

P1: EXPLORING WEATHER TRENDS

This project will focus on analyzing local and global temperature data and compares the local temperature trends to overall global temperature trends.





Steps

1. Extract the data from the database using **SQL**.

- SQL query to extract Saudi Arabia cities data.

SCHEMA	1 SELECT city
avg_temp	2 FROM city_list
city_list	3 WHERE country = 'Saudi Arabia';
city	
country	
global_data	Success! EVALUATE
Output 2 results	Download CSV
city	
Mecca	
Riyadh	

- SQL query to extract the city (Riyadh) temperature data and global temperature data.

SCHEMA		1 SELECT global.year, global.avg_temp as global_avg, city.avg_temp as city_avg
city		2 FROM global_data as global, city_data as city
country		3 WHERE city.city = 'Riyadh' AND global.year = city.year;
avg_temp		4
city_list		Success!
global_data		EVALUATE
Output	171 results	 Download CSV
year	global_avg	city_avg
1843	8.17	24.74
1844	7.65	15.45
1845	7.85	20.82
1846	8.55	
1847	8.09	
1848	7.98	24.56
1849	7.98	24.80
1850	7.90	24.34

2. After downloading the CSV, the CSV is opened using **Excel** to manipulate the data.

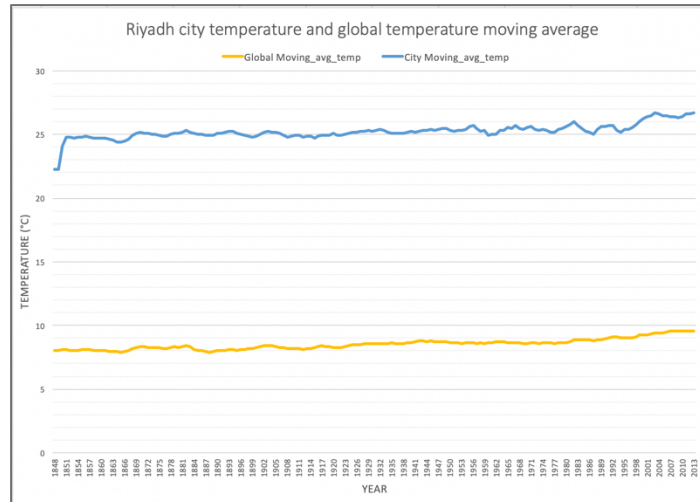
- Calculating the **(5) years moving average** for global average temperature

AVERAGE Δ \times \checkmark f_x $= (B2+B3+B4+B5+B6)/5$				
	A	B	C	D
1	Year	Global avg_temp	City avg_temp	Global Moving_avg_temp
2	1843	8.17	24.74	
3	1844	7.65	15.45	
4	1845	7.85	20.82	
5	1846	8.55		
6	1847	8.09		
7	1848	7.98	24.56	$= (B2+B3+B4+B5+B6)/5$

- Calculating the **(5) years moving average** for the city Riyadh average temperature. **Note:** There are two missing data, and one of the approaches on how to handle missing data is to compute the overall median, So I did it.

AVERAGE Δ \times \checkmark f_x $= (C2+C3+C4+C5+C6)/5$					
	A	B	C	D	E
1	Year	Global avg_temp	City avg_temp	Global Moving_avg_temp	City Moving_avg_temp
2	1843	8.17	24.74		
3	1844	7.65	15.45		
4	1845	7.85	20.82		
5	1846	8.55	25.15		
6	1847	8.09	25.15		
7	1848	7.98	24.56	8.062	$= (C2+C3+C4+C5+C6)/5$

- Creating a **line chart** for the Average temperature, the x-axis represents the years, while the y-axis represents the average temperature in Celsius



- Correlation coefficient is 0.802716623

CORREL Δ \times \checkmark f_x $= \text{CORREL}(D7:D172, E7:E172)$						
	A	B	C	D	E	F
1	Year	Global avg_temp	City avg_temp	Global Moving_avg_temp	City Moving_avg_temp	correlation
2	1843	8.17	24.74			E172
3	1844	7.65	15.45			
4	1845	7.85	20.82			
5	1846	8.55	25.15			
6	1847	8.09	25.15			
7	1848	7.98	24.56	8.062	22.262	
8	1849	7.98	24.8	8.024	22.226	
9	1850	7.9	24.34	8.09	24.096	

Observation

1. From the figure illustrated above, it was found that Riyadh city is hotter on average compared to the global average since the year 1843.
2. From the figure illustrated above, it was found that Riyadh city's temperature is getting high over time, and so is the global temperature.
3. The figure illustrated above shows that in the year 1862 Riyadh's temperature has affected the trend, which was Riyadh's lowest temperature since 1848.
4. The figure illustrated above shows that Riyadh city's temperature will continue to rise in the next 3 years.