

Explore Weather Trends

Represented by Amira Saleh

In this project, we were asked to:

- Extract the data.
- Open up the CSV
- Create a line chart.
- Make observations

So, in this report, I will be explaining how I did each step in detail.

Let us start with extracting the data:

- 1- for me to find the closest city to mine. I wrote the following statement:

```
select city from city_list
```

I did not find my city—Jeddah, Saudi Arabia—but I found Mecca, so I chose it for my project. Then I wrote the following statement to get the temperature of the city throughout the years:

```
select year,city,avg_temp from city_data where city='Mecca';
```

- 2- To get the global temperature, I wrote this statement:

```
select* from global_data where year>=1843 and year<=2013;
```

I added the year conditions because I noticed that for Mecca, the only data we have is from 1843–2013, but for the world years, we have 1750–2015, and the average temperature throughout the years was between 7-9. So, instead of replacing the missing values we would be having in Mecca, I dropped the extra years in the global average temperature.

For opening the CVS, I chose Excel. opened each CVS alone, copied the year's average temperature row, and pasted it in the Mexico CVS.

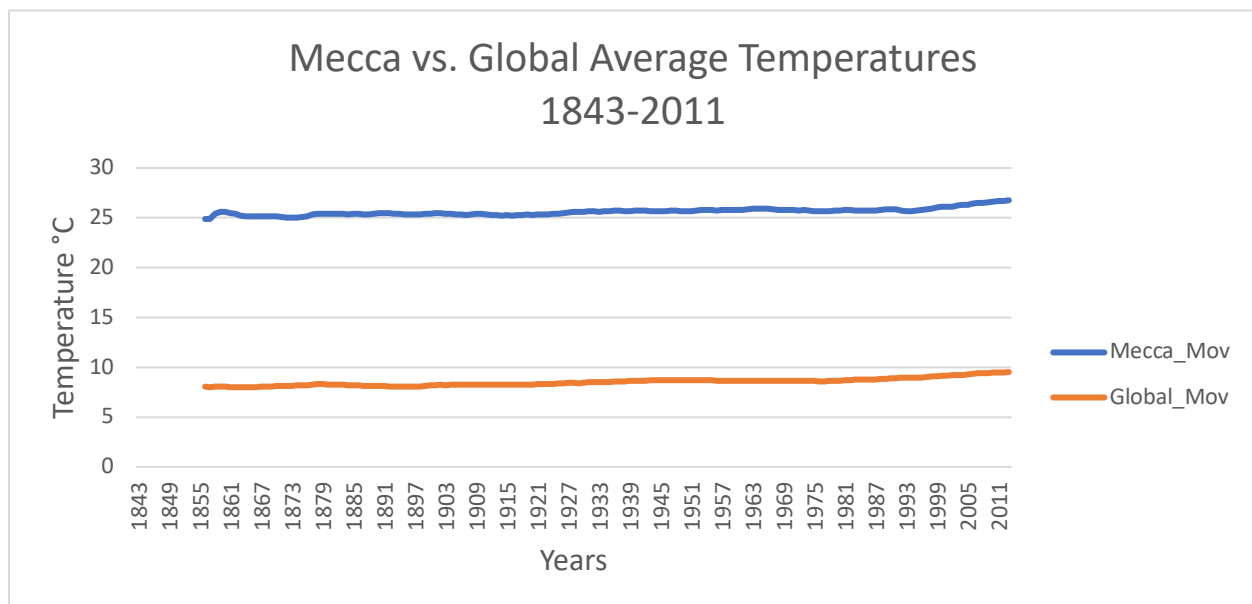
There were 15 missing values in Mecca's average temperature. I replaced them with the average value of the avg_temp row.

To create the line chart, I used Analysis Tool, chose Moving Average, and specified the input and output columns with the interval 14.

These are the results:

year	city	Mecca_Avg	Globa_Avg	Mecca_Mov	Global_Mov
1843	Mecca	25.16	8.17		
1844	Mecca	19.05	7.65		
1845	Mecca	22.46	7.85		
1846	Mecca	25.61	8.55		
1847	Mecca	25.61	8.09		
1848	Mecca	25.61	7.98		
1849	Mecca	25.61	7.98		
1850	Mecca	25.61	7.9		
1851	Mecca	25.61	8.18		
1852	Mecca	25.61	8.1		
1853	Mecca	25.61	8.04		
1854	Mecca	25.61	8.21		
1855	Mecca	25.61	8.11		
1856	Mecca	25.61	8	24.884286	8.0578571

Line Graph:



Observations:

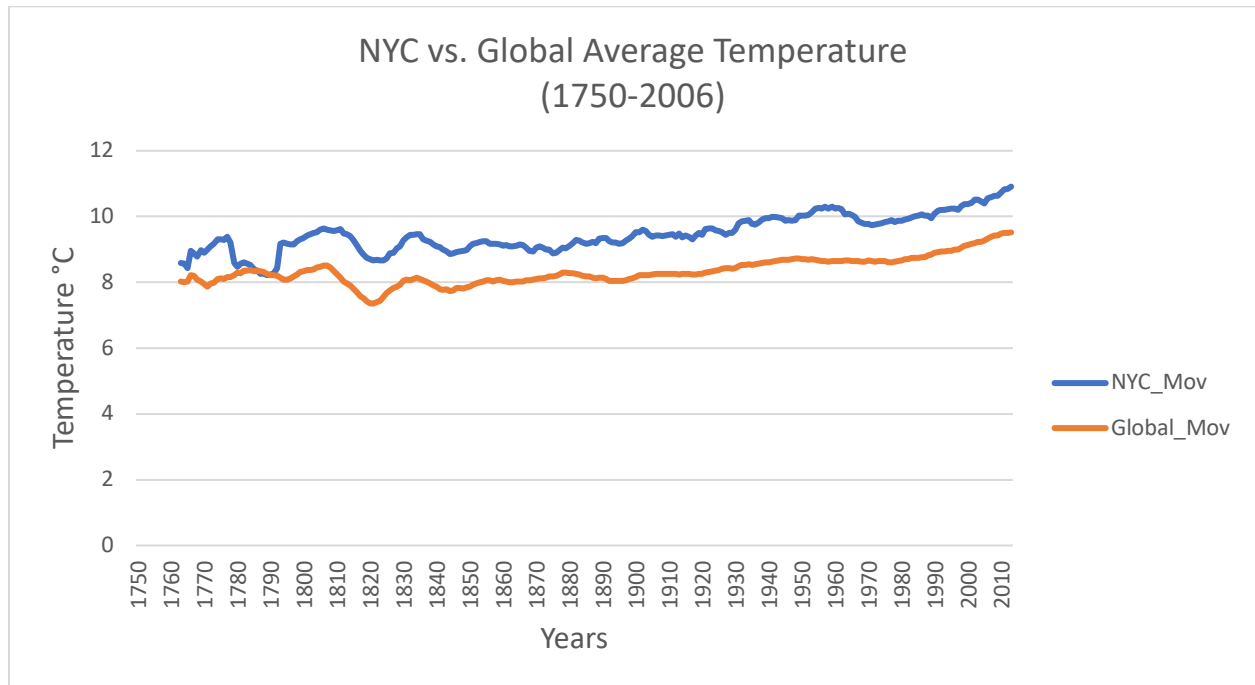
From the line graph, we can see very clearly that Mecca is hotter than the rest of the world. And by the end of the graph, we can notice that both the global average temperature and the mecca average temperature are witnessing an increase. And to see if Mecca actually has an effect on the rest of the world, I calculated the correlation coefficient, which is 6.32. which indicates a strong correlation, and yes, Mecca did cause an increase in the rest of the world.

I thought of trying another city, in which the average temperature can be very similar to the rest of the world. just to make things harder for me. I chose New York.

Moving Average Results:

year	NYC_Avg	Global_Avg	NYC_Mov	Global_Mov
1750	10.07	8.72		
1751	10.79	7.98		
1752	2.81	5.78		
1753	9.52	8.39		
1754	9.88	8.47		
1755	6.61	8.36		
1756	9.94	8.85		
1757	8.89	9.02		
1758	8.15	6.74		
1759	9.01	7.99		
1760	7.73	7.19		
1761	10.18	8.77		
1762	9.55	8.61		
1763	7.23	7.5	8.59714286	8.02642857

The line graph:



From the chart, we can see that New York is kind of hotter than the global average. We can see that New York has a little effect on the global average temperature. But to ensure that, I calculated the correlation coefficient, which was only 0.349, which is a really small number and means there is a weak correlation and no actual effect on it.

We can conclude from both graphs of cities that the world temperature is increasing, meaning the world is getting hotter since the increase has been consistent throughout the years.