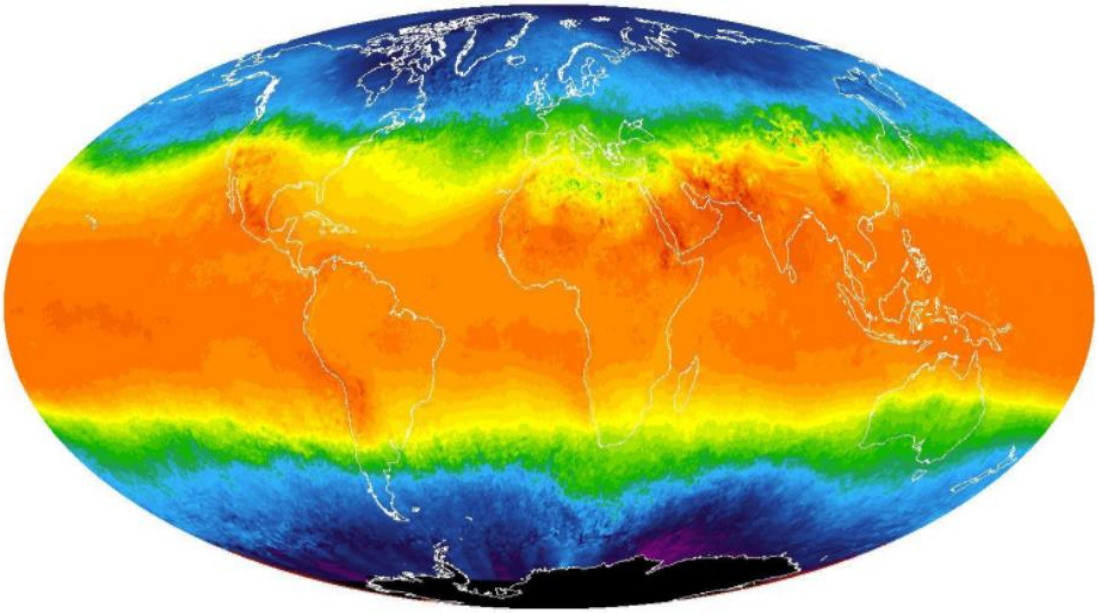

Project 1: Data Analysis
Exploring Weather Trends

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1- Introduction:

Exploring Weather Trends is the first project in Data Analysis nanodegree program. The goal of this project is to create visualization and write up describing the similarities and differences between global temperature trends and temperature trends in the big city to the local city.

2- Preparing the Data:

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

- For extracting global Data, I used the below query as shown in Figure.1, then I downloaded it as csv file:

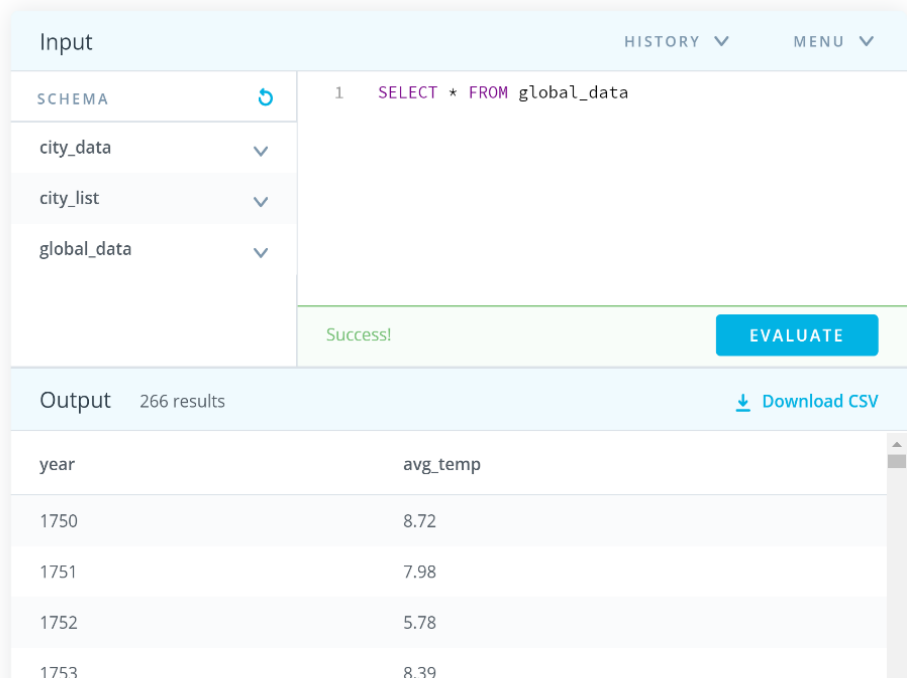


Figure 1 : SQL query for global data

- For extracting the city Data, I used the below query as shown in Figure.2, then I downloaded it as csv file:

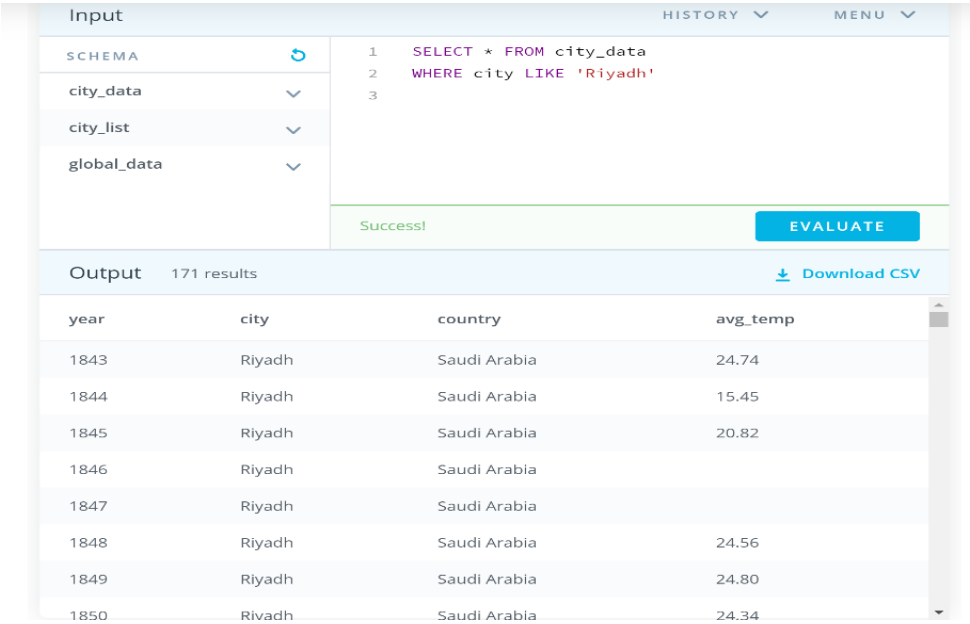


Figure 2 : SQL query for 'Riyadh city'

3- Use Excel to:

- Clean the data by cutting the data of the Global-Data to be equals in years with the data from my city 'Saudi Arabia - Riyadh city'.

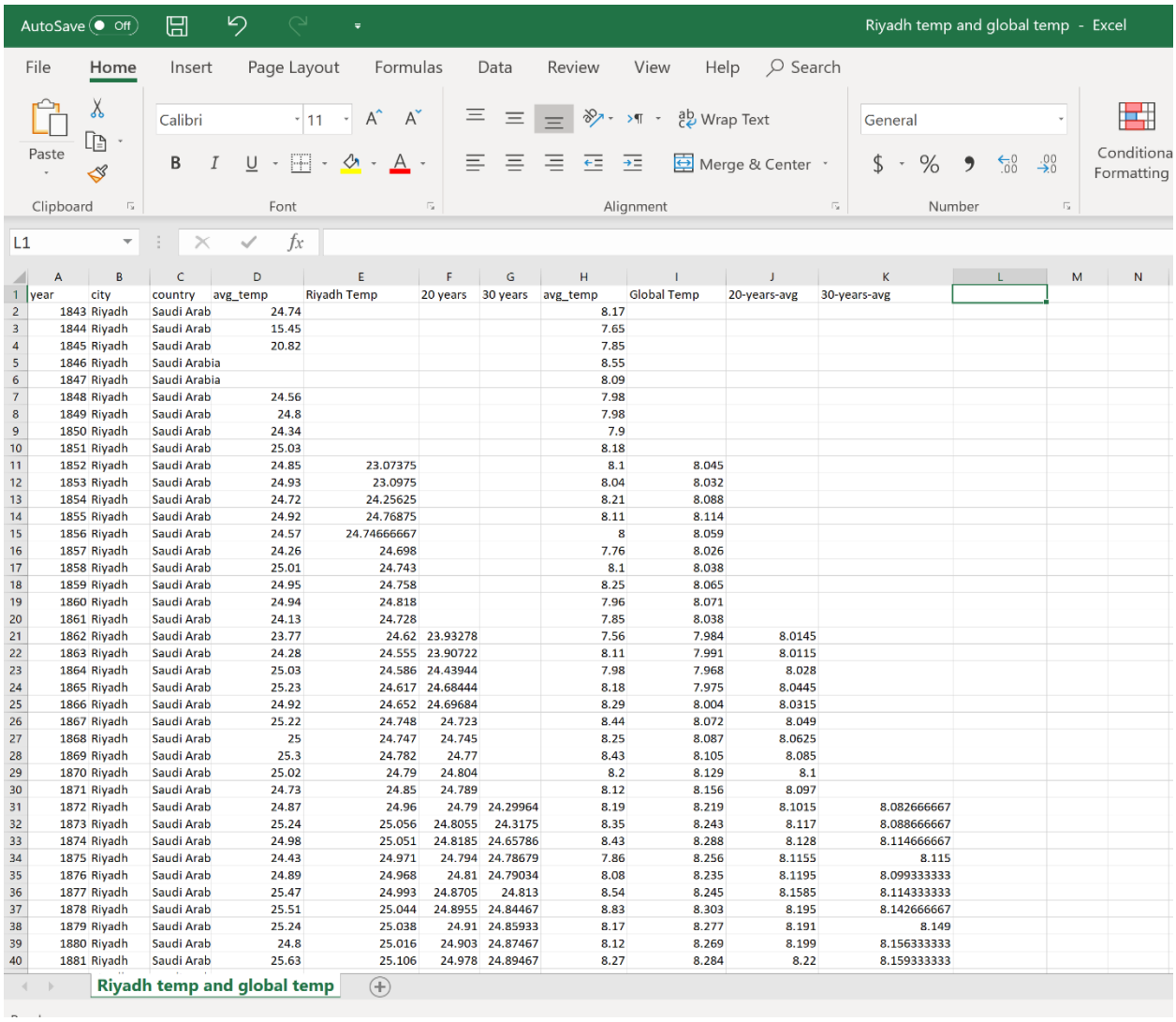
- Exclude the year 1846 and 1847 because it's included missing data in 'Saudi Arabia - Riyadh city' data.

- Combine 'Saudi Arabia - Riyadh city' data and 'Global data' in one excel sheet to compare and visualize them.

- Apply moving average for 10 years using average () function and rename it to 'Riyadh Temp' and 'Global Temp' to visualize it.

- Compare Riyadh-avg and Global-avg by using "Scatter with Straight line".

- Choose the moving average to be 10 years since I tried 3 different possibilities 10,20,30 years as it's shown in Figure.3 because more than this will be a lack of details, so I found that 10 years more comfort for eyes to find the trend and see the pattern clearly and faster than the other choices.



year	city	country	avg_temp	Riyadh Temp	20 years	30 years	avg_temp	Global Temp	20-years-avg	30-years-avg
1843	Riyadh	Saudi Arab	24.74				8.17			
1844	Riyadh	Saudi Arab	15.45				7.65			
1845	Riyadh	Saudi Arab	20.82				7.85			
1846	Riyadh	Saudi Arabia					8.55			
1847	Riyadh	Saudi Arabia					8.09			
1848	Riyadh	Saudi Arab	24.56				7.98			
1849	Riyadh	Saudi Arab	24.8				7.98			
1850	Riyadh	Saudi Arab	24.34				7.9			
1851	Riyadh	Saudi Arab	25.03				8.18			
1852	Riyadh	Saudi Arab	24.85	23.07375			8.1	8.045		
1853	Riyadh	Saudi Arab	24.93	23.0975			8.04	8.032		
1854	Riyadh	Saudi Arab	24.72	24.25625			8.21	8.088		
1855	Riyadh	Saudi Arab	24.92	24.76875			8.11	8.114		
1856	Riyadh	Saudi Arab	24.57	24.74666667			8	8.059		
1857	Riyadh	Saudi Arab	24.26	24.698			7.76	8.026		
1858	Riyadh	Saudi Arab	25.01	24.743			8.1	8.038		
1859	Riyadh	Saudi Arab	24.95	24.758			8.25	8.065		
1860	Riyadh	Saudi Arab	24.94	24.818			7.96	8.071		
1861	Riyadh	Saudi Arab	24.13	24.728			7.85	8.038		
1862	Riyadh	Saudi Arab	23.77	24.62	23.93278		7.56	7.984	8.0145	
1863	Riyadh	Saudi Arab	24.28	24.555	23.90722		8.11	7.991	8.0115	
1864	Riyadh	Saudi Arab	25.03	24.586	24.43944		7.98	7.968	8.028	
1865	Riyadh	Saudi Arab	25.23	24.617	24.68444		8.18	7.975	8.0445	
1866	Riyadh	Saudi Arab	24.92	24.652	24.69684		8.29	8.004	8.0315	
1867	Riyadh	Saudi Arab	25.22	24.748	24.723		8.44	8.072	8.049	
1868	Riyadh	Saudi Arab	25	24.747	24.745		8.25	8.087	8.0625	
1869	Riyadh	Saudi Arab	25.3	24.782	24.77		8.43	8.105	8.085	
1870	Riyadh	Saudi Arab	25.02	24.79	24.804		8.2	8.129	8.1	
1871	Riyadh	Saudi Arab	24.73	24.85	24.789		8.12	8.156	8.097	
1872	Riyadh	Saudi Arab	24.87	24.96	24.79	24.29964	8.19	8.219	8.1015	8.082666667
1873	Riyadh	Saudi Arab	25.24	25.056	24.8055	24.3175	8.35	8.243	8.117	8.088666667
1874	Riyadh	Saudi Arab	24.98	25.051	24.8185	24.65786	8.43	8.288	8.128	8.114666667
1875	Riyadh	Saudi Arab	24.43	24.971	24.794	24.78679	7.86	8.256	8.1155	8.115
1876	Riyadh	Saudi Arab	24.89	24.968	24.81	24.79034	8.08	8.235	8.1195	8.099333333
1877	Riyadh	Saudi Arab	25.47	24.993	24.8705	24.813	8.54	8.245	8.1585	8.114333333
1878	Riyadh	Saudi Arab	25.51	25.044	24.8955	24.84467	8.83	8.303	8.195	8.142666667
1879	Riyadh	Saudi Arab	25.24	25.038	24.91	24.85933	8.17	8.277	8.191	8.149
1880	Riyadh	Saudi Arab	24.8	25.016	24.903	24.87467	8.12	8.269	8.199	8.156333333
1881	Riyadh	Saudi Arab	25.63	25.106	24.978	24.89467	8.27	8.284	8.22	8.159333333

Figure 3 : Excel sheet for comparison of 'Riyadh city' temp data and 'Global temp' data

4- Conclusion:

As shown in Figure.3, The avg-temp of Riyadh city is hotter than the global avg-temp, the avg-temp of Riyadh city ranges between 23 to 26 and the avg-temp of the global ranges between 7 to 9. So depending on this, the difference is kind of consistent. The avg-temp of Riyadh city faster to become hotter than the global avg-temp, since from 1845 until 2013, the avg-temp of Riyadh city increasing by 4 to 5 c, where the global increasing by 1 to 2 c. Depending on the below figure the world will be hotter with years and the relation between the avg-temp of Riyadh city and Global avg-temp is that Riyadh is one of the reasons that making the avg world higher with years.

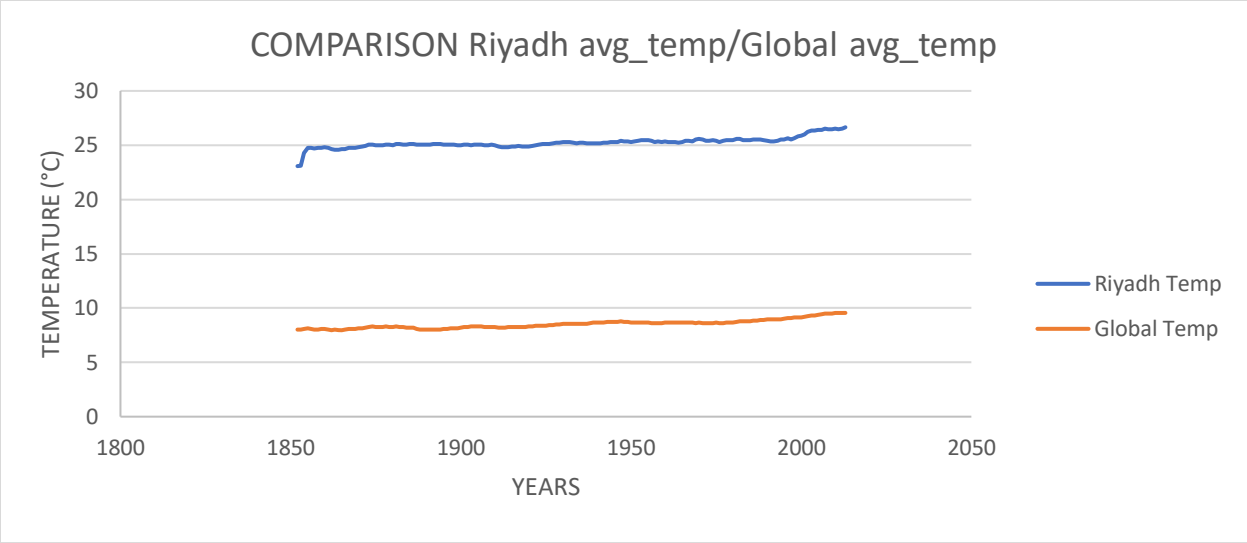


Figure 4 : Comparison of avg Temp between Riyadh city and Global Temp