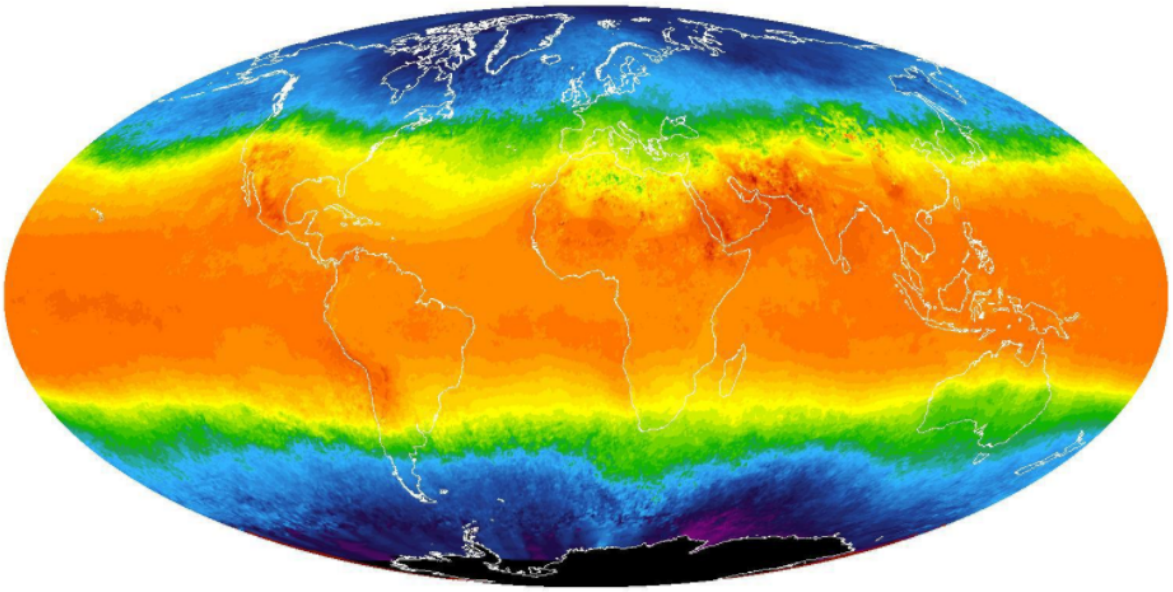

Exploring Weather Trends Project

Hawazn Alzara

1- What tools did you use for each step?

Firstly, I used SQL to extract the data from the database by 2 queries as listed below:

- Global Data:
  SELECT *
  FROM global_data

- Local Data:
  SELECT *
  FROM city_data
  where city = 'Riyadh'

Scondly, downloaded the CSV files from the work space

Finally, convert the CSV files to XSLX files by MS Excel to calculate the moving average And do the charts.

2- How did you calculate the moving average?

AVERAGE function has been used to calculate the moving average.

3 averages try done on 3 different years period (7, 10, 20) to determine the better to smooth out data.

year	city	country	avg_temp	7 years
1843	Riyadh	Saudi Arabia	24.74	
1844	Riyadh	Saudi Arabia	15.45	
1845	Riyadh	Saudi Arabia	20.82	
1846	Riyadh	Saudi Arabia		
1847	Riyadh	Saudi Arabia		
1848	Riyadh	Saudi Arabia	24.56	
1849	Riyadh	Saudi Arabia	24.8	=AVERAGE(D2:D8)
1850	Riyadh	Saudi Arabia	24.34	

Figure 1 7 Years Moving Average

year	city	country	avg_temp	7 years	10 years
1843	Riyadh	Saudi Arabia	24.74		
1844	Riyadh	Saudi Arabia	15.45		
1845	Riyadh	Saudi Arabia	20.82		
1846	Riyadh	Saudi Arabia			
1847	Riyadh	Saudi Arabia			
1848	Riyadh	Saudi Arabia	24.56		
1849	Riyadh	Saudi Arabia	24.8	22.074	
1850	Riyadh	Saudi Arabia	24.34		
1851	Riyadh	Saudi Arabia	25.03		
1852	Riyadh	Saudi Arabia	24.85		=AVERAGE(D2:D11)
1853	Riyadh	Saudi Arabia	24.93		

Figure 2 10 Years Moving Average

year	city	country	avg_temp	7 years	10 years	20 years
1843	Riyadh	Saudi Arabia	24.74			
1844	Riyadh	Saudi Arabia	15.45			
1845	Riyadh	Saudi Arabia	20.82			
1846	Riyadh	Saudi Arabia				
1847	Riyadh	Saudi Arabia				
1848	Riyadh	Saudi Arabia	24.56			
1849	Riyadh	Saudi Arabia	24.8	22.074		
1850	Riyadh	Saudi Arabia	24.34			
1851	Riyadh	Saudi Arabia	25.03			
1852	Riyadh	Saudi Arabia	24.85		23.07375	
1853	Riyadh	Saudi Arabia	24.93			
1854	Riyadh	Saudi Arabia	24.72			
1855	Riyadh	Saudi Arabia	24.92			
1856	Riyadh	Saudi Arabia	24.57			
1857	Riyadh	Saudi Arabia	24.26			
1858	Riyadh	Saudi Arabia	25.01			
1859	Riyadh	Saudi Arabia	24.95			
1860	Riyadh	Saudi Arabia	24.94			
1861	Riyadh	Saudi Arabia	24.13			
1862	Riyadh	Saudi Arabia	23.77			=AVERAGE(D2:D21)
1863	Riyadh	Saudi Arabia	24.28			

Figure 3 20 Years Moving Average

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

The key considerations were to find out the timeframe for visualize the data. By looking at the Local temperature data for Riyadh city it is from 1843 to 2013, where the global temperature data from 1750 to 2015. Therefore, the analysis will be performed from 1843 to 2013 to cover the range of temperature in both databases (local and global).

More consideration was to adjust the starting point for each chart as follows:

- 7 year moving average starting point: 1849 (1843 + 7) figure 4
- 10-year moving average starting point: 1852 (1843 + 10) figure 5
- 20-year moving average starting point: 1862 (1843 + 20) figure 6

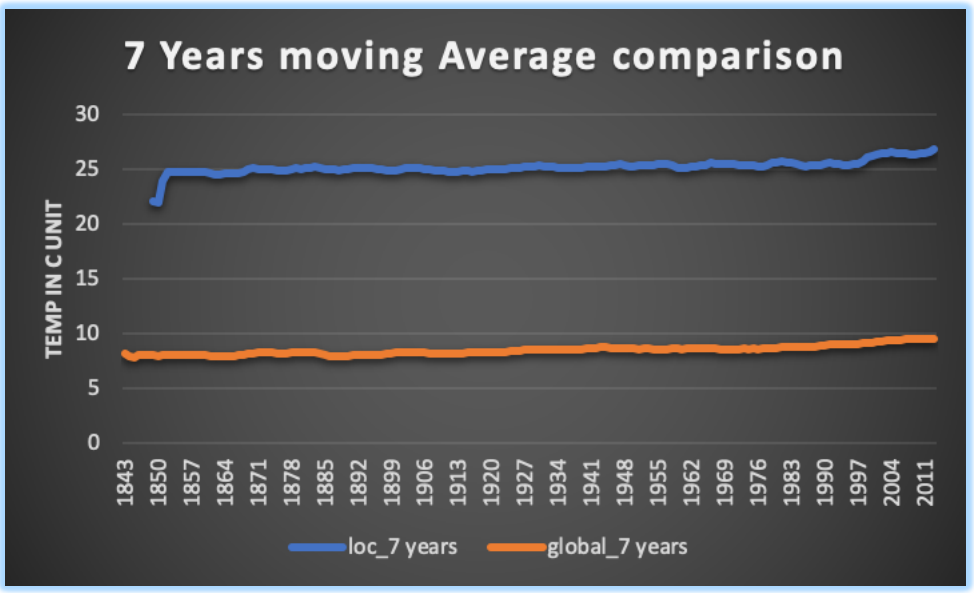

Figure 4 7 years moving average comparison

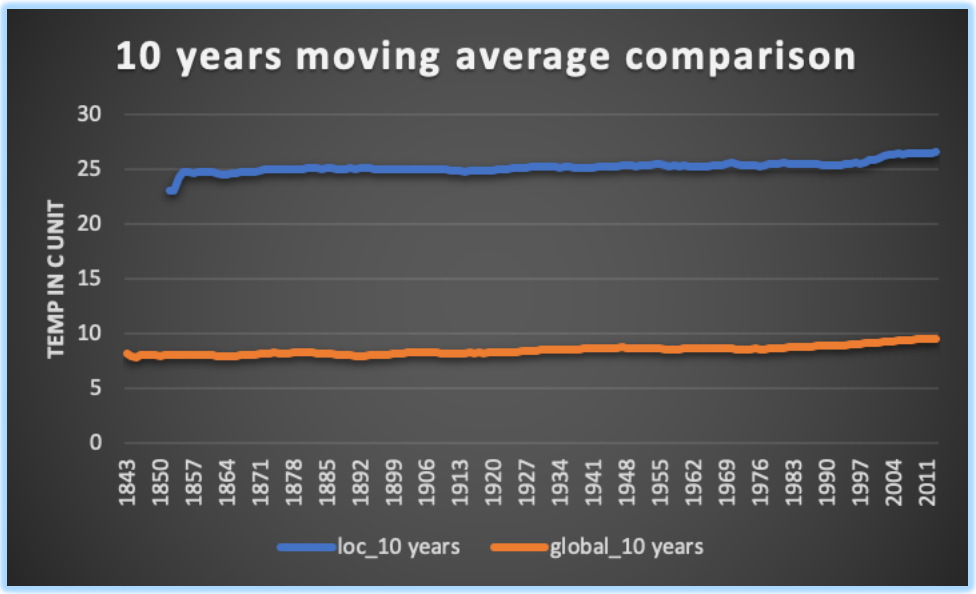

Figure 5 10 years moving average comparison

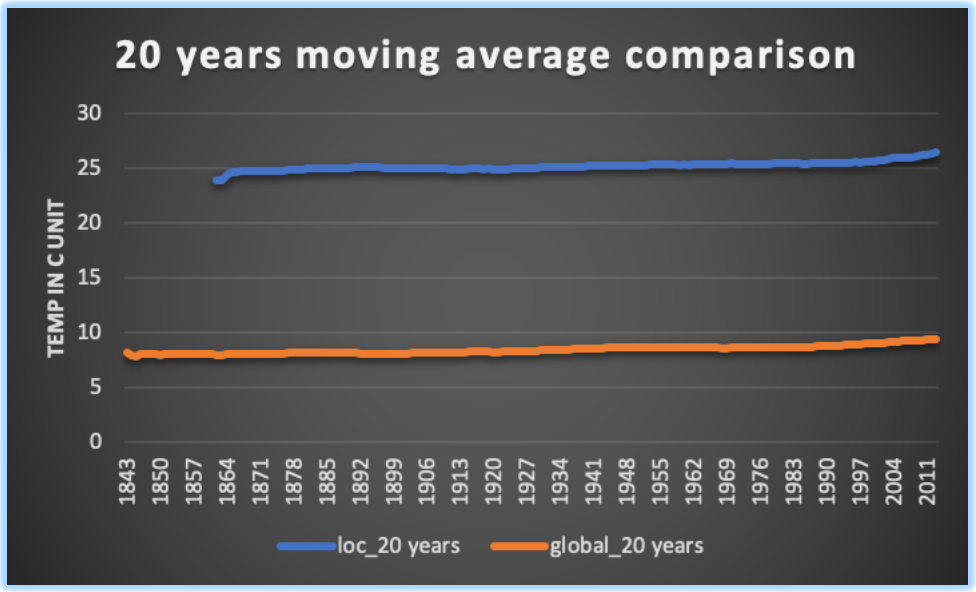

Figure 6 20 years moving average comparison

Observations:

1- Riyadh city is hotter than the global temperature.
2- Riyadh and global temperature are both increasing.
3- The global moving average experiences less fluctuations than the local moving average Riyadh city.
4- The highest local temperature was recorded in 2011 and it was 28c. And the lowest was in 1844 and it was 15c (as shown in figure 7)

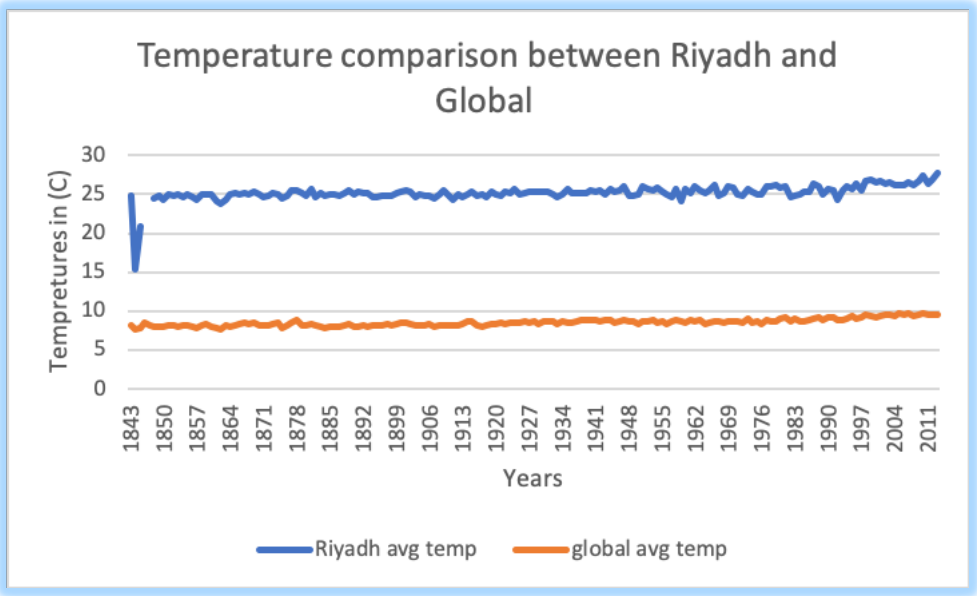

Figure 7 Average Comparison