



Project exploring the weather



By raghad askar al-onazie



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What tools did you use for each step? (Python, SQL, Excel, etc)

a. I used two SQL queries to extract my data from the database:

i. Global Data: `SELECT * FROM global_data`

ii. Local Data: (for Saudi arabia, 'Riyadh')

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

b. I exported the data to CSV files using this link

[Download CSV](#)

c. I used MS Excel to convert the CSV file to XSL file, calculate the moving average and create the charts.

2. How did you calculate the moving average?

I tried 5, 7, 15-year moving averages to see which average is better to smooth out data. To calculate the moving average in MS Excel, I used the AVERAGE function (the same approach as in the lesson) as shown below:

	country	avg_temp_local	avg_temp_local_5year	avg_temp_global_5year	avg_temp_local_7year	avg_temp_global_7year	avg_temp_local_15year
1h	Saudi Arab	24.95	24.742	8.044	24.76571429	8.067142857	
1h	Saudi Arab	24.94	24.746	8.014	24.76714286	8.055714286	
1h	Saudi Arab	24.13	24.658	7.984	24.68285714	8.004285714	
1h	Saudi Arab	23.77	24.56	7.944	24.51857143	7.925714286	
1h	Saudi Arab	24.28	24.414	7.946	24.47714286	7.941428571	
1h	Saudi Arab	25.03	24.43	7.892	24.58714286	7.972857143	
1h	Saudi Arab	25.23	24.488	7.936	24.61857143	7.984285714	
1h	Saudi Arab	24.92	24.646	8.024	=AVERAGE(F113:F119)	7.99	
1h	Saudi Arab	25.22	24.936	8.2	AVERAGE(number1, [number2], ...)	8.058571429	
1h	Saudi Arab	25	25.08	8.228	24.77857143	8.115714286	
1h	Saudi Arab	25.3	25.134	8.318	24.99714286	8.24	

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iyadh	Saudi Arab	24.56					
iyadh	Saudi Arab	24.8					
iyadh	Saudi Arab	24.34					
iyadh	Saudi Arab	25.03					
iyadh	Saudi Arab	24.85	24.716	8.028			
iyadh	Saudi Arab	24.93	24.79	8.04			
iyadh	Saudi Arab	24.72	24.774	8.086	24.74714286	8.055714286	
iyadh	Saudi Arab	24.92	24.89	8.128	24.79857143	8.074285714	
iyadh	Saudi Arab	24.57	24.798	8.092	24.76571429	8.077142857	
iyadh	Saudi Arab	24.26	24.68	8.024	24.75428571	8.057142857	
iyadh	Saudi Arab	25.01	24.696	8.036	24.75142857	8.045714286	
iyadh	Saudi Arab	24.95	24.742	8.044	24.76571429	8.067142857	
iyadh	Saudi Arab	24.94	24.746	8.014	24.76714286	8.055714286	
iyadh	Saudi Arab	24.13	24.658	7.984	24.68285714	8.004285714	
iyadh	Saudi Arab	23.77	24.56	7.944	24.51857143	7.925714286	24.652
iyadh	Saudi Arab	24.28	24.414	7.946	24.47714286	7.941428571	24.63333333
iyadh	Saudi Arab	25.03	24.43	7.892	24.58714286	7.972857143	24.64866667
iyadh	Saudi Arab	25.23	24.488	7.936	24.61857143	7.984285714	=AVERAGE(F104:F118)
iyadh	Saudi Arab	24.92	24.646	8.024	24.61428571	7.99	AVERAGE(number1, [number2], ...)
iyadh	Saudi Arab	25.22	24.936	8.2	24.65428571	8.058571429	24.72533333
iyadh	Saudi Arab	25	25.08	8.228	24.77857143	8.115714286	24.73

Note :For the 5 year I was doing it row by row before I know the trick I used in 7 and 15 years

3. What were your key considerations when deciding how to visualize the trends?

The key consideration was to determine the timeframe for data visualization; Looking at the local temperature

data for Saudi arabia(ryiadh), the data covers the period between 1843 to 2013, where in the global temperature data covers the period between 1750 and 2015. Therefore, the analysis was performed for the range between 1848 to 2013 ,To make sure local and global temperature data is mapped correctly

-5year moving average starting point: 1852 (1848+ 5)

-7year moving average starting point: 1854 (1848 + 7) see figure A

-15year moving average starting point: 1862 (1848 + 15) see figure B

98	1848	Riyadh	Saudi Arab	24.56				
98	1849	Riyadh	Saudi Arab	24.8				
9	1850	Riyadh	Saudi Arab	24.34				
18	1851	Riyadh	Saudi Arab	25.03				
1	1852	Riyadh	Saudi Arab	24.85	24.716	8.028		
14	1853	Riyadh	Saudi Arab	24.93	24.79	8.04		
21	1854	Riyadh	Saudi Arab	24.72	24.774	8.086	=AVERAGE(F101:F107)	8.0
11	1855	Riyadh	Saudi Arab	24.92	24.89	8.128	AVERAGE(number1, [number2], ...)	8.0
8	1856	Riyadh	Saudi Arab	24.57	24.798	8.092	24.76571429	8.0
76	1857	Riyadh	Saudi Arab	24.26	24.68	8.024	24.75428571	8.0
1	1858	Riyadh	Saudi Arab	25.01	24.696	8.036	24.75142857	8.0

figure A

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1852	Riyadh	Saudi Arab	24.85	24.716	8.028			
1853	Riyadh	Saudi Arab	24.93	24.79	8.04			
1854	Riyadh	Saudi Arab	24.72	24.774	8.086	24.74714286	8.055714286	
1855	Riyadh	Saudi Arab	24.92	24.89	8.128	24.79857143	8.074285714	
1856	Riyadh	Saudi Arab	24.57	24.798	8.092	24.76571429	8.077142857	
1857	Riyadh	Saudi Arab	24.26	24.68	8.024	24.75428571	8.057142857	
1858	Riyadh	Saudi Arab	25.01	24.696	8.036	24.75142857	8.045714286	
1859	Riyadh	Saudi Arab	24.95	24.742	8.044	24.76571429	8.067142857	
1860	Riyadh	Saudi Arab	24.94	24.746	8.014	24.76714286	8.055714286	
1861	Riyadh	Saudi Arab	24.13	24.658	7.984	24.68285714	8.004285714	
1862	Riyadh	Saudi Arab	23.77	24.56	7.944	24.51857143	7.925714286	24.652
1863	Riyadh	Saudi Arab	24.28	24.414	7.946	24.47714286	7.941428571	24.63333333
1864	Riyadh	Saudi Arab	25.03	24.43	7.892	24.58714286	7.972857143	24.64866667
1865	Riyadh	Saudi Arab	25.23	24.488	7.936	24.61857143	7.984285714	24.708
1866	Riyadh	Saudi Arab	24.92	24.646	8.024	24.61428571	7.99	=AVERAGE(F105:F119)
1867	Riyadh	Saudi Arab	25.22	24.936	8.2	24.65428571	8.058571429	AVERAGE(number1, [number2], ...)

figure B

Also i calculate the Max, Min, differences and avg chang as follows:

max value on local normal average	min value on local normal average
27.78	23.77
max value on global normal average	min value on global normal average
9.73	7.56
max difference	min deffrence
18.17	15.41
avg chang on global	avg chang on local
0.011144578	-0.156626506

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The image shows an Excel spreadsheet with the following data:

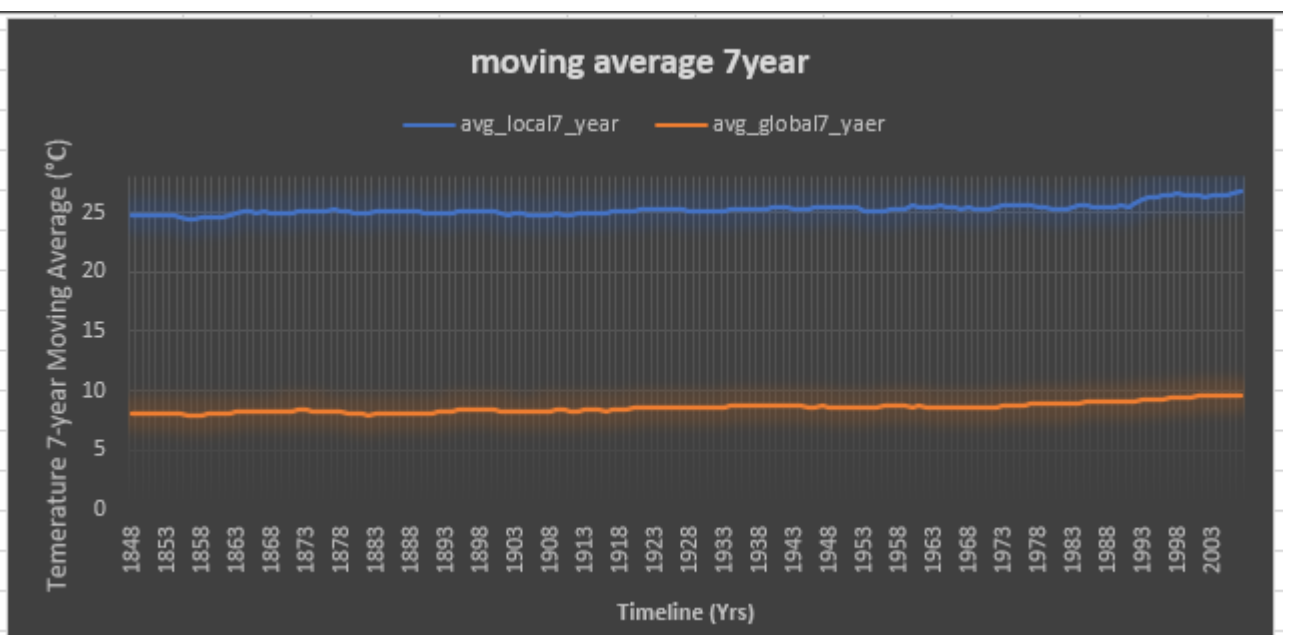
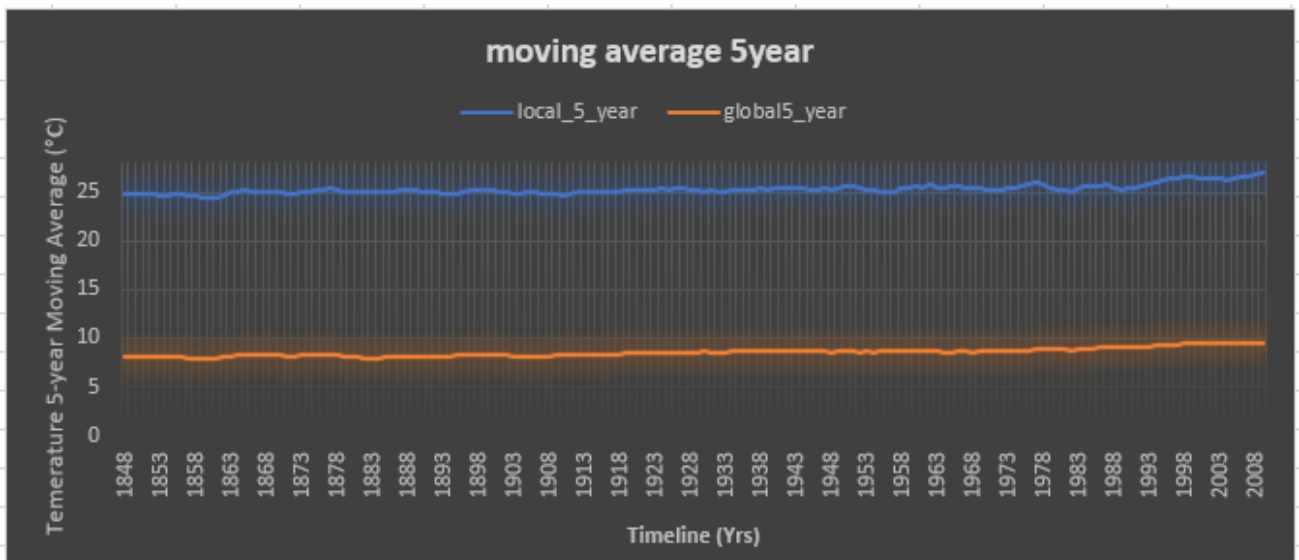
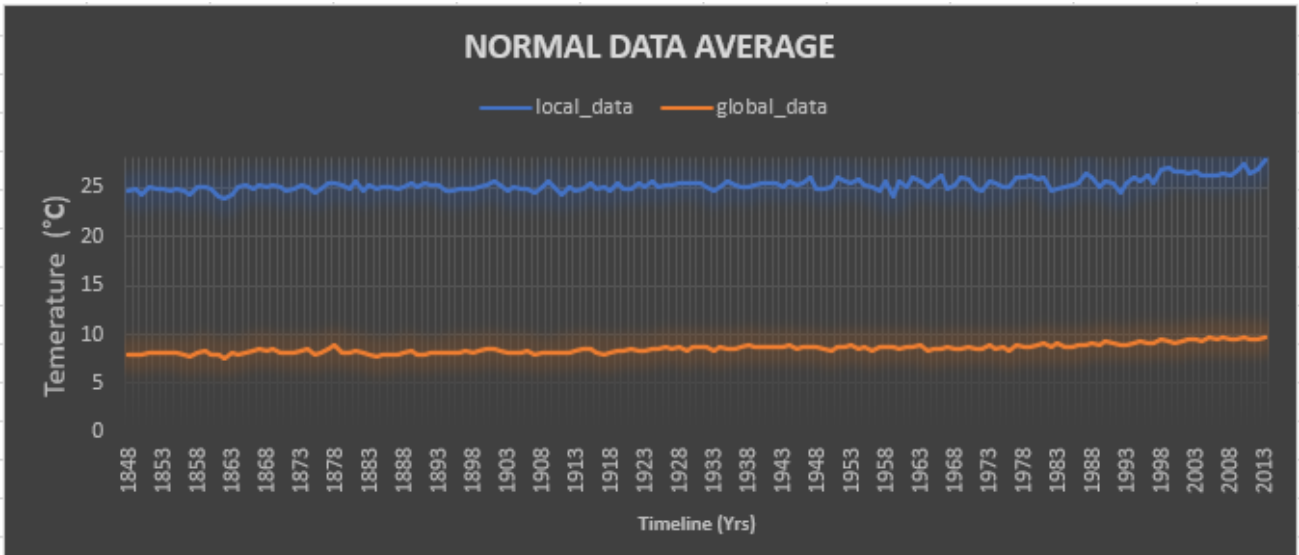
	A	B	C	D	E
1	difference bettween global and local avg				
2	16.58				
3	16.82				
4	16.44				
5	16.85				
6	16.75				
7	16.89				
8	16.51				
9	16.81				
10	16.57				
11	16.5				
12	16.91				
13	16.7				
14	16.98				
15	16.28				
16	16.21				
17	16.17				
18	17.05				
19	17.05				
20	16.63				
21	16.78				
22	16.75				
23	16.87				

The formula bar at the top shows: `=(project2!F102-project2!A102)`

Observations:

- The Saudi Arabia(Riyadh) is hotter than the global temperature (please refer to Min,. columns in the pic above)
- The local Saudi Arabia(Riyadh) and global temperature levels are both increasing.
- The global moving average experiences less fluctuations than the local moving average in Saudi Arabia(Riyadh)
- the world every year getting hotter that's mean An increase in global temperatures will lead to a rise in sea levels, and a change in the amount and pattern of precipitation
- The global temperature its increase by 0.01 (please refer to the avg change pic above)

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