# Explore Weather Trends

In this report I have analyzed the global temperature with Bangalore City Temperature, which is my nearest city. I have explained the tools which I used and given a chart which shows the trends of the average temperature with the Observation and Actions from the graph. Also updated the references which I used.

## Tools Used

1) SQL → To Extract the data from UDACITY Site
2) EXCEL →To Visualize and observer the trends using Line Chart

## Extracting the Data

I have extracted the data from Udacity portal by issuing the below SQL commands. I have taken the data which I needed by the help of JOIN and WHERE Clause from global_data and city_data database. As the Data of global_data is from 1751 to 2015 I have taken only the data which my city has, Bangalore data is available only from 1796 to 2013.

## SQL CODE

```
SELECT g.year, g.avg_temp as glob_temp, c.avg_temp as bglr_temp
     FROM global_data g
    JOIN city_data c
    ON g.year=c.year
    WHERE c.city LIKE 'Bangalore'
```

Now, I downloaded the data as temp.csv, from this file I have analyzed the moving temperature between Global and Bangalore.

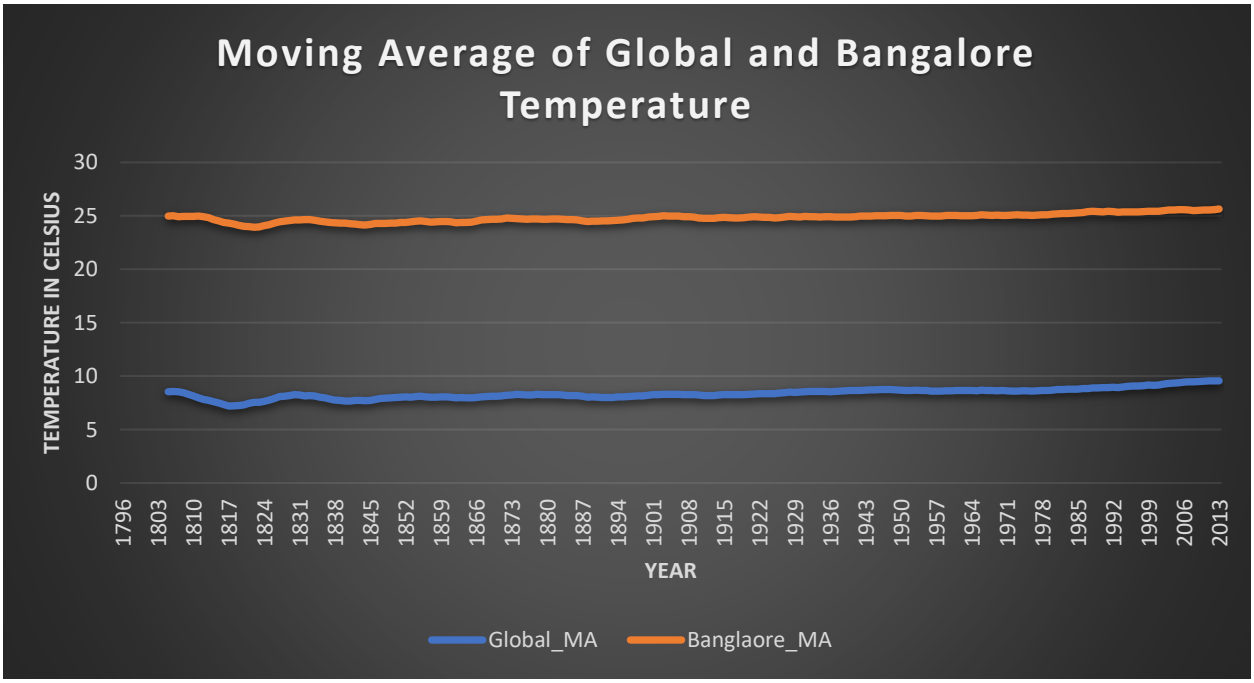
## Exploring the Data

When I begin to analyze the data, I found there are few blanks cells in Bangalore average temperature. So, I used the `=AVERAGE(C2:C219)` Excel function to get the mean value and applied it in all blanks cells of Bangalore average temperature.

From this data I have calculated the Moving Average of Global and Bangalore for every 10 years using the Excel function and rounded the output with 2 digits floating points `(=ROUND(AVERAGE(B2:B11),2))`. And Labeled the column as Global_MA and Bangalore_MA, where MA refer to Moving Average.

Then, I created a line chart with Year, Global_MA and Bangalore_MA, where I got a graph with Temperature in Y axis and Year in X axis. To get a better view I altered the X axix scale to 7 Years interval so that I can view the graph from 1796 to 2013 and here is the chart for Observation.

## Line Chart




The above chart plots the moving average of Global and Bangalore Temperature in Celsius, Where the Orange Line refers to the Bangalore Moving Average Temperature and Blue Line refers the Global Moving Average Temperature.

## Observation

To make the chart clear and to view plots from 1796 to 2013, I scaled the X axis to 7 Years.

- By seeing the Graph, we can observe the temperature of both Global and Bangalore are increasing every year.
- Bangalore is hotter than Global Average Temperature
- In the year close between 1796 to 1805 the temperature is high, which is nearly close to the 2013 temperature.
- Least Average temperature for Global recorded in the year 1817 with 7.2° Celsius but It is 24.31° Celsius for Bangalore which is hotter in Bangalore
- Least Average temperature for Bangalore recorded in the year 1822 with 23.93° Celsius and Global Temperature of same year is 7.56° Celsius.
- Maximum Global Temperature is 9.56° Celsius in the year 2013
- Maximum Bangalore Temperature is also at 2013 with 25.64° Celsius
- Overall from the year 1950 the Global Temperature is raising which also lead the temperature raise Bangalore
- Earth is getting hotter on every year globally, due to this there are changes in the climate every year.

## Actions

- We need to plant more trees every year, which will get the rains and maintain the Ground water level, By that we can avoid earth getting hot.
- Government should restrict the industries which are getting more ground waters by creating new policy for Ground Water Management
- Citizens must get the awareness to save rain water and re-use the water using STP plants
- Re-Cycled waters can be used for agricultural lands.
- New Small Check Dam's needs to constructed on the long rivers, which will increase the water levels of nearby Lakes, Ponds, Wells.. etc..
- Government check & maintain the ECO-Safe zones and Forests periodically
- Education Department must ensure that school children's get the awareness for water management and we need to teach them how to save water in our daily life, By this our next generation will get know the importance of water.

## References:


- Data Visualization Chapter from UDACITY Course
- Moving Average from dummies.com
  https://www.dummies.com/software/microsoft-office/excel/how-to-calculate-moving-averages-in-excel/