Name / Khaled Almousa
Date : 9/22/2022

Analyzing Weather Trend

Overview: temperature is a way to find how cold or hot the place or object is, in this project I have used the Celsius scale from Udacity dataset to determine the weather trend of local and global temperature and visualize the result.

Here are some of the questions I will try to answer:

- Is my city hotter or cooler on average compared to the global average? Has the difference been consistent over time?
- "How do the changes in my city's temperatures over time compare to the changes in the global average?"
- What does the overall trend look like? Is the world getting hotter or cooler? Has the trend been consistent over the last few hundred years?

Tools I have used:

-SQL

-MS Excel

Steps:

I have used SQL to extract the local and global data from 'city_data' and 'global_data'. First, I have changed the name of global average temperature to be able to join the two tables together.

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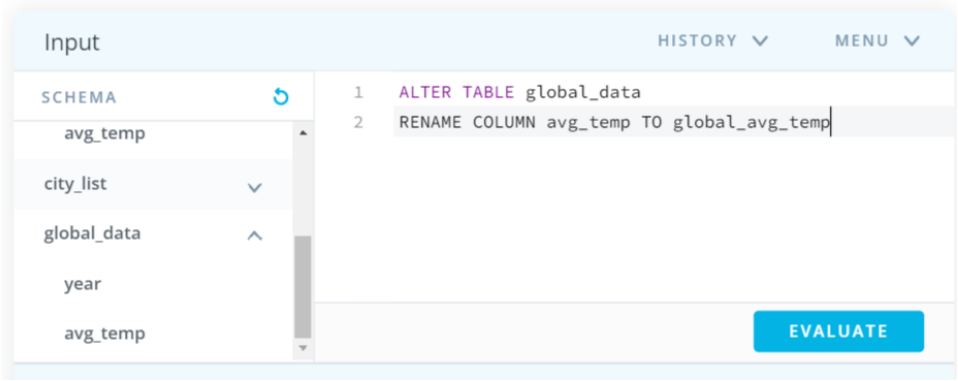
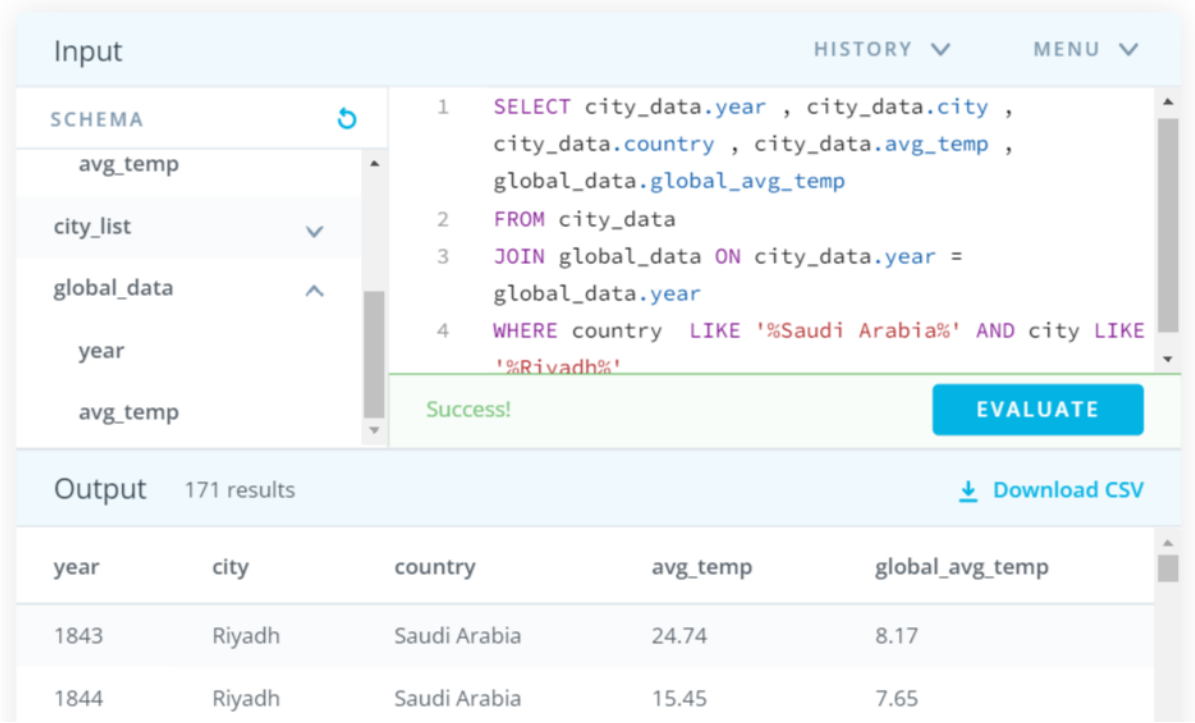


- Then write the query for joining the two tables together and download the data



- After that, I have used Microsoft excel to do some analysis. First I have used box & whisker to find if there is any outlier to eliminate them.

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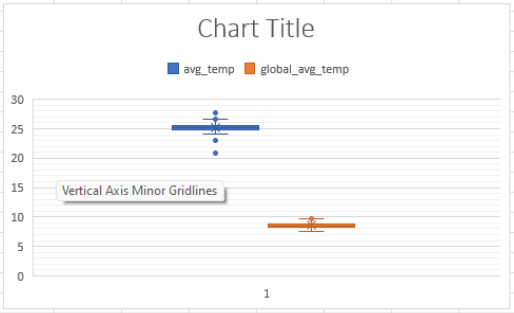
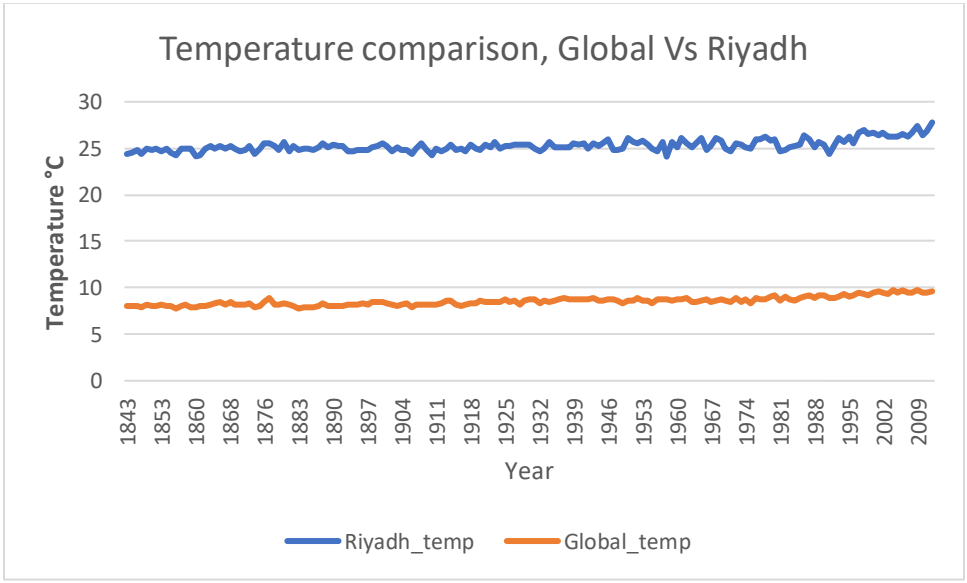
	year	city	country	avg_temp	global_avg_temp
2	1843	Riyadh	Saudi Aral	24.74	8.17
3	1844	Riyadh	Saudi Aral	15.45	7.65
4	1845	Riyadh	Saudi Aral	20.82	7.85
5	1846	Riyadh	Saudi Aral	23.1	8.55
6	1847	Riyadh	Saudi Aral	24.4	8.09
7	1848	Riyadh	Saudi Aral	24.56	7.98
8	1849	Riyadh	Saudi Aral	24.8	7.98
9	1850	Riyadh	Saudi Aral	24.34	7.9
10	1851	Riyadh	Saudi Aral	25.03	8.18
11	1852	Riyadh	Saudi Aral	24.85	8.1
12	1853	Riyadh	Saudi Aral	24.93	8.04
13	1854	Riyadh	Saudi Aral	24.72	8.21
14	1855	Riyadh	Saudi Aral	24.92	8.11
15	1856	Riyadh	Saudi Aral	24.57	8
16	1857	Riyadh	Saudi Aral	24.26	7.76
17	1858	Riyadh	Saudi Aral	25.01	8.1
18	1859	Riyadh	Saudi Aral	24.95	8.25
19	1860	Riyadh	Saudi Aral	24.94	7.96
20	1861	Riyadh	Saudi Aral	24.13	7.85
21	1862	Riyadh	Saudi Aral	23.77	7.56
22	1863	Riyadh	Saudi Aral	24.28	8.11
23	1864	Riyadh	Saudi Aral	25.03	7.98
24	1865	Riyadh	Saudi Aral	25.23	8.18
25	1866	Riyadh	Saudi Aral	24.92	8.29



- After removing the outliers, now we can draw the line chart to visualize the trend of the temperature .



- To visualize the trend clearly, I have calculate the 10 year average of local and global data by using the following formula and plot the result.

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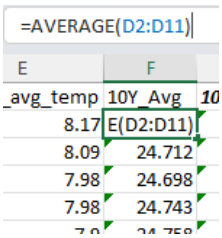
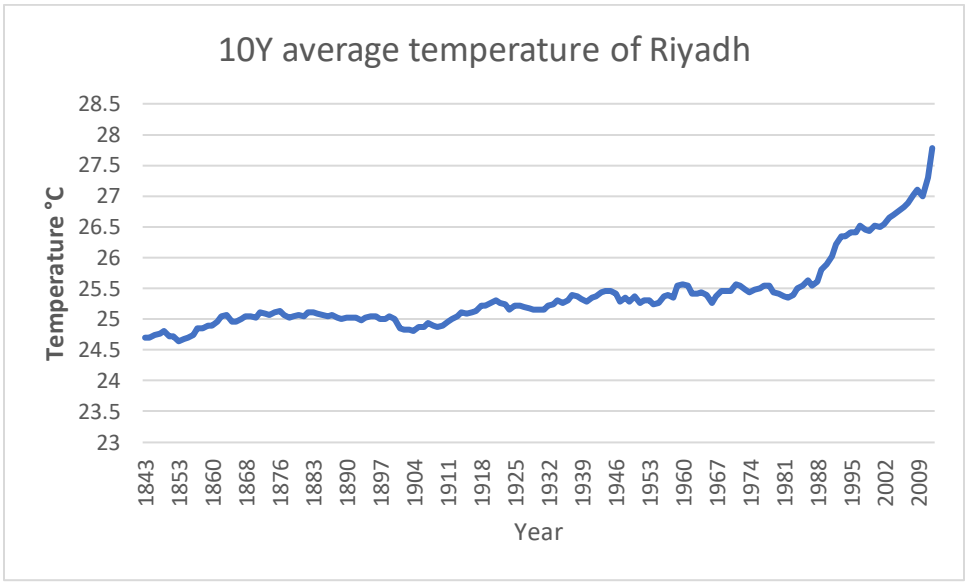
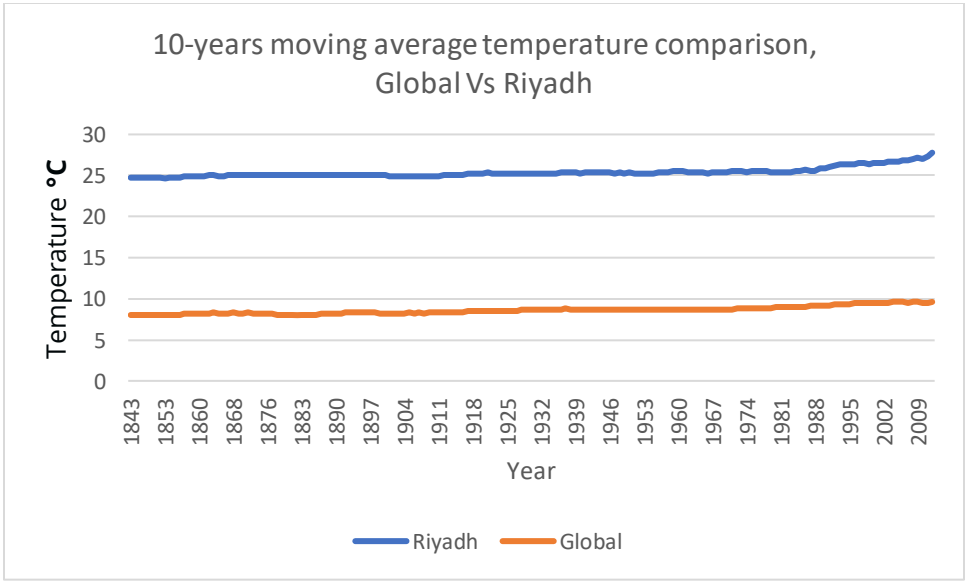




- It is clear that the local temperature is an up trend and it's getting hotter over time. The following chart shows the global and local 10Y averages.



- The chart shows that both local and global are in an up trend.

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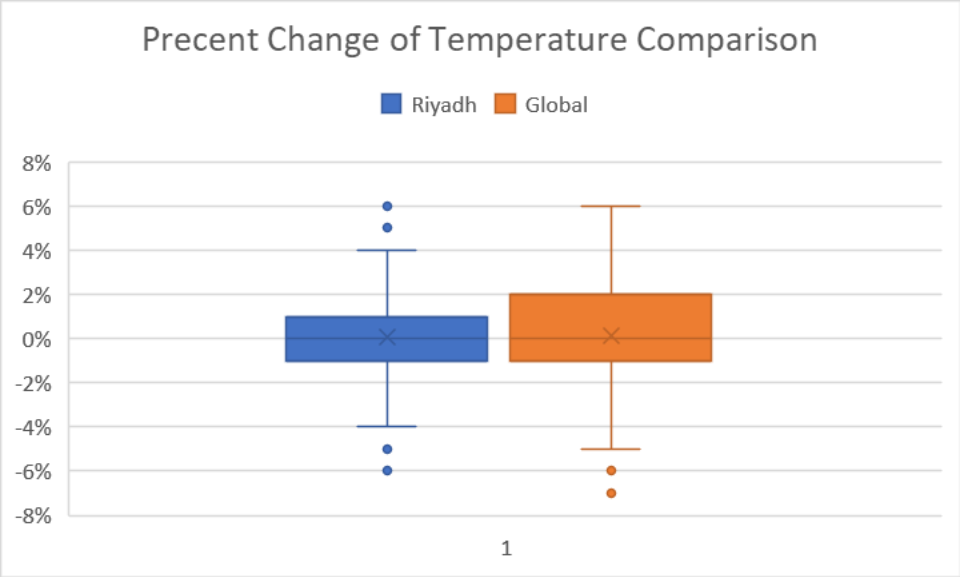
- Now calculating the percentage changes over time by using this formula

(relative change = final value – initial value/ initial value)



I have used box& whisker because it shows clearly that 50% of global changes are between -1% to +2%, and for Riyadh changes are between -1%to +1%

In conclusion:

- The data shows that Riyadh is hotter than the average global temperature.
- The percentage change over time of Riyadh and the global temperature is quite similar.
- The change of temperature of Riyadh has raised significantly over the past 25 years. starting from 1989.
- The trend of both local and global temperature is up and it is getting hotter over time.
- 50% of global yearly changes are between -1% to +2%, and for Riyadh changes are between +1%to -1%