

Explore Weather Trends

1st Step: Data extraction from the database using SQL queries:

Extracting Tunis Temperature Data SQL query:

```
SELECT * FROM city_data  
WHERE city='Tunis'
```

Extracting Global Temperature Data SQL query:

```
SELECT * FROM global_data
```

Then, exporting results in .csv files.

2nd Step: Data Analysis

Importing the .csv file into excel and calculating the *moving average* as follows:

Data Selection:

Since there are missing data in the table of temperature for the city Tunis, which is my city, as well as in the table of temperature for the world. So, I decided to calculate the moving average starting from 1753 to 2013, because there are no missing data in both table in that period of time.

Moving average:

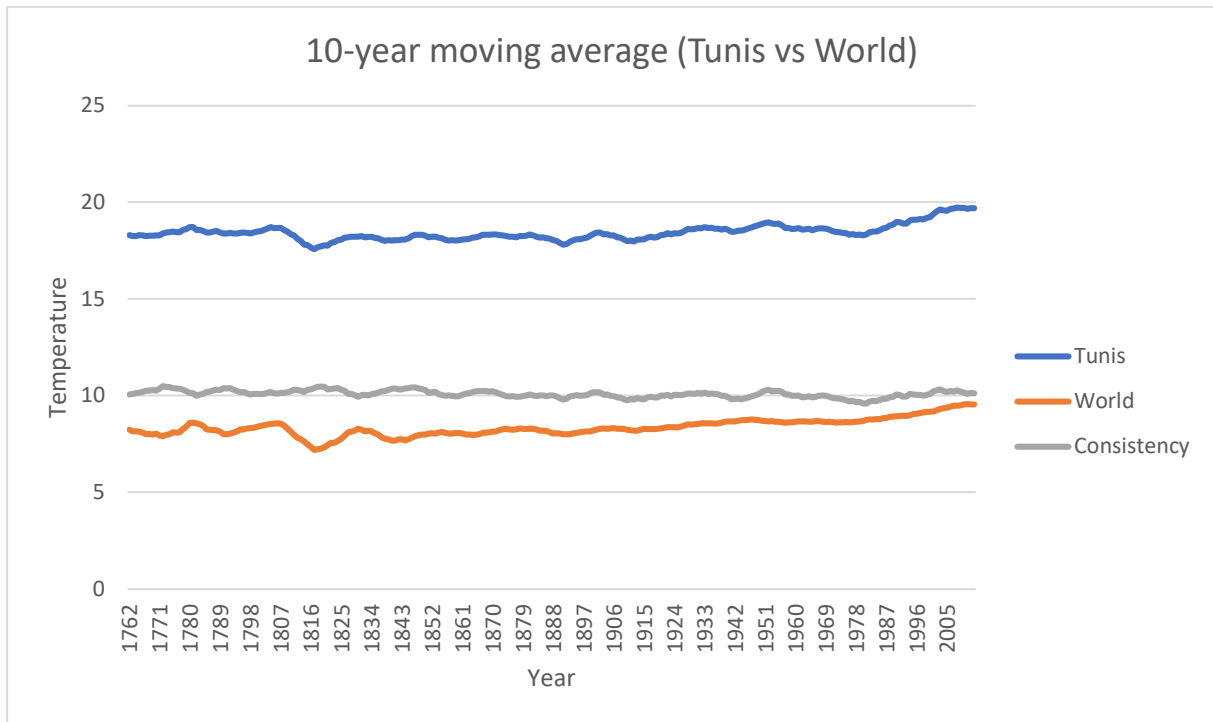
I calculated 5-year, and 10-year moving average in order to see which one gives the best results in term of a smooth line chart but with visible long-term trend.

Then, I decided to work with 10-year moving average because:

- The trend was visible and clearer than when using a 5-year moving average.
- The line chart is smoother which make it easier to compare the variation of both cases (Tunis VS Global).

3rd Step: Data Visualization

Plotting line chart for the 10-year moving average.



4th Step: Observations

- 1- My city, Tunis, is on average 10 degrees hotter than the global average.
- 2- The consistency line chart shows that the difference between the average temperature of Tunis and the world remains almost constant throughout the span of 251 years.
- 3- The changes in my city's temperatures over time are very similar to those corresponding to the global average. Both Tunis and the world are following the same long-term trend.
- 4- The overall trend is that the world temperature is getting hotter progressively since the mid-19th century (1840) which is the era after the first industrial revolution. Which may suggest that the evolution in industry lead indirectly to increase in the global temperature through global warming.
- 5- The global average temperature trend has not been consistent over the last 250 year and that is visible in the line chart :
 - Prior to 1840, the temperature is fluctuating (non-monotonic)
 - Post 1840, the global temperature is almost strictly increasing.