

# EXPLORE WEATHER TRENDS

## 1. Extracting the Data Using SQL

I ran the following queries for extracting the data from the database:

(a) I first queried to find the cities present in the list:

```
SELECT *  
FROM city_list;
```

I found that Agra was present in the list.

(b) I then extracted the data for Agra using:

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

I exported the query results to a csv file "Agra.csv" and downloaded the file to my local machine.

(c) I then extracted the global data:

```
SELECT *  
FROM global_data;
```

I exported the results to a csv file "World.csv" and downloaded it to my local machine

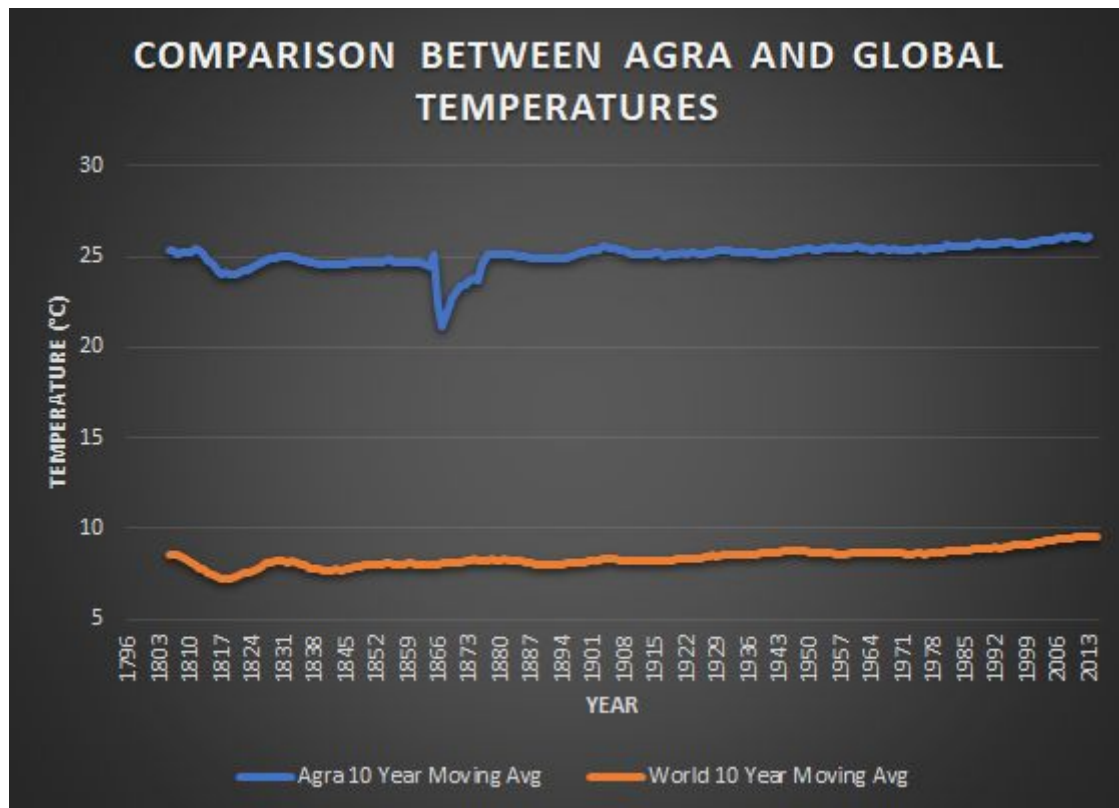
## 2. Manipulating Data Using Excel

For Agra.csv and World.csv, I calculated the 10 year moving averages by using AVERAGE() function of Excel for first 10 rows and copying the formula for subsequent Rows.

I then copied the moving averages for the world into a new column in Agra.csv so that I could create a line chart comparing both Agra's and the world's temperatures.

## 3. Data Visualization

Here's the line chart that I got:



#### 4. Observations

- (a) We can clearly observe that Agra's temperatures are way higher than the global average for all the years. While the world's temperatures hover around 8°C, Agra's temperatures are clearly concentrated around 25°C. Therefore, there's a clear difference of about 17°C
- (b) We see that there was a dip in temperatures for Agra during 1866-80, when the temperatures vary from around 21°C to 24.5°C. This is because certain values were missing in the data, resulting in lower moving averages. Values were also missing for a few earlier years (1808-1812), and hence we see a slight dip in values for that region.
- (c) In 2013, the temperature value for Agra was 26.101°C, which is slightly higher than 1805's value of 25.286°C, which signifies that Agra's temperature has risen slightly in about 200 years by around 0.8°C.
- (d) Whereas the world average in 2013 was 9.556°C, which is also higher than 1805's 8.551°C. Thus, a rise of about 1°C has occurred worldwide.
- (e) The rise in temperature over the years for Agra is about 0.2°C less than the world average.
- (f) Thus, we conclude that global temperatures (including those of Agra) are steadily rising over the years except for a short period from 1810 to 1825 (6.8 to 7.6°C).