Tools :

SQL to Extract the data from the database

Excel to calculate moving average and visualization

Extract the data

I wrote SQL query to extract the city data "Riyadh'' and I use inner join to merge the data with the global data

I handled the missing values by fill it with the mean

Moving Averages (7 year MA)

I created two columns called 7-year MA, which is where the moving average field will be stored. I used the AVERAGE() function to calculate the average temperature for the first seven years of temperature, as seen in the image below.
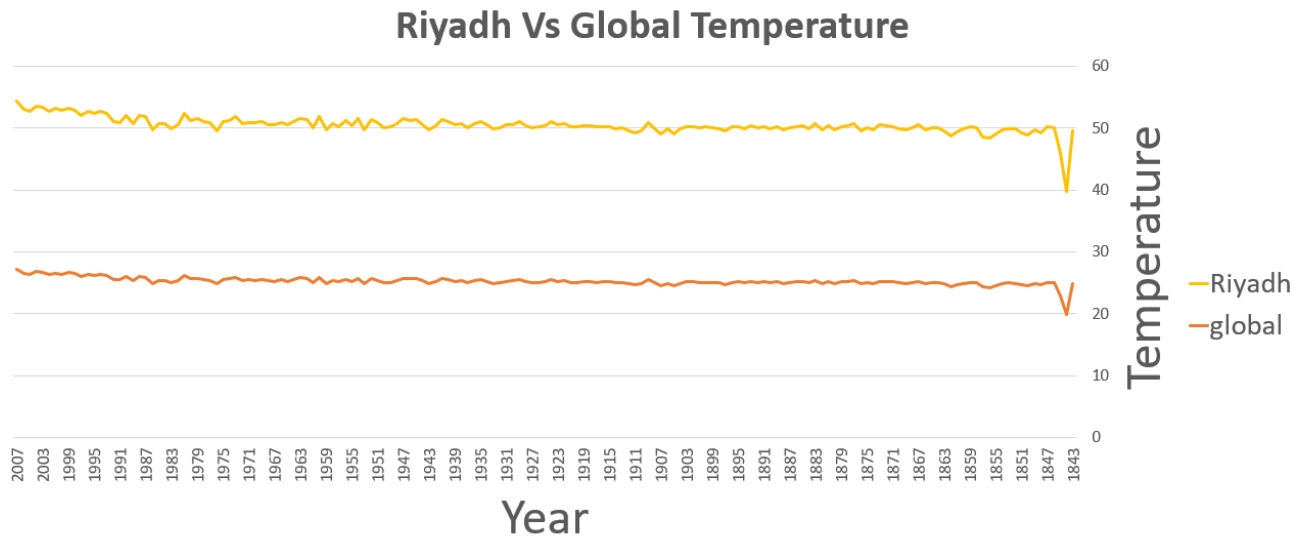
	city	year	avg_temp	7-Year MA	year	global avg_temp	7-Year MA
1	city	year	avg_temp	7-Year MA	year	global avg_temp	7-Year MA
2	Riyadh	1843	24.74		1843	24.74	
3	Riyadh	1844	15.45		1844	15.45	
4	Riyadh	1845	20.82		1845	20.82	
5	Riyadh	1846	25.2		1846	25.2	
6	Riyadh	1847	25.2		1847	25.2	
7	Riyadh	1848	24.56		1848	24.56	
8	Riyadh	1849	24.8	24.77	1849	24.8	24.77
9	Riyadh	1850	24.34	19.895	1850	24.34	19.895
10	Riyadh	1851	25.03	22.925	1851	25.03	22.925
11	Riyadh	1852	24.85	25.025	1852	24.85	25.025
12	Riyadh	1853	24.93	25.065	1853	24.93	25.065
13	Riyadh	1854	24.72	24.64	1854	24.72	24.64
14	Riyadh	1855	24.92	24.86	1855	24.92	24.86
15	Riyadh	1856	24.57	24.455	1856	24.57	24.455
16	Riyadh	1857	24.26	24.645	1857	24.26	24.645
17	Riyadh	1858	25.01	24.93	1858	25.01	24.93
18	Riyadh	1859	24.95	24.94	1859	24.95	24.94
19	Riyadh	1860	24.94	24.83	1860	24.94	24.83
20	Riyadh	1861	24.13	24.525	1861	24.13	24.525
21	Riyadh	1862	23.77	24.17	1862	23.77	24.17
22	Riyadh	1863	24.28	24.27	1863	24.28	24.27
23	Riyadh	1864	25.03	25.02	1864	25.03	25.02
24	Riyadh	1865	25.23	25.09	1865	25.23	25.09
25	Riyadh	1866	24.92	24.93	1866	24.92	24.93

join global and riyadh

Line chart with Riyadh and global temperature trends

Riyadh Vs Global Temperature

Observations

- During the 7-year MA, the global temperature ranges from 19.89°C to 27.1°C
- A 7-year MA temperature for Riyadh city ranges from 39.98°C to 53.57°C.
- There is a huge difference in temperature between Riyadh and Global in the chart.
- The average temperature in Riyadh is higher than the global average temperature. According to the graph
- global temperature has increased from 19.89°C to 27.1°C
- global temperature and Riyadh average temperature has been up and down throughout the last few years
- Both temperatures increased from 1843 to 2007
- The final conclusion of this project is Riyadh is hotter than global temperature and temperature is increasing day by day due to changes in the climate.