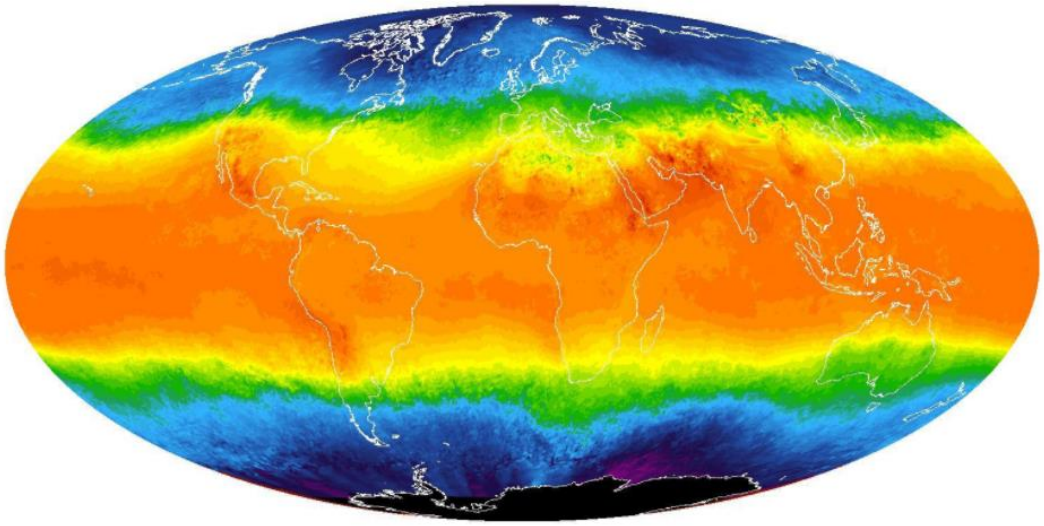
UDACITY

Udacity Data Analyst Nanodegree

Project 1:

Exploring Weather Trends



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Outline

The project aims to compare global weather change and Riyadh weather change from 1860 to 2010.

- **Tool used for the project**

Excel 2021 professional version was used to analyze the data and for the visualization the trends.

- **Moving average calculation**

The moving average was calculated by intervals of 5 years to reduce noise in the line chart shown in Figures 1 and 2.

Regarding the project first rejection, here's more clarifying in the next image:

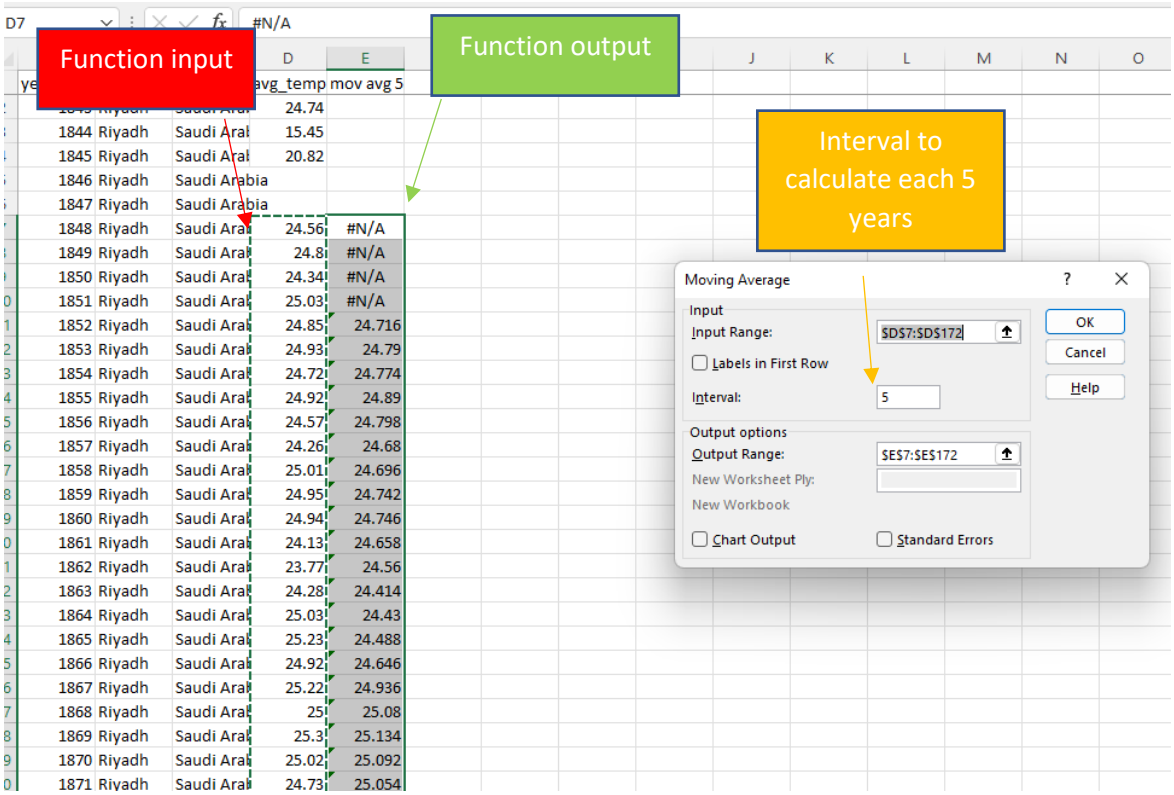
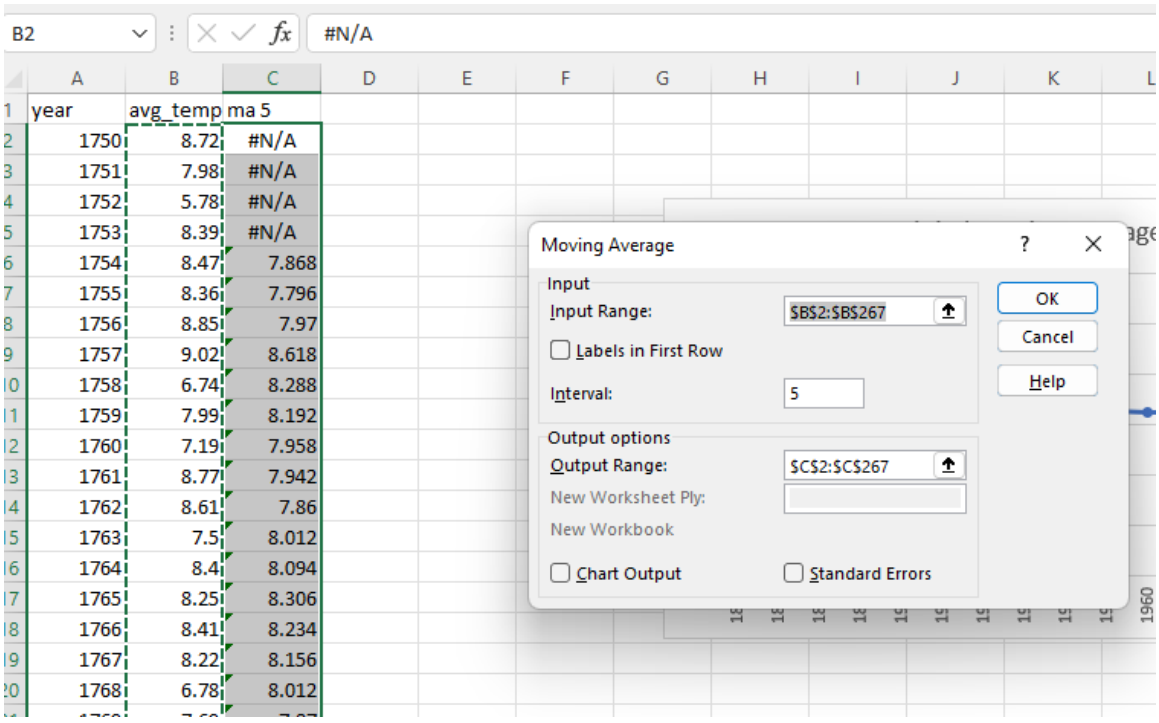


Image 1 – Moving average calculation methodology

Same method was done to global data as the next image shows.



	A	B	C
1	year	avg_temp	ma 5
2	1750	8.72	#N/A
3	1751	7.98	#N/A
4	1752	5.78	#N/A
5	1753	8.39	#N/A
6	1754	8.47	7.868
7	1755	8.36	7.796
8	1756	8.85	7.97
9	1757	9.02	8.618
10	1758	6.74	8.288
11	1759	7.99	8.192
12	1760	7.19	7.958
13	1761	8.77	7.942
14	1762	8.61	7.86
15	1763	7.5	8.012
16	1764	8.4	8.094
17	1765	8.25	8.306
18	1766	8.41	8.234
19	1767	8.22	8.156
20	1768	6.78	8.012

Image 2 – Moving average calculation methodology

- **Visualization key considerations**

Since the chart required is a simple line chart, Excel was an excellent tool for the visualization, no Python or any other programming languages is needed.

Also, to enhance the look of the line chart, an interval of 10 years is chosen to reduce noise and to clarify the trend behavior.

Regarding the project first rejection, here's more clarifying in the next image:

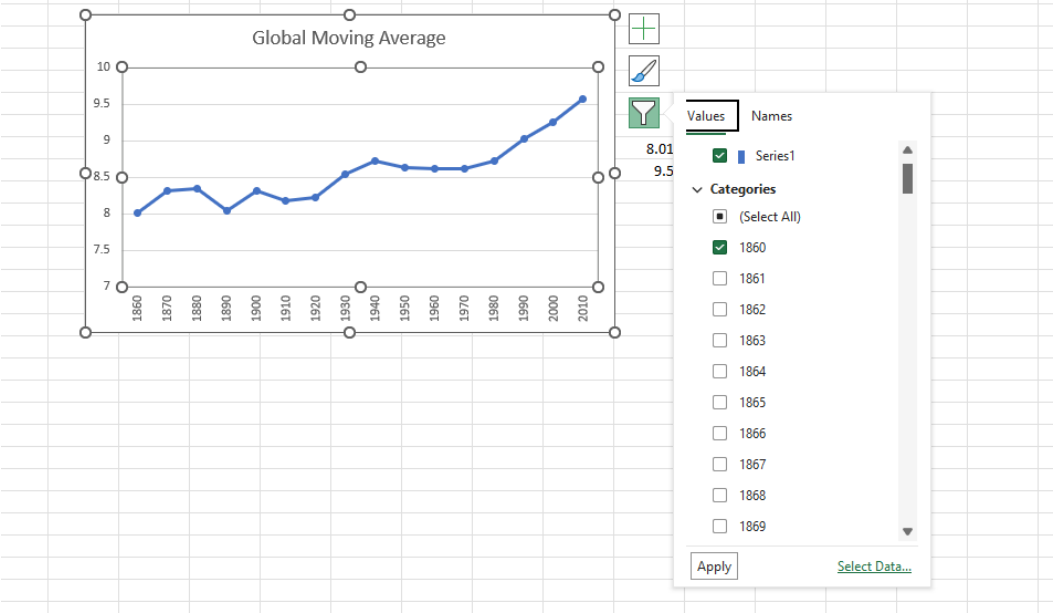


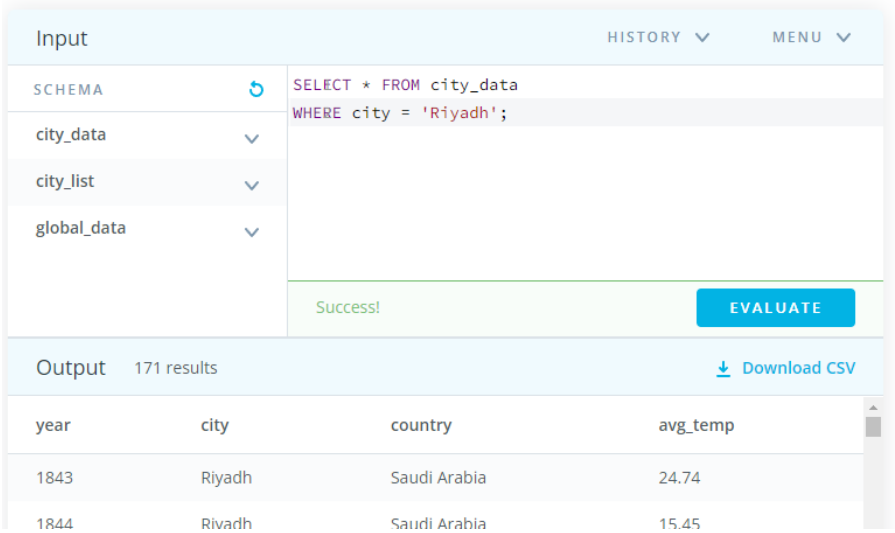
Image 3 –Filtering years to enhance pattern recognition

The moving average is calculated for every year as image 1 shows, but as mentioned in the previous report in 'Visualization key considerations' section the graph was modified to make the pattern not look like a single line, see image 3.

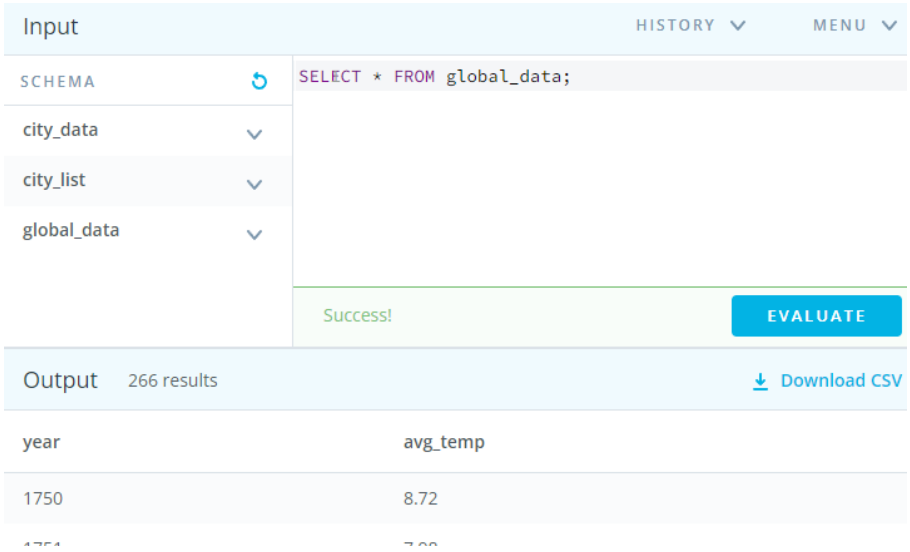
However, after rejecting the way I used in the previous report it is modified to plot more years (ignoring chart readability) from 1860 to 2010 for both dataset in one line chart.

SQL Used to Extract the data

- **Query used to extract Riyadh data**



- **Query used to extract global data**



Then the extracted dataset was saved using the button ‘Download CSV’ and opened using Microsoft Excel.

Visualization

The following Figure show a comparison between Riyadh and global weather changes.

In the previous report the chart was filtered each 10 years to make the chart look better and to make the pattern more readable, but it changed to plot more years since filtering 10 years made it looks like I calculated the average for 10 years which is not true.

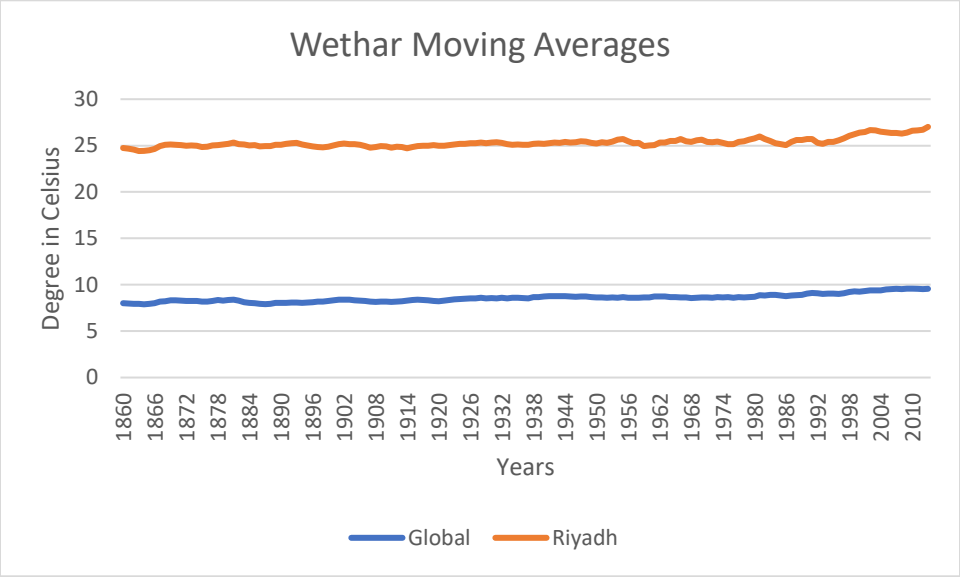


Figure 1 - Moving average comparison

Observations

- The previous graphs show increasing in the moving average in both charts.
- Riyadh moving average started in 1860 with 24.7 °C while the same year in the global was 8 °C.
- According to the previous observation, the percentage change formula is used to measure the increment percentage in both charts, Riyadh increasing is 7.5% from 1860 to 2010, while global increasing is 19.4% for the same period.
- The maximum global moving average was in year 2010 which is equivalent to 9.58 °C, while Riyadh maximum was in 2013 and it was 27.01 °C