Outline

The purpose of this project is to evaluate how Amsterdam average temperatures compare to global average temperatures, for this I used the Udacity workspace connected to a database and MS Excel.

First, I fetched the data from the `city_data` and `global_data` tables using the query below:

```
SELECT city_data.year, city_data.city, city_data.avg_temp
FROM city_data
WHERE city = 'Amsterdam'
UNION ALL
SELECT year, 'Global' as city, avg_temp
FROM global_data
ORDER BY city, year
```

The data was then extracted to a csv file and transformed into a pivot chart to be used for the analysis.

According to this IPCC report, surface temperatures are rising by about 0.2 °C per decade. This means that every 25 years we see an increase of approximately 0.5 °C. For this reason and to smooth out the data as to observe trends, similarities and differences easily, 25 years moving average was the chosen timeframe.

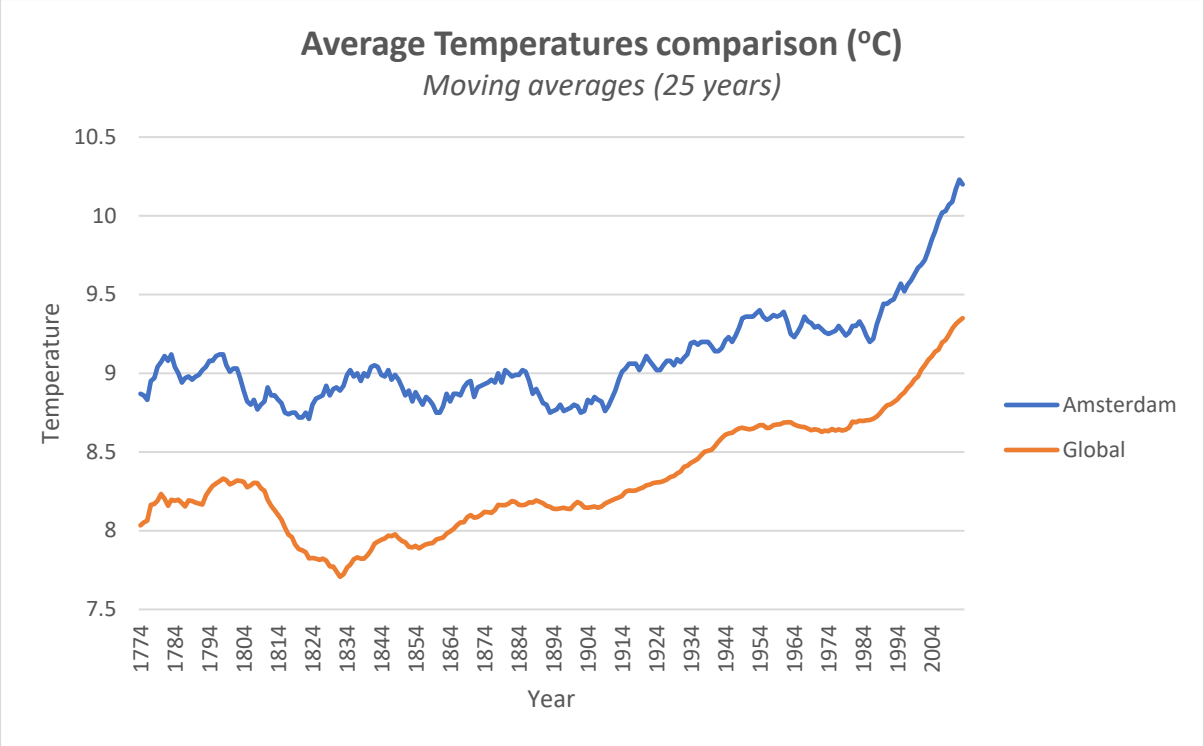
The moving average is one of the statistical techniques that can be used to view long-term trends.

To calculate the moving average, we identify the mean (average) of a given set of data by suming up their values and then dividing by the number of variables contained in the selected set.

We then move to the following datapoint, and perform the same calculation. This method is repeated until the last valid datapoint is reached.

Since 25 years was the chosen timeframe to calculate moving averages, we start by calculating the mean temperatures of the first 25 years containing valid temperatures. 1750 is the first year which both Amsterdam and Global tables contain valid temperatures, thus the moving average calculation starts in 1774.

In the following page we will start analyzing the chart and point out some of the trends observed.



Observations:

- Throughout the whole period analyzed, Amsterdam temperatures have been consistently above Global average
- On average, Amsterdam temperatures are 0.7 °C higher then global temperatures. Between the years of 1825 and 1849, however, Amsterdam temperatures were approximately 1 °C higher than global temperatures
- Amsterdam temperatures have greater variation in comparison to global temperatures
- Through the period between 1799 and 1909 Amsterdam temperatures remained stable, fluctuating between 8.7 °C and 9 °C. Afterwards, it trended upward. Global temperatures show a different trend, though: temperatures droped between 1799 and 1829 and then steadily increased throughout the whole period
- The correlation coeficient between Amsterdam and global temperatures is 0.91, suggesting a strong relationship between these two variables