Project #1:

Exploring Weather Trends

Data Analysis

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- **Preparing the Data:**

1- Extract data with SQL by using the below queries:

- For extracting the global data:

```
SELECT *  FROM global_data;
```

- For extracting the city data:

```
SELECT *  FROM city_data
    WHERE city= 'Riyadh' ;
```

I chose Riyadh city because it's the closest big city to where I live

2- Deal with data using Excel:

- In city data I notice that there is two missing value in year 1846 and 1847, so I ignore these tuples.
- In global data I take the data from year 1843 to 2013 to be compatible in years with city data.

- To be easy to handle, compare and visualize with the data I combined City data and Global data in one excel sheet

	A	B	C	D	E	F	G	H	I	J
1	RIYADH							GLOBAL		
2	year	city	country	avg_temp	Riyadh 10 years - MA			year	avg_temp	Global 10 years - MA
3	1843	Riyadh	Saudi Arabia	24.74				1843	8.17	
4	1844	Riyadh	Saudi Arabia	15.45				1844	7.65	
5	1845	Riyadh	Saudi Arabia	20.82				1845	7.85	
6	1848	Riyadh	Saudi Arabia	24.56				1846	8.55	
7	1849	Riyadh	Saudi Arabia	24.8				1847	8.09	
8	1850	Riyadh	Saudi Arabia	24.34				1848	7.98	
9	1851	Riyadh	Saudi Arabia	25.03				1849	7.98	
10	1852	Riyadh	Saudi Arabia	24.85				1850	7.9	
11	1853	Riyadh	Saudi Arabia	24.93				1851	8.18	
12	1854	Riyadh	Saudi Arabia	24.72	23.424			1852	8.1	8.045
13	1855	Riyadh	Saudi Arabia	24.92	23.442			1853	8.04	8.032
14	1856	Riyadh	Saudi Arabia	24.57	24.354			1854	8.21	8.088
15	1857	Riyadh	Saudi Arabia	24.26	24.698			1855	8.11	8.114
16	1858	Riyadh	Saudi Arabia	25.01	24.743			1856	8	8.059
17	1859	Riyadh	Saudi Arabia	24.95	24.758			1857	7.76	8.026
18	1860	Riyadh	Saudi Arabia	24.94	24.818			1858	8.1	8.038
19	1861	Riyadh	Saudi Arabia	24.13	24.728			1859	8.25	8.065
20	1862	Riyadh	Saudi Arabia	23.77	24.62			1860	7.96	8.071
21	1863	Riyadh	Saudi Arabia	24.28	24.555			1861	7.85	8.038
22	1864	Riyadh	Saudi Arabia	25.03	24.586			1862	7.56	7.984
23	1865	Riyadh	Saudi Arabia	25.23	24.617			1863	8.11	7.991
24	1866	Riyadh	Saudi Arabia	24.92	24.652			1864	7.98	7.968
25	1867	Riyadh	Saudi Arabia	25.22	24.748			1865	8.18	7.975
26	1868	Riyadh	Saudi Arabia	25	24.747			1866	8.29	8.004
27	1869	Riyadh	Saudi Arabia	25.3	24.782			1867	8.44	8.072
28	1870	Riyadh	Saudi Arabia	25.02	24.79			1868	8.25	8.087
29	1871	Riyadh	Saudi Arabia	24.73	24.85			1869	8.43	8.105
30	1872	Riyadh	Saudi Arabia	24.87	24.96			1870	8.2	8.129
31	1873	Riyadh	Saudi Arabia	25.24	25.056			1871	8.12	8.156
32	1874	Riyadh	Saudi Arabia	24.98	25.051			1872	8.19	8.219
33	1875	Riyadh	Saudi Arabia	24.43	24.971			1873	8.35	8.243
34	1876	Riyadh	Saudi Arabia	24.89	24.968			1874	8.43	8.288
35	1877	Riyadh	Saudi Arabia	25.47	24.993			1875	7.86	8.256
36	1878	Riyadh	Saudi Arabia	25.51	25.044			1876	8.08	8.235
37	1879	Riyadh	Saudi Arabia	25.24	25.038			1877	8.54	8.245
38	1880	Riyadh	Saudi Arabia	24.8	25.016			1878	8.83	8.303
39	1881	Riyadh	Saudi Arabia	25.63	25.106			1879	8.17	8.277
40	1882	Riyadh	Saudi Arabia	24.66	25.085			1880	8.12	8.269
41	1883	Riyadh	Saudi Arabia	25.19	25.08			1881	8.27	8.284

Figure 1: Excel sheet for comparison of Riyadh city data and Global data

- Moving Average:

I calculated 10 years moving avarge using AVERAGE() function for both city data and global data

My key considerations were I chose it because it in middle to illustrate, the small number will give me noisy data (outlier) and the large number will lack in detail. so, 10 years was the best choice.

- **Line chart with local and global temperature trends**

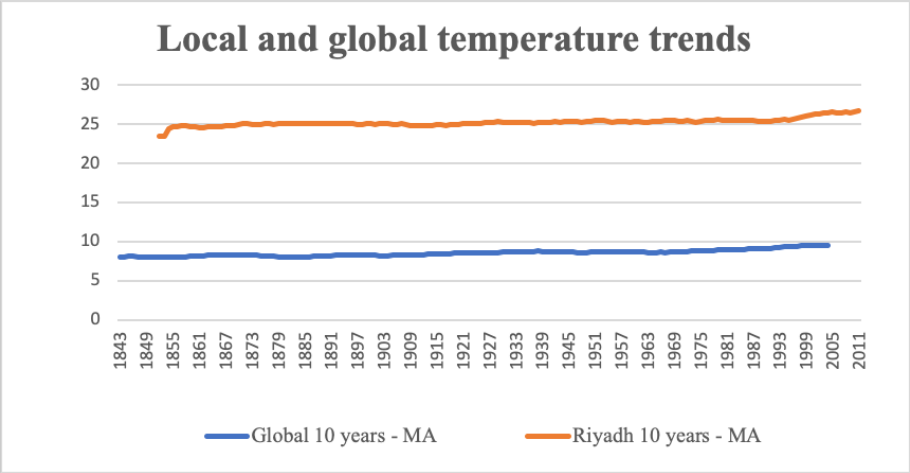

Figure 2:Comparison of average temperature between Riyadh city and Global

- **Observations**

1- I found that on average, Riyadh city is hotter than the globe. The differential was constant over time.
2- There was a small decrease from 1843 to 1849 in global.
3- There was a decrease in the changes in Riyadh city from 1843 to 1847 approximately.
4- The trend is that the weather is getting hotter over the years.