Exploring Weather Trends Project

1. **Extracting Data from the database using the below SQL queries.**

    - Finding out if “Detroit” is available in the city_list table using the below query:
      Select * from city_list where city='Detroit'
      The output was with 1 result. **city: Detroit ,country: United States**

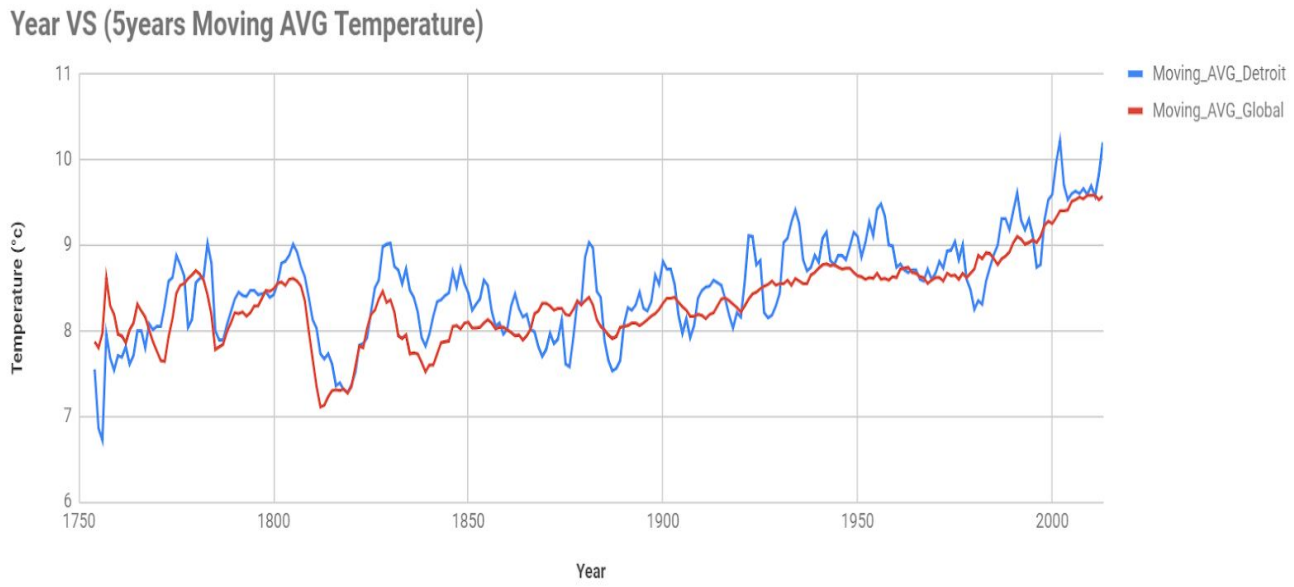
    - Getting the average temperature for “Detroit” through the city_data table:
      Select year, avg_temp from city_data where city='Detroit'
      -No need to get *ALL data from this table as we are sure that Detroit exists.
      -Downloading the CSV file.

    - Getting ALL data from the table global_data:
      Select * from global_data
      -Downloading the CSV file.

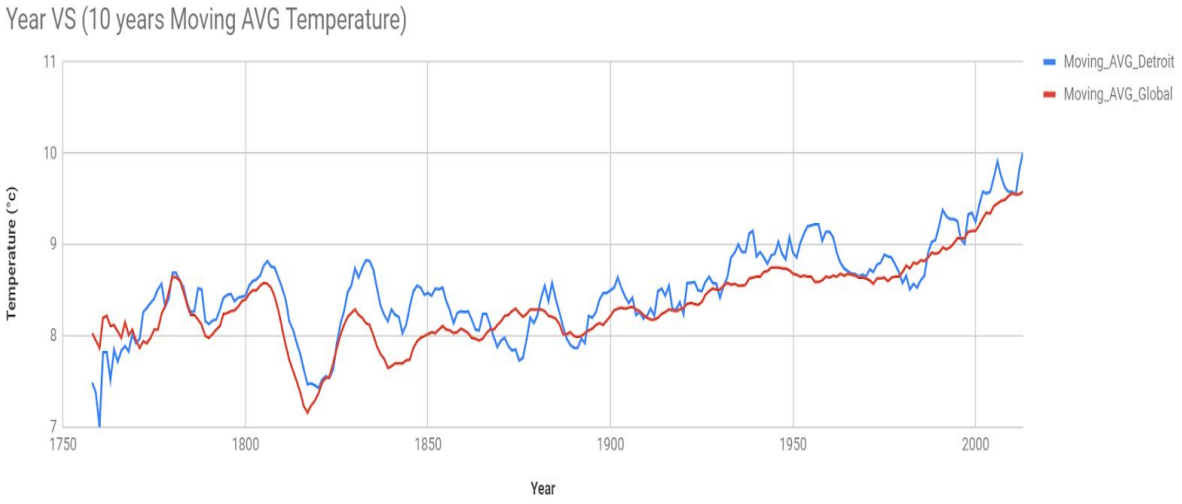
2. **Calculating the moving averages using “Google Sheets”.**
    - Joining both CSV files into 1 sheet.
    - Since we have temperature records for around 250 years, I decided to calculate the moving averages for 5 and 10 years.
    - Calculating the 5 years moving average using the below formula for both city and global avg_temp:
      For example: the moving average for year 1760 which is on cell “A12” and and avg_temp on cell “B12” will be as the below:
      =ROUND(AVERAGE(B8:B12),2)
      - Round formula to get only 2 decimal digits.
    - Calculating the 10 years moving average using the previous steps.

3. Plotting the Line Chart.

- The below chart shows the moving averages for 5 years.



- The below chart shows the moving averages for 10 years.



4. Conclusion:

- For my conclusion and observation, i used the 5 years moving average graph since it gives more accurate results.
- The temperature in Detroit have been increased from 7.5 in 1750 to 10.5 in 2013
- The global temperature have been increased from 7.8 in 1750 to 9.5 in 2013
- The minimum temperature for Detroit it was 6.72 in 1756, and for the global it was 7.11 in 1812
- The maximum temperature for Detroit it was 10.2 in 2002 and 2013, and for the global it was 9.57 in 2013.
- We can observe one big sudden decrease during these years, it was between 1805 and 1819 for both Detroit and Global temperature, after that it starts increasing again.
- There are several years where the temperature in Detroit is approximately equal to that of the Global (where the 2 graphs intersect). That was clearly during the years between 1820 and 1826.