Data Analysis Nanodegree Program

Project 1: Explore Weather Trends

In this project we will compare Riyadh city weather trends over the Global cities.

We will use SQL to extract date from Database and Excel as tool to analyses.

The queries we used:

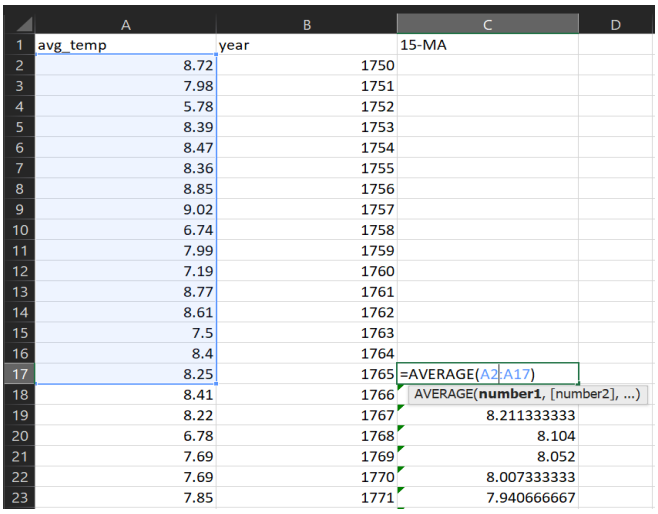
1- Riyadh city temperature data:

```
SELECT concat(d.city,', ', d.country)
        AS city_counry, d.avg_temp, d.year
FROM city_data d
WHERE d.city LIKE 'Riyadh'
        AND d.avg_temp IS NOT NULL;
```

2- Global cities temperature data:

```
SELECT g.avg_temp, g.year
FROM global_data g
WHERE g.avg_temp IS NOT NULL;
```

we kept sure that the date is clean and organized by setting *NOT NULL* condition in the queries.
In analyzing we used *Moving Average* to visualize the date, the X-axis is the years while the Y-axis is the averages of the temperature.
For Riyadh city *Moving Average*, we took the average for every 10 years using AVERAGE function in Excel.
For Global cities *Moving Average*, we took the average for every 15 years using AVERAGE function in Excel.



	A	B	C	D
1	avg_temp	year	15-MA	
2	8.72	1750		
3	7.98	1751		
4	5.78	1752		
5	8.39	1753		
6	8.47	1754		
7	8.36	1755		
8	8.85	1756		
9	9.02	1757		
10	6.74	1758		
11	7.99	1759		
12	7.19	1760		
13	8.77	1761		
14	8.61	1762		
15	7.5	1763		
16	8.4	1764		
17	8.25	1765	=AVERAGE(A2:A17)	
18	8.41	1766	AVERAGE(**number1**, [number2], ...)	
19	8.22	1767	8.211333333	
20	6.78	1768	8.104	
21	7.69	1769	8.052	
22	7.69	1770	8.007333333	
23	7.85	1771	7.940666667	

This is an example for using AVERAGE Function

Q/A:

Here some question we can answer from the analyses:

1- Is Riyadh city hotter or cooler on average compared to the global average? Has the difference been consistent over time?
A: It's obvious from the plots that Riyadh city has been much hotter over the global cities, and over the years Riyadh is even getting hotter and the global average concurrency.

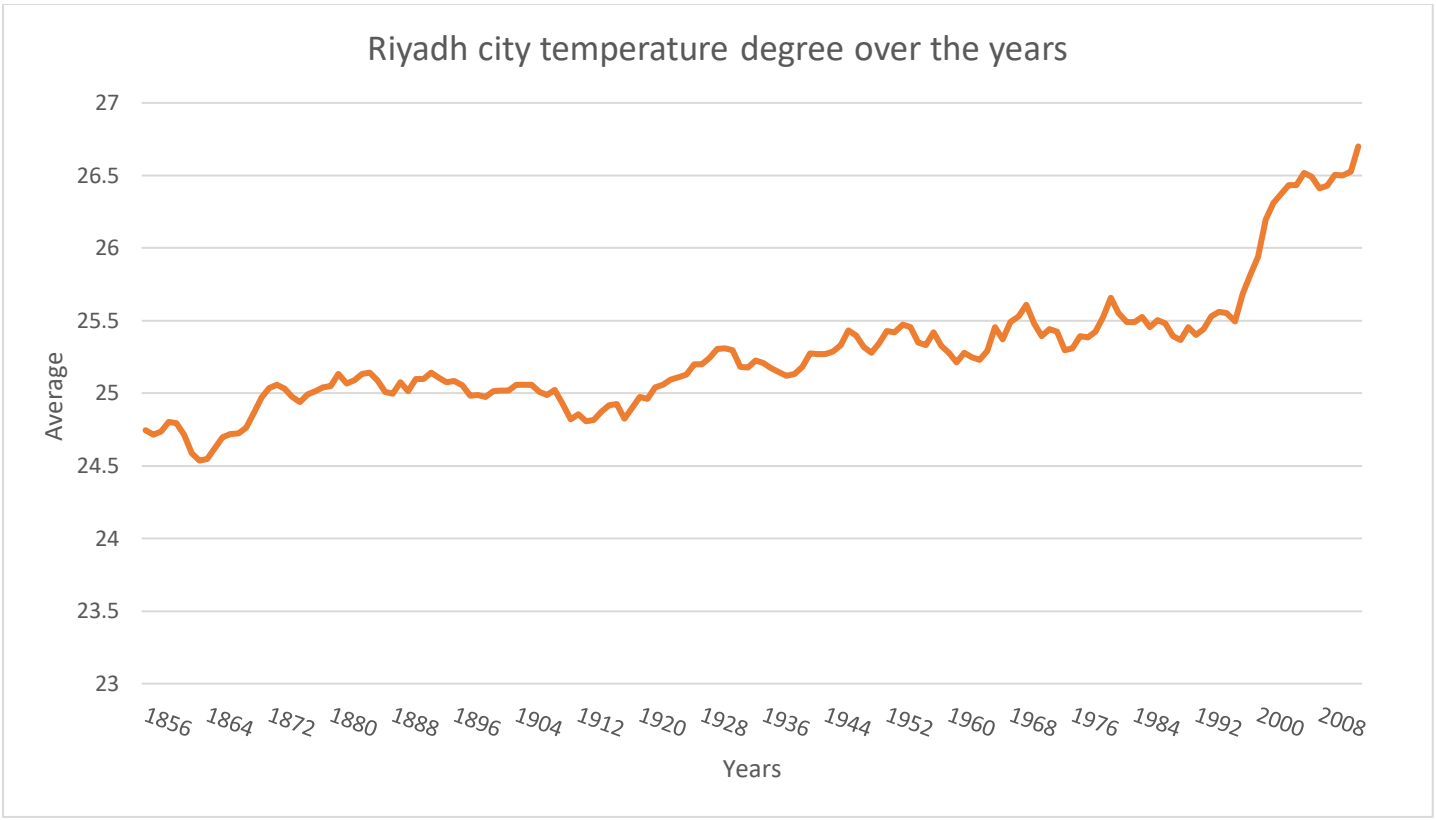
2- How do the changes in Riyadh's temperatures over time compare to the changes in the global average?
A: Both from 1800's the temperature is getting hotter, there is some vibrate, but in total they all are getting hotter and hotter.

3- What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?
A: If we compare the 1700's to 1800's, it's was getting cooler, but after 1825 it goes all up.

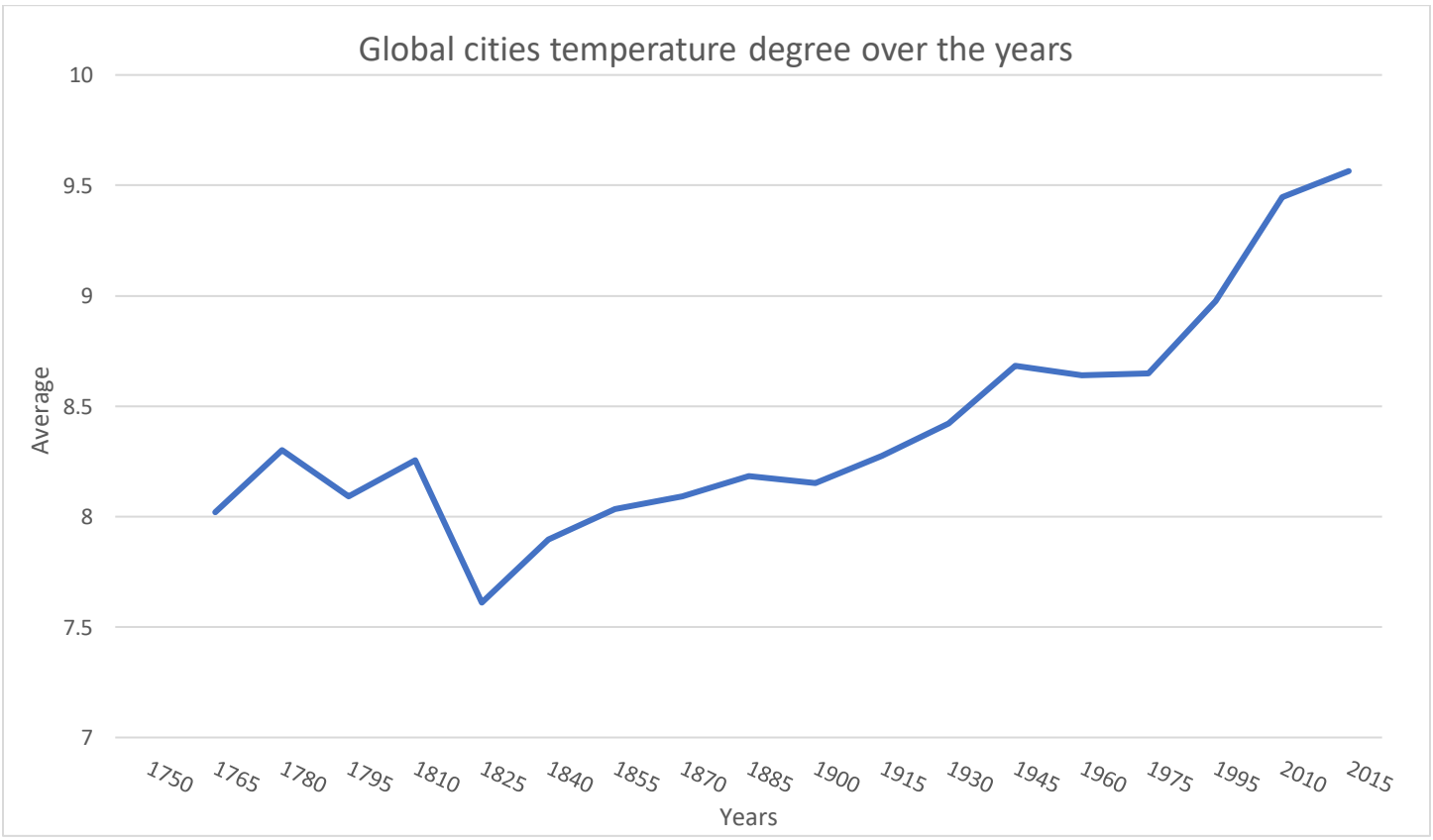
STATISTICS:

1- We can see how both Riyadh city and the Global Cities average is getting hotter,
Riyadh has got hotter by 6.45% since 1900 to 2013, while the global Cities has got hotter by 11.55% at the same period.

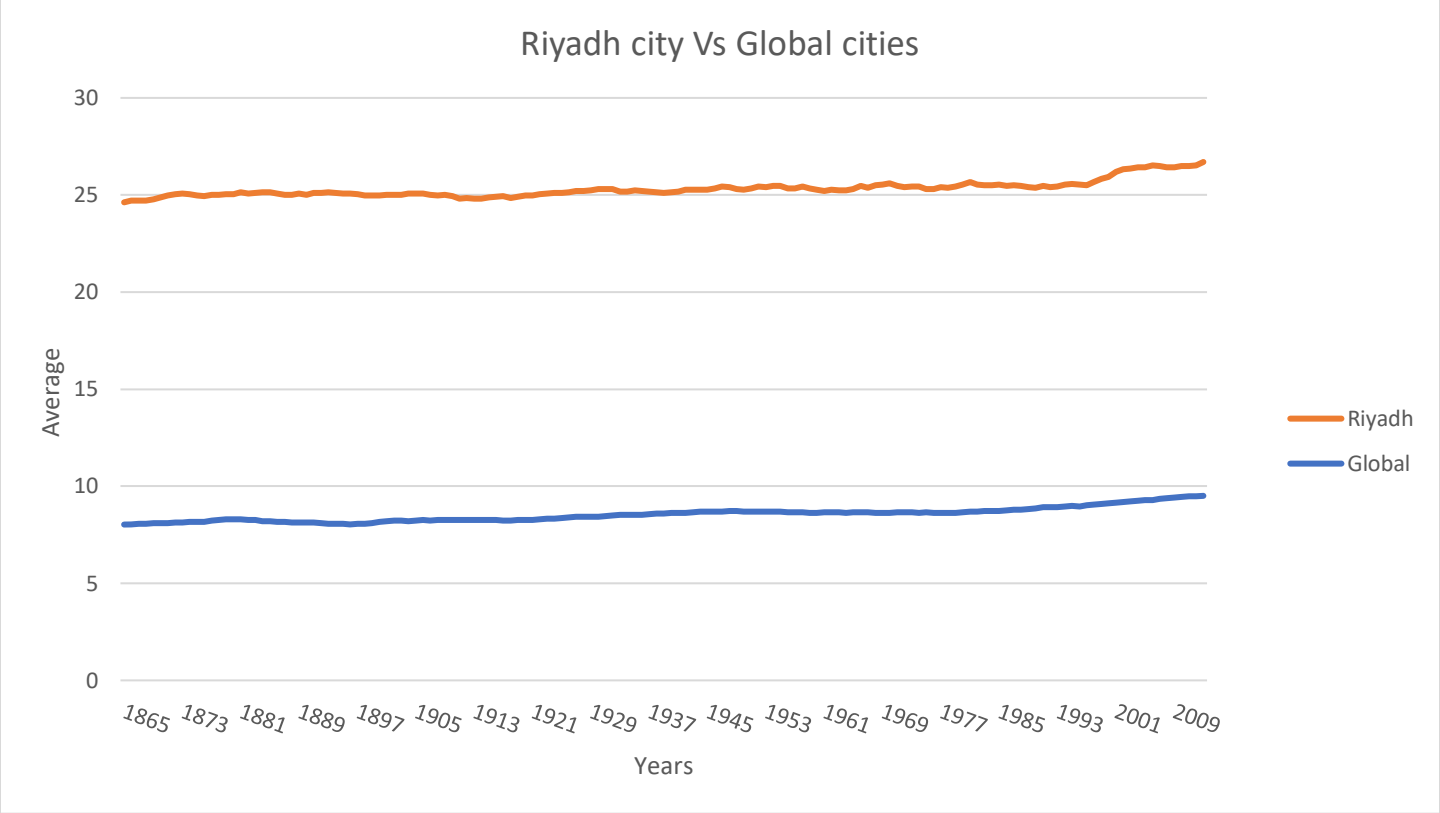
2- The difference between Riyadh city and the global average in 1900 was 65.97% for Riyadh city, while in 2013 the difference is 65.41%, we can see how both is getting hotter at the same degree which makes the different consistence.



The First plot for Riyadh city temperature degree over the years.



The Second plot for Global cities temperature degree over the years.



The Third plot is comparing Riyadh city temperature and Global Cities temperature.