Introduction

Global temperature is changing over the time and the scientist are studying the reason of climate change. In this project, we were asked to compare the local temperature and the global temperature together. In this report, you will find a comparison between the local temperature in Riyadh city which is the capital of Saudi Arabia and it's the nearest city to me, and the global temperature. The data of years that were analysed from 1851 to 2013. SQL program was used as a database for the cities to extract the data. Then, for the observation was made by the two-years moving average to observe long term trends. After that, the data were analysed using Microsoft Excel. By the end of this report you will find discussion about the comparison between the local temperature and global temperature in a Line Chart.

Objective

The goal of this project is to end up with four main observations after making the line charts and creating a well data visualisation and to describe the fluctuation over the years between local temperature and global temperature.

Methodology

There are two steps were used to accomplish this project which are as follows. Firstly, using SQL to extract the data from the database, there are three different SQL queries to extract the data the first one is as shown in figure 1, figure 1 illustrates the query that were used to extract the general data for all cities which are the years and average temperature for each city, as shown in the bottom left that the results is 266 after evaluating it.

Figure 1 Query for Global data for all cities

The second query is shown in figure 2 below, figure 2 shows the query needed to extract the city list to see all the cities in the database and the results are 342 which represent 342 cities. The third query in figure 3 below after figure 2 shows the query for the city that were chosen which is Riyadh city and I chose it because it's the closest one to my city and it's the capital of Saudi Arabia. So, it would be interesting to study it. Also, the years that was decided to compare them were from 1851 to 2013. After all, it's obvious that all the SQL queries were running without any errors and all data were extracted from SQL database.

Figure 2 Query for city list

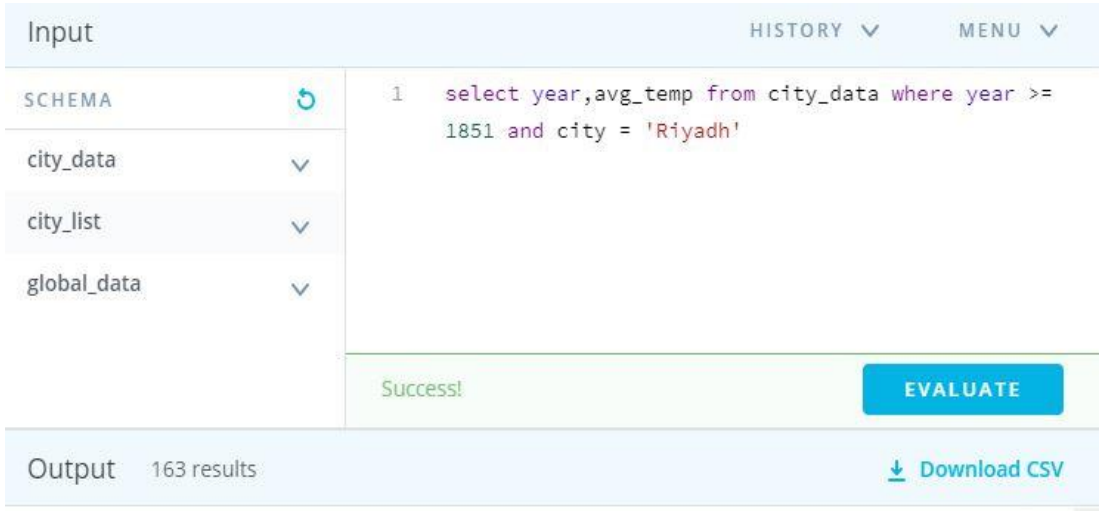
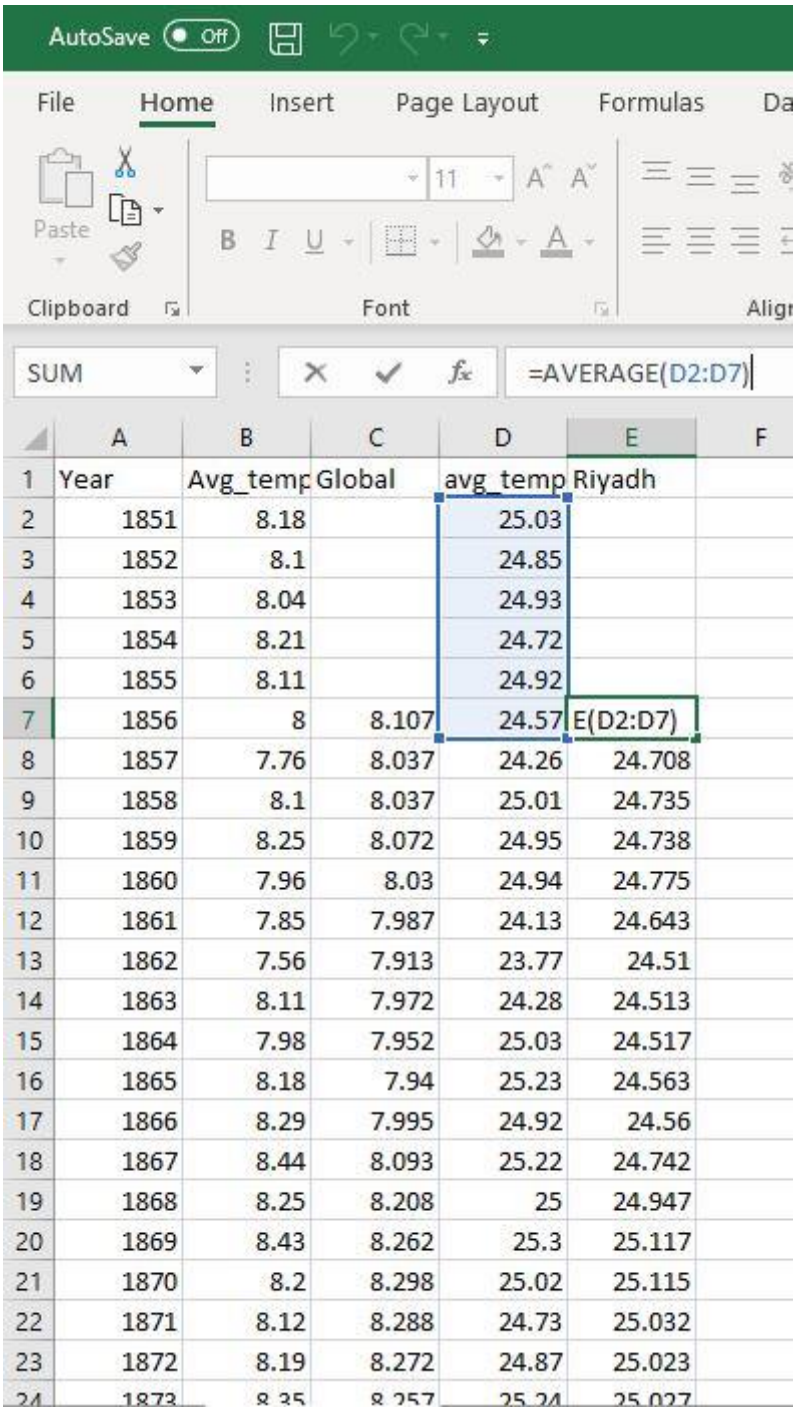


Figure 3 Query for local city

Secondly, after extracting all the data that is needed for the comparison between local and global temperature now it's time to analyze it using a tool like Google Sheet, R-programming and many others. The Microsoft Excel were used to analyze the data because it's simple and easy like the Google Sheet. Then, using the two-years moving average. Figure 4 shows the function that were used in Microsoft Excel with the AVERAGE function for six-years moving average. Then, after completing one cell, there's a point at the bottom of that cell on the

bottom right corner, simply dragging the formula down until reaching the year 2013. Also, doing this for both local and global temperature. For example, as shown in the figure that the first six-years moving average for local temperature was calculated from the cells D2 to D7 and the rest were dragged.



	A	B	C	D	E	F
1	Year	Avg_temp	Global	avg_temp	Riyadh	
2	1851	8.18		25.03		
3	1852	8.1		24.85		
4	1853	8.04		24.93		
5	1854	8.21		24.72		
6	1855	8.11		24.92		
7	1856	8	8.107	24.57	E(D2:D7)	
8	1857	7.76	8.037	24.26	24.708	
9	1858	8.1	8.037	25.01	24.735	
10	1859	8.25	8.072	24.95	24.738	
11	1860	7.96	8.03	24.94	24.775	
12	1861	7.85	7.987	24.13	24.643	
13	1862	7.56	7.913	23.77	24.51	
14	1863	8.11	7.972	24.28	24.513	
15	1864	7.98	7.952	25.03	24.517	
16	1865	8.18	7.94	25.23	24.563	
17	1866	8.29	7.995	24.92	24.56	
18	1867	8.44	8.093	25.22	24.742	
19	1868	8.25	8.208	25	24.947	
20	1869	8.43	8.262	25.3	25.117	
21	1870	8.2	8.298	25.02	25.115	
22	1871	8.12	8.288	24.73	25.032	
23	1872	8.19	8.272	24.87	25.023	
24	1873	8.35	8.257	25.24	25.027	

Figure 4 Formulation in Microsoft Excel

Conclusions & Observations

After following the previous steps about the SQL and analyzing the data using the Microsoft Excel. The final phase to do is to conduct the conclusions and clarify the observations. Figure 4 is the Line chart, it's A line chart or line plot or line curve chart which displays information as a series of data points, it's very basic chart and it's common in fields. The figure below shows the six-years moving average on x-axis and the temperature in celsius on y-axis. The main points that we could conduct are:

1 – It's clearly that Riyadh city is hotter than the global average temperature through all the years. Riyadh city temperature average doesn't change much from year to another year except in the last few years. It has nearly consistent average every year.

2- Riyadh city is getting hotter through the years but it's not a significant change, it's more than the change globally. Global average temperature is increasing very slowly comparing to Riyadh city.

3 – As shown that the trend is clearly not consistent over the last 50 years which makes it increase for both of Riyadh city and global temperature.

4 – The overall trend for Riyadh city is almost increasing over the years but not too much. in contrast, the global temperature is not changing from a year to another year.

In my opinion, the world is getting hotter because of many reasons like forest destruction, human activities, green house gas emissions, and so on.

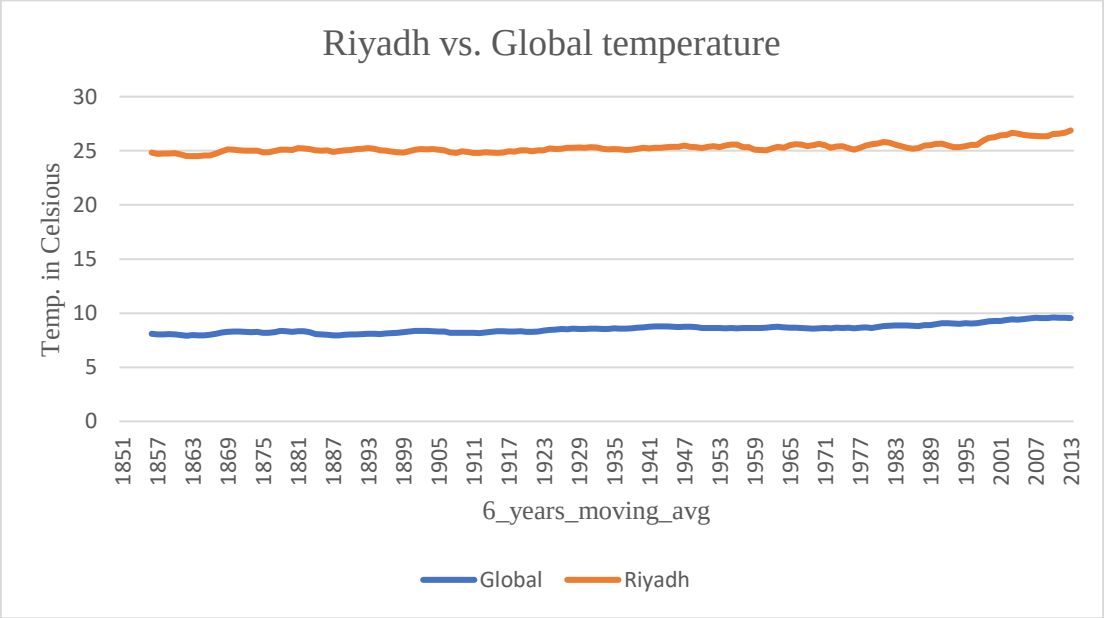


Figure 5 Comparison bt. Riyadh and global temperature using 6-years moving avg.