Riyadh City

Overview:

In this project, I will analyze local and global temperature data and compare the temperature trends where **Riyadh** city to overall **Global** temperature trends. I used temperature average data from **1843** to **2013** years, with a moving average of **10** years. Also I extracted the data from the database on Udacity Portal, then I downloaded **CSV** for the result.

Riyadh is the capital city of the kingdom of Saudi Arabia, and it is the nearest city in the database to me, where I am live in eastern region in Dhahran City.

Annual Mean Temperature
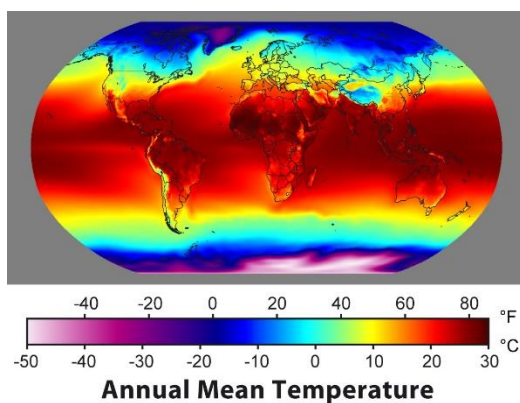
Saudi Arabia – Middle East

Extracted Data:

There are three tables in the database Schema:

- city_list - This contains a list of cities and countries in the database.
- city_data - This contains the average temperatures for each city by year (⁰C).
- global_data - This contains the average global temperatures by year (⁰C).

Steps:

First:

- I used the **city_list** table, to look through them in order to find the city nearest to me.
- I used this query:

  SELECT* FROM city_list WHERE country = 'Saudi Arabia'

- Result:

- Riyadh City is the nearest to me, so I chose it.

Second:

- I used the **city_data** table, to find the average temperatures for Riyadh city by year (⁰C).
- I used this query:

  SELECT* FROM city_data WHERE country = 'Saudi Arabia' AND city = 'Riyadh'

- Result:

- The result is from 1843 year until 2013 year, with 172 rows.

- I used the **global_data** table, to find the average global temperatures by year (⁰C).
- I used this query:

  SELECT* FROM global_data

- Result:

A	B	C
year	avg_temp	
1750	8.72	
1751	7.98	
1752	5.78	
1753	8.39	
1754	8.47	
1755	8.36	
1756	8.85	
1757	9.02	
1758	6.74	
1759	7.99	

- The result is from 1750 year until 2015 year, with 267 rows.

Moving averages:

It used to smooth out data to make it easier to observe long term trends and not get lost in daily fluctuations.

I chose **10th years** to make the moving averages for the temperature to be used in the line chart. And I used temperature average data from **1843** to **2013** years.

Steps:

- I used Excel for opened the CSV.
- I copied the result for **global** temperature and pest it in CSV for **Riyadh** City.
- I made another two columns I named it **10-Year MA**, which is where the moving average field will be stored for Riyadh and global average temperature.
- Method used to calculate the moving average is : =Average(number1:number2)
  - **Ex.** (=Average(D2:D11) = 23.07375)

Line chart:
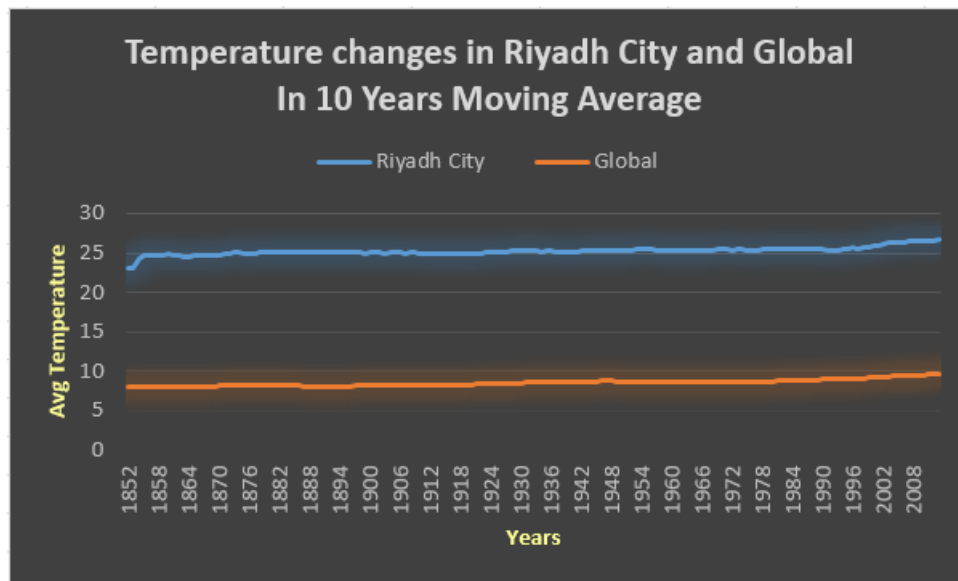
Observations:

The similarities and differences between the world averages and your Riyadh City averages, as well as overall trends. Here are some Observations.

- **First**, I calculated the **Max** and **Min** degree for both **Avg** temperature

	The Min degree:	The Max degree:
Riyadh Temperature		
Degree	23.07375	26.65
Method	=MIN(E11:E172)	=MAX(E11:E172)
Global Temperature		
Degree	7.968	9.556
Method	=MIN(K11:K172)	=MAX(K11:K172)

- You can see from this table that Moving average temperature in 2013 is gotten hotter than 1852 for both Riyadh Temperature and the Global Temperature.

	Riyadh Temperature	Global Temperature
Min Degree	23.07375	7.968
Max Degree	26.65	9.556
Differences	+ 3.57625	+ 1.588
rate of Average in 161 years	0.0222	0.0098

- According to this table, Riyadh city is hotter on average temperature compared to the global average. With 0.0222 rate of Average for Riyadh and differences with a global average rate on increased with 0.0124.

- Second, the Avg for global temperatures is between +8 degree and +9 degree, with increased over years, but we can find four years that seems is the cooler years in average with +7 degree, from the year 1862 to1865.

- And the Avg for Riyadh City is between +23 degree and +26 degree, with increased over years, although the years between 1862 and 1865 were the coldest years in the global trend, they were getting hot in the city of Riyadh. In **1861** the Avg was **24.728** and the next year is decreased to **24.62** and also the next years was **24.555**, then noticed the gradual rise of heat.

- Both trends have **ups** and **downs** in Avg temp over years but the general trend is the Avg increased.

- Third, a **positive** anomaly means the temperature is warmer than the long-term average, a **negative** anomaly means its cooler.

- In **Riyadh** & **Global** Avg According to CSV dataset, most of years there is a **positive** anomaly.

Conclusion:

From the overall trend I saw from the average temperatures, **the world is getting hotter** over the years. The trend is changing and the temperature is increased over the last years, but as we can see also that it have ups and downs in Avg temp in some years. And also you can find that Riyadh city is hotter on average temperature compared to the global average. And in most of the years, there is a positive anomaly in temperature.

Resources:

Picture of city:

http://f1i.com/news/304266-saudi-arabia-gets-first-race-formula-e-2018-19-season.html

Picture of map:

https://www.timeanddate.com/weather/saudi-arabia/riyadh/ext

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