UDACITY

Project 1: Explore Weather Trends - Amsterdam

Data preparation:

Step 1:
First, I played around in SQL to see what kind of data was available. I'm from Amsterdam and wanted to see if that city was available in this dataset. To find out I wrote the following query:

```
SELECT *
FROM city_list
WHERE country = 'Netherlands';
```

This query returned only one city meaning that this dataset only contained data from one city in The Netherlands. Funnily enough this city was Amsterdam.

Step 2:
After that I wanted to see what kind of data city_data contained so I wrote the following query:

```
SELECT *
FROM city_data
WHERE country = 'Netherlands' AND city = 'Amsterdam'
```

This showed me the average temperature in Amsterdam from the year 1743 till 2013.

Step 3:
Thirdly, I wanted to see what kind of data global_data contained. I found out by using the following query:

```
SELECT *
FROM global_data
```

This query gave me information about the average temperature worldwide from 1750 till 2015.

Step 4:
After finding out where all the data was stored I had to combine the city_data with the global_data to get a nice list of the average temperature in Amsterdam compared to the average temperature worldwide. I could achieve this by executing the following query:

```
SELECT global_data.year, global_data.avg_temp AS avg_global_temp, city_data.avg_temp
AS avg_city_temp
FROM global_data
JOIN city_data
ON global_data.year = city_data.year
WHERE city = 'Amsterdam';
```

Step 5:
After getting my desired data I downloaded the results as a CSV file and opened it in Microsoft Excel.

Moving averages:

To observe the trends in temperature I used the Moving Average to get a more precise view of the global temperatures vs the temperatures in Amsterdam. I decided to go with a 10-year moving average.

In order to get the 10-year moving average I used the following command:
=AVERAGE(B2:B11)

Visualization:

After calculating the moving average, I was able to create the visualization down below.
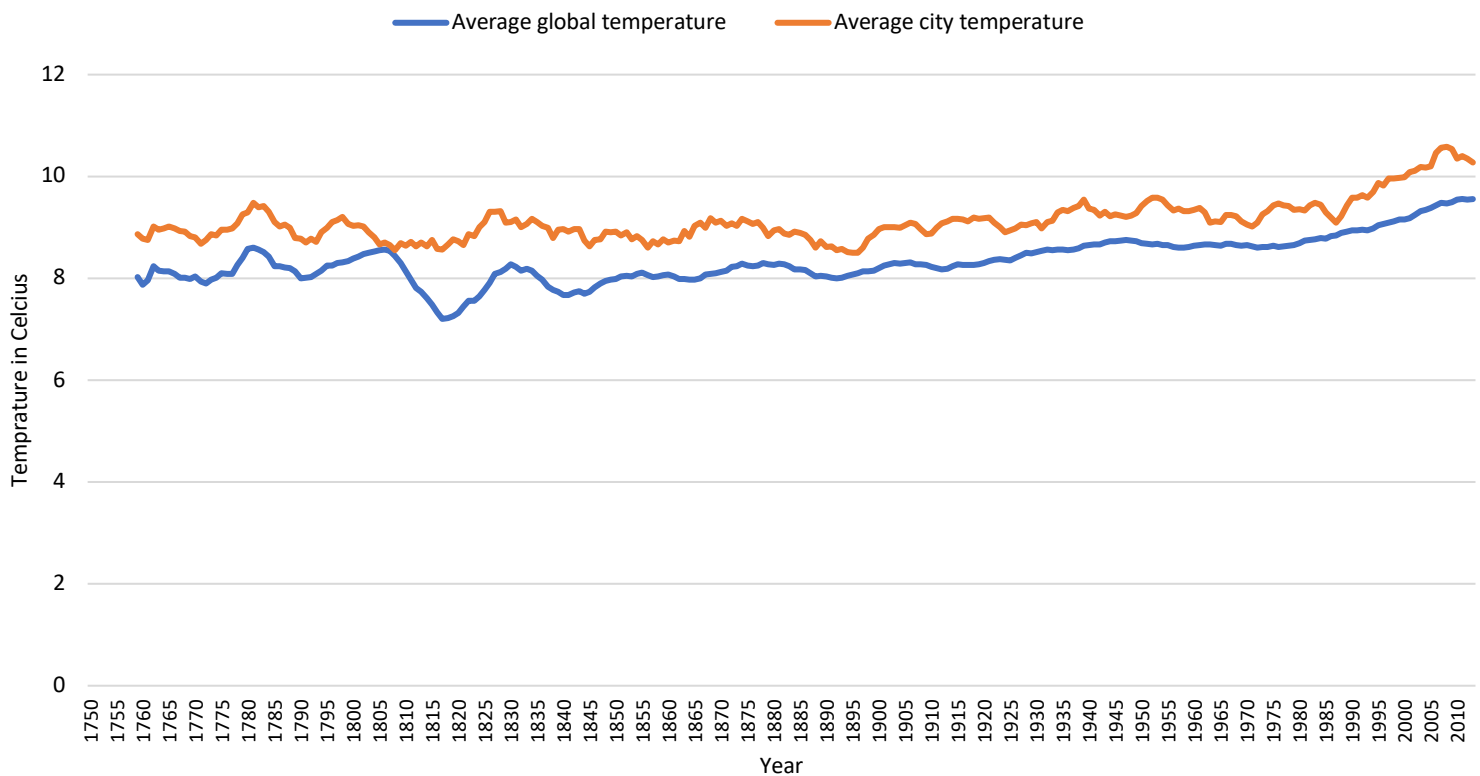
Observations:

- Global average temperature varies between **7.203 and 9.556** whilst the average temperatures in Amsterdam varies between **8.502 and 10.583**. This means that the average temperature in Amsterdam is higher than the average global temperature. This is also shown in the visualization.

- The smallest temperature difference between Amsterdam and the world was **0.105 degrees Celsius** and this occurred in **1807**. The biggest temperature difference between Amsterdam and the world was **1.51 degrees Celsius** and this occurred in **1819**. Both are also clearly visible in the line chart above.

- There was a big decrease in the average global temperature from 1804 till 1817. The temperature went from **8.53 degrees Celsius in 1804 to 7.203 degrees Celsius in 1817.** The average temperature in Amsterdam also decreased in that time period but not by much. The temperature in Amsterdam went from **8.799 degrees Celsius in 1804 to 8.565 degrees Celsius in 1817.** Both of these decreases are visible in the line chart above.

- According to the line graph the average global temperature and the average temperature in Amsterdam are both rising. This means that **the world is getting hotter** over time.