EXPLORING WEATHER TRENDS

PROJECT 1: DATA ANALYST

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INTRODUCTION

Exploring Weather Trends is the first project in the Data Analyst Nanodegree program, which aims to analyze the local and global temperature. And then compare and visualize the pattern and trend.

DATA EXTRACTION AND PREPARING

Extract the data from the database using the SQL query.

For extracting city data, I used this query to extract Riyadh city. As shown in figure 1

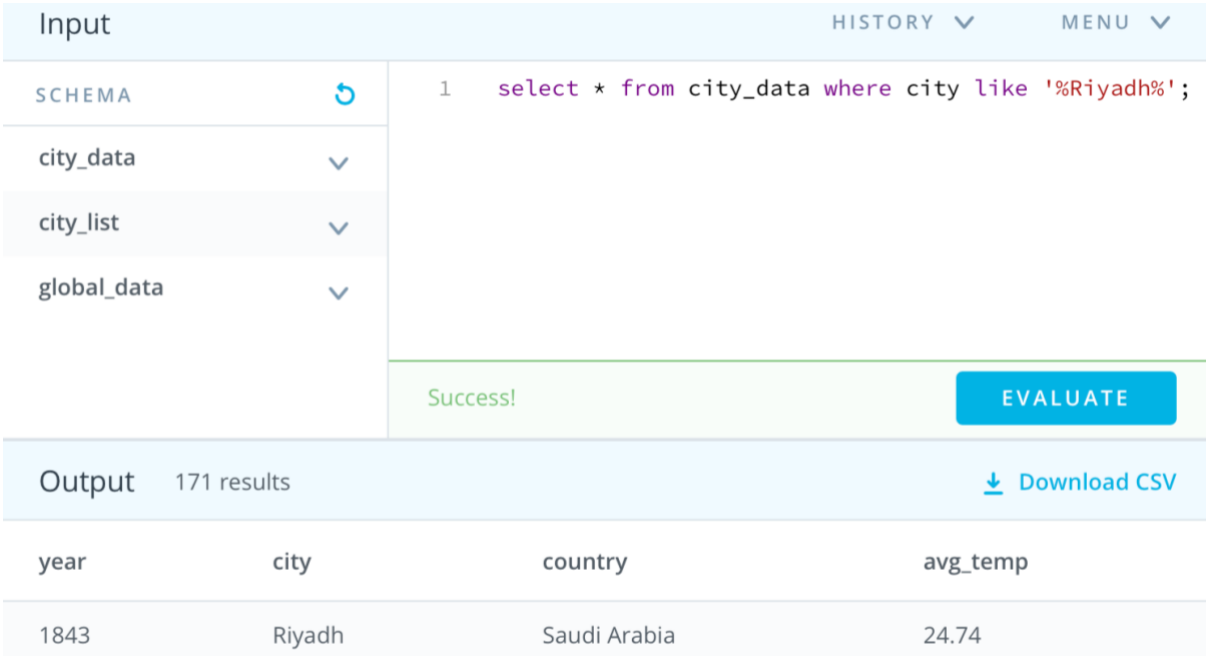

Figure 1: SQL query to extract Riyadh city data

I used this query for extracting global data because I only need the average temperature in the years between 1843 and 2013. Since I only had the temperatures of these years for Riyadh city to speed up the process of cleaning the dataset. As shown in figure 2.

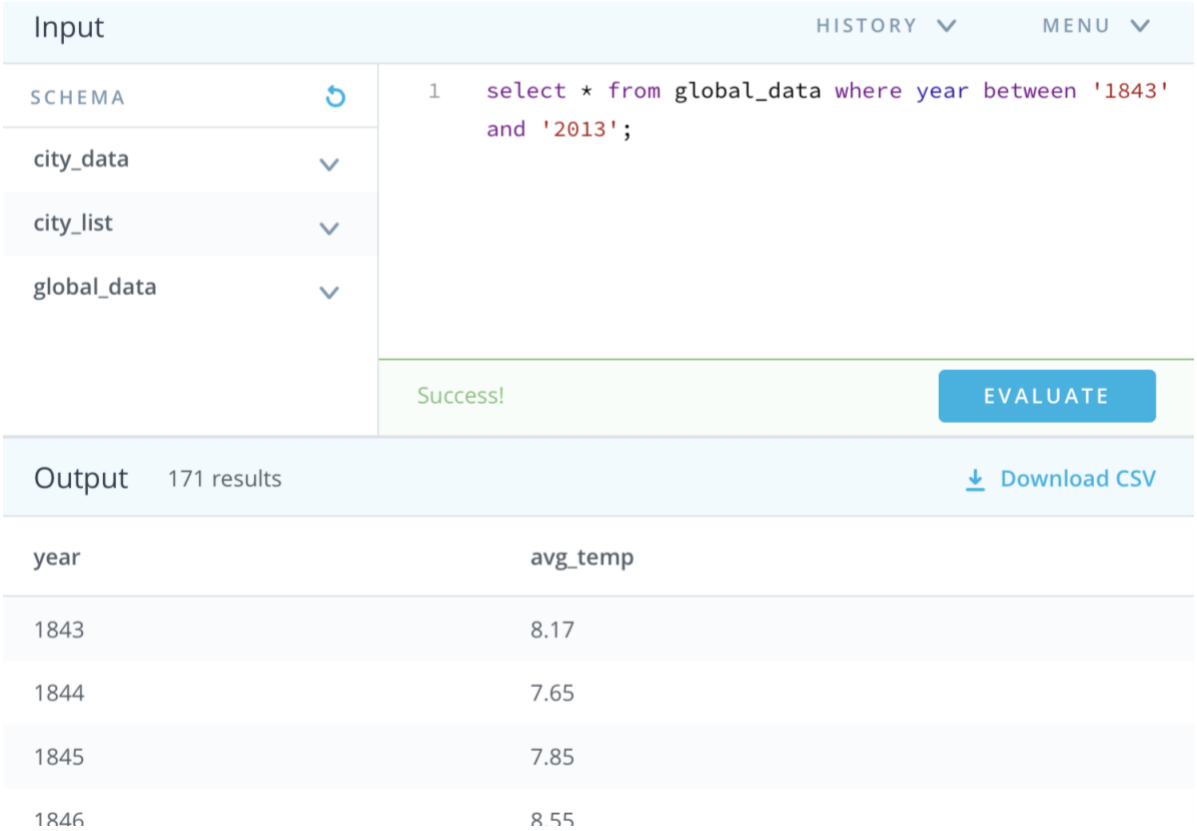

Figure 2: SQL query to extract global data

After I downloaded each dataset in CSV format, I combined them into one sheet in Excel to calculate the Moving Average (MA) for both Riyadh city temperature and global temperature using AVERAGE () function. I noticed that the temperature of Riyadh city in the years 1846 and 1847 are missing, so I decided to ignore it. Then, I calculated five years MA and ten years MA. As shown in figure 3.

	A	B	C	D	E	F	G	H	I
1	Year	City	Country	Riyadh_avg_temp	Riyadh_5_MA	Riyadh_10_MA	Global_avg_temp	Global_5_MA	Global_10_MA
2	1843	Riyadh	Saudi Arabia	24.74			8.17		
3	1844	Riyadh	Saudi Arabia	15.45			7.65		
4	1845	Riyadh	Saudi Arabia	20.82			7.85		
5	1846	Riyadh	Saudi Arabia				8.55		
6	1847	Riyadh	Saudi Arabia		20.33666667		8.09	8.062	
7	1848	Riyadh	Saudi Arabia	24.56	20.27666667		7.98	8.024	
8	1849	Riyadh	Saudi Arabia	24.8	23.39333333		7.98	8.09	
9	1850	Riyadh	Saudi Arabia	24.34	24.56666667		7.9	8.1	
10	1851	Riyadh	Saudi Arabia	25.03	24.6825		8.18	8.026	
11	1852	Riyadh	Saudi Arabia	24.85	24.716	23.07375	8.1	8.028	8.045
12	1853	Riyadh	Saudi Arabia	24.93	24.79	23.0975	8.04	8.04	8.032
13	1854	Riyadh	Saudi Arabia	24.72	24.774	24.25625	8.21	8.086	8.088
14	1855	Riyadh	Saudi Arabia	24.92	24.89	24.76875	8.11	8.128	8.114
15	1856	Riyadh	Saudi Arabia	24.57	24.798	24.74666667	8	8.092	8.059
16	1857	Riyadh	Saudi Arabia	24.26	24.68	24.698	7.76	8.024	8.026
17	1858	Riyadh	Saudi Arabia	25.01	24.696	24.743	8.1	8.036	8.038
18	1859	Riyadh	Saudi Arabia	24.95	24.742	24.758	8.25	8.044	8.065
19	1860	Riyadh	Saudi Arabia	24.94	24.746	24.818	7.96	8.014	8.071
20	1861	Riyadh	Saudi Arabia	24.13	24.658	24.728	7.85	7.984	8.038
21	1862	Riyadh	Saudi Arabia	23.77	24.56	24.62	7.56	7.944	7.984
22	1863	Riyadh	Saudi Arabia	24.28	24.414	24.555	8.11	7.946	7.991
23	1864	Riyadh	Saudi Arabia	25.03	24.43	24.586	7.98	7.892	7.968
24	1865	Riyadh	Saudi Arabia	25.23	24.488	24.617	8.18	7.936	7.975
25	1866	Riyadh	Saudi Arabia	24.92	24.646	24.652	8.29	8.024	8.004
26	1867	Riyadh	Saudi Arabia	25.22	24.936	24.748	8.44	8.2	8.072
27	1868	Riyadh	Saudi Arabia	25	25.08	24.747	8.25	8.228	8.087
28	1869	Riyadh	Saudi Arabia	25.3	25.134	24.782	8.43	8.318	8.105
29	1870	Riyadh	Saudi Arabia	25.02	25.092	24.79	8.2	8.322	8.129
30	1871	Riyadh	Saudi Arabia	24.73	25.054	24.85	8.12	8.288	8.156
31	1872	Riyadh	Saudi Arabia	24.87	24.984	24.96	8.19	8.238	8.219
32	1873	Riyadh	Saudi Arabia	25.24	25.032	25.056	8.35	8.258	8.243
33	1874	Riyadh	Saudi Arabia	24.98	24.968	25.051	8.43	8.258	8.288
34	1875	Riyadh	Saudi Arabia	24.43	24.85	24.971	7.86	8.19	8.256
35	1876	Riyadh	Saudi Arabia	24.89	24.882	24.968	8.08	8.182	8.235

Figure 3: Excel sheet for Riyadh city and global

LINE CHART

The line chart used to show the comparison between Riyadh city and global temperature. It allows observing and finding patterns and trends.

As shown in figure 4, the plots in the line chart based on five years MA. Because I found it more observable to see the trend and pattern. However, MA for ten years or larger would show fewer details.

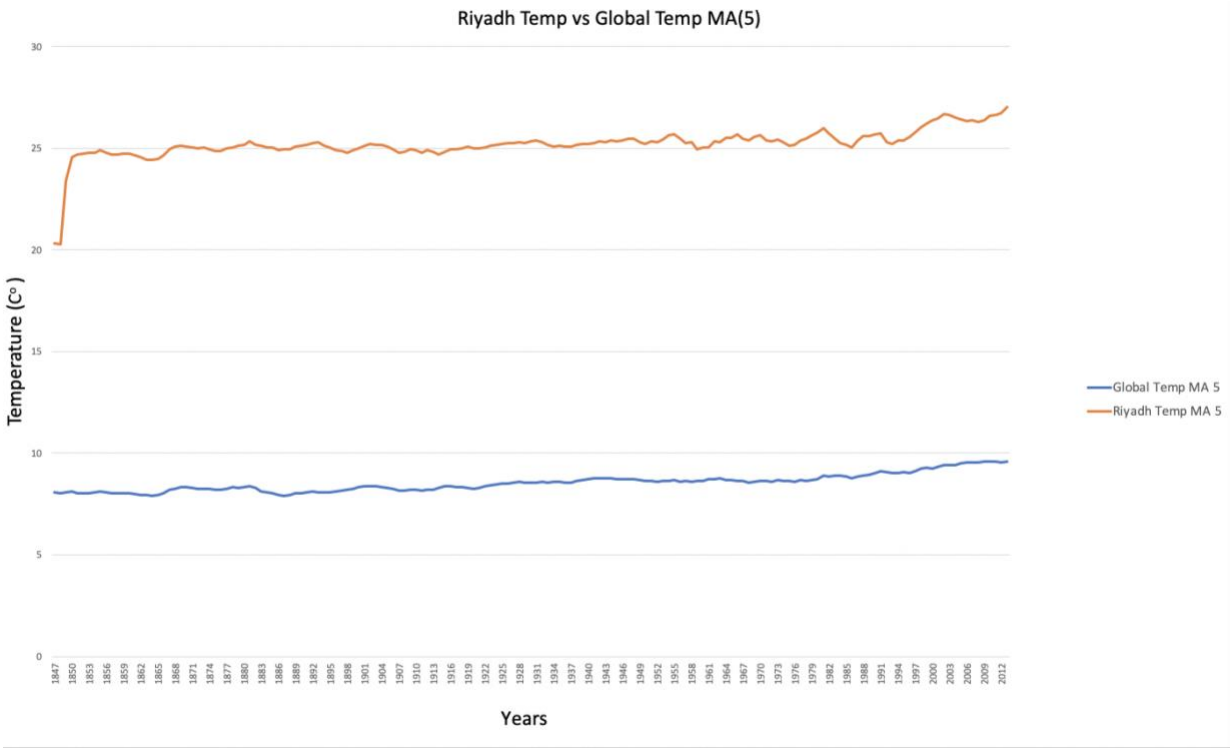

Figure 4: Riyadh temp vs Global temp

OBSERVATIONS

As shown in figure 4 above, Riyadh city is the hotter average temperature (ave-temp) than the global ave-temp. The global average temperature in the years 1846 to 1888 is in the range between 7 and 8. Furthermore, the years 1889 till 1989 had been consistent with 8, and the years 1990 to 2013 increased to 9. On the other hand, since Riyadh city ave-temp is hotter than the global, the increase in temperature is higher too. Riyadh city ave-temp increased by 4 in the year 1450 and kept high in the range between 24 and 27 compared to global, which increases by one each year. The trend has been consistent over the last few years, depending on the ave-temp world will get hotter.