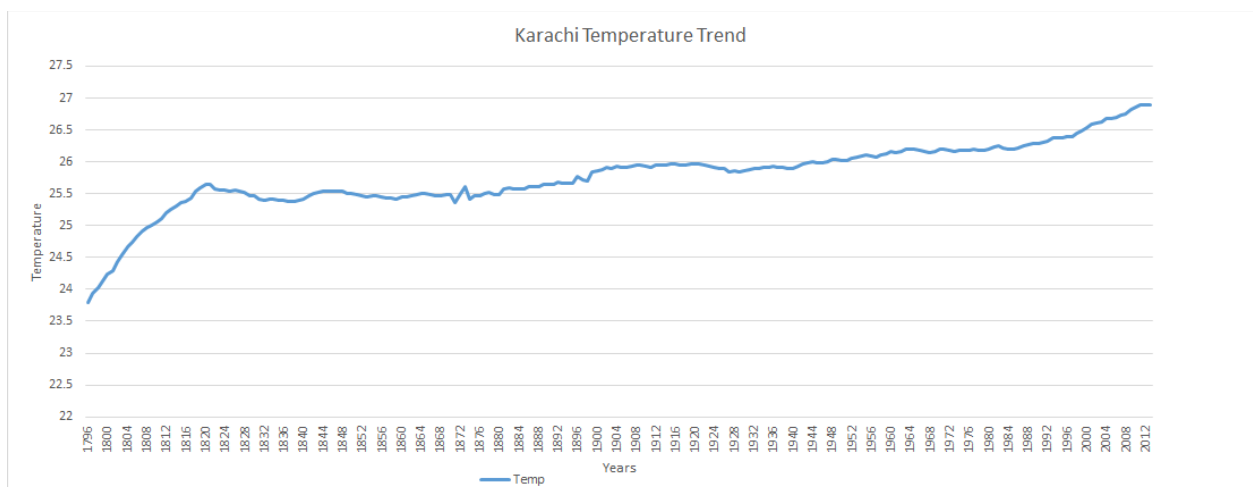
PREPARED BY  
Amanullah Ashraf

## Temperature trend among world major cities:



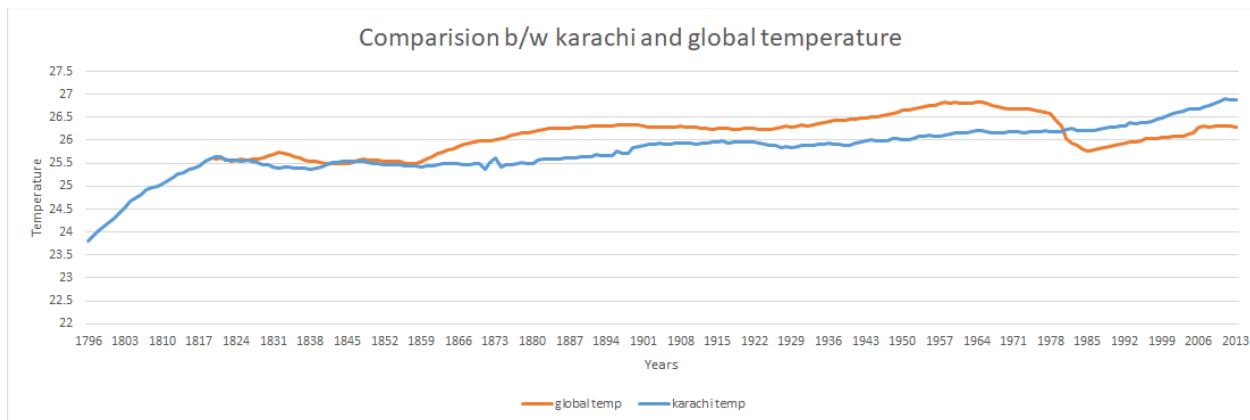
Above line graph is representing different cities temperature pattern over the last two hundred years. As we can notice, in the early 1800s, temperature range is between 25.5 to 26. Later part of 1800s and most of the 1900s shows increase in temperature trends. It might be due to industrial revolution. From 1978 to 1985 shows sudden fall in temperature trend. May be due to strict environmental control measure. From 1985 to 2006 there is steep rise in temperature again with consistency. 2006 and onwards shows a stable pattern.

## Karachi Temperature Trend:



Above line graph is representing temperature trend of Karachi city. In the early 1800s, there is a steep rise in Karachi temperature with consistency. Stability can be seen from 1840 to 1880. From 1884 and onwards, temperature is towards increasing side. 1992 to 2012 time period shows a steep rise in temperature. It may be due to increasing population, pollution, traffic etc.

## Comparison between Karachi and Global cities temperature:



Above graph is a comparison between Karachi city with other world major cities. Generally, over the past 100s year, Karachi temperature was well below the global city temperature, except few overlapping. 1978 to 1985 is a time period where this trend was broken and since then it is increasing and it went above the global city temperature. Karachi city is becoming hotter compared to global temperature, consistency can be seen in the later part of the graph.

Later part of the graph shows, both the global cities and Karachi temperatures are rising with consistency and the world we live in is becoming hotter. But in recent years, Karachi is becoming hotter than global cities.

Following are some similarities and differences between local temperature (i.e. Karachi) and global cities.

Similarities	Differences
1817 to 1824 time period shows overlapping in Karachi temperature and global cities temperature	In the early 1800s Karachi temperature is well below the average temperature of global cities.
1845 to 1859 shows consistency in Karachi temperature and global cities temperature. Slight difference is ignorable.	1831 to 1838 shows global cities temperature rises and Karachi temperature slightly falls from the usual pattern
Global temperature falls and Karachi temperature rises which gives an overlap in 1985.	From 1859 to 1978 Karachi temperature is well below the global cities temperature.
Though global temperature had fallen quite sharply compared to Karachi temperature, but in the end both shows rising trend.	From 1985 and onwards, global had fallen sharply and Karachi temperature is towards rising side.

# Steps taken to prepare the data for graph:

Run the following SQL queries against database and downloaded their data in .csv format.

1. Select \* from city\_list;
2. Select \* from city\_data where city='Karachi';
3. Select \* from global\_data;

Later converted the .csv into EXCEL file.

## **Tools Used: Excel**

Make some changes in EXCEL file and Calculate Moving Average:

Moving average is calculated by using `=Average(cell2,cell26)` formula.

## **Key Considerations:**

In order to see year wise temperature changes , first moving average of 25 years was calculated to in order to avoid null values in average temperature column and also to have a smooth line graph. Finally, drew a line graph using moving averages (avg. temp) and year's columns. Having moving averages (avg. temp) on Y-axis and Year on X-axis.

## **References:**

1. <https://www.youtube.com/watch?v=Xn7Sd5Uu42A&t=149s> (how to make a multi-line chart)