EXPLORE WEATHER TRENDS PROJECT

Extraction of the data using SQL

The list of US cities was explored as follows in order to find the closest city to my current location.

SELECT *

FROM city_list

WHERE country = 'United States'

Since the closest city is Alexandria, VA but there are multiple cities named Alexandria worldwide, 'United States' was included as country in the search. The data was exported as CSV.

SELECT *

FROM city_data

WHERE city = 'Alexandria' AND country = 'United States';

I noticed that the first year available for Alexandria was 1743, so I performed a search to find out which year was the first available for the global temperature.

SELECT year

FROM global_data

LIMIT 1;

The global data starts from 1750, just a few years later than the data available for Alexandria. The global data was searched as follows and exported to csv.

SELECT *

FROM global_data;

Data manipulation with Excel

Both spreadsheets (for global and local data) were opened, a new sheet was created copying and pasting the column containing the year as well as the Alexandria and global temperatures. The columns were named as follows:

- Year
- Alexandria temperature
- Global temperature

Two new columns were created

- Average Temperature Alexandria
- Average Temperature Global

In order to calculate the 10 year moving average, in these two new column I went down to the row corresponding to the 10th year available for Alexandria and Global respectively and used the AVERAGE() function. I then dragged the formula down to the last data available.

Since the data available for Alexandria ranges from 1743 to 2013 and the global data ranges from 1750 to 2015, I considered if to include all the data or just the overlapping period. My final decision was to include each data point for a complete representation of each dataset, as a result the moving average for Alexandria temperature starts earlier and stops earlier compared to the global one.

Data visualization with Excel

A *line chart* was created after selecting the columns 'Year', 'Average Temperature Alexandria', 'Average Temperature Global'. The following were performed on the chart:

- Title and axis labels were inserted
- Y axis was formatted starting at 6 °C instead of 0°C order to appreciate more the differences between the two moving averages.

Results and Discussion
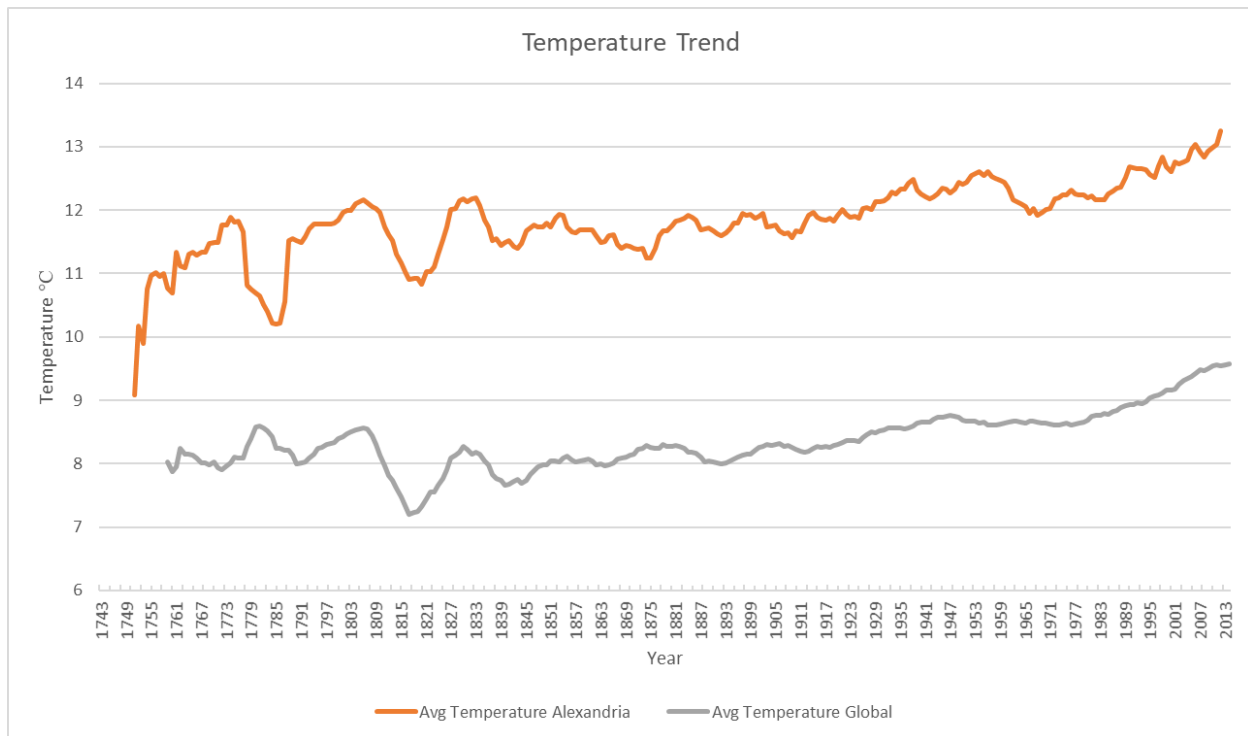
- The average temperature in Alexandria has been consistently above the global average
- The local temperature increase of Alexandria trough time seems to correlate with the increasing global temperature.
- The increasing temperature trend seems to be more evident after the 1900 and progressively increased in the last 40 years, both globally and locally.
- One of the 'major' temperature drop occurred around 1815 and it is clearly evident locally and globally.
- The data available for Alexandria, VA goes back further than the one available for the global temperature. Between 1746 and 1749 data are missing and in the first year initial temperatures are highly variable. Higher variability of the data representing the first few years might also be due to the non-accurate or non-consistent recording of temperatures. Alexandria was actually founded in the mid 1700s. Since no more info are available regarding those early years, I believe that data should be interpreted with caution.