

EXPLORING WEATHER TRENDS

The following steps were used to prepare the data to be visualized in the chart:

1. CSV File was downloaded using SQL query from the database.
2. Following queries were used :
`SELECT * FROM city_data;`
`SELECT * FROM city_list;`
`SELECT * FROM global_data;`
3. A separate MS-Excel sheet was made for Dallas with year and average temperature for the corresponding year . The sheet was named 'Dallas'.
4. Global average temperature for the years 1820 to 2013 were added in the 'Dallas' sheet.
5. A 10 year moving average was calculated for Dallas average temperature as well as global average temperature.
Eg: Moving average for Dallas between years 1820 to 1829 was calculated using the AVERAGE function of MS-Excel : `AVERAGE(D3:D12)`
The same was then copied in all the other rows. Similarly the moving average was calculated for the global avg temperatures.
6. A line plot was drawn selecting the columns where moving average was calculated.
7. Axis titles were changed for readability.
8. X-axis data was changed to the data in the 'year' column for better readability.

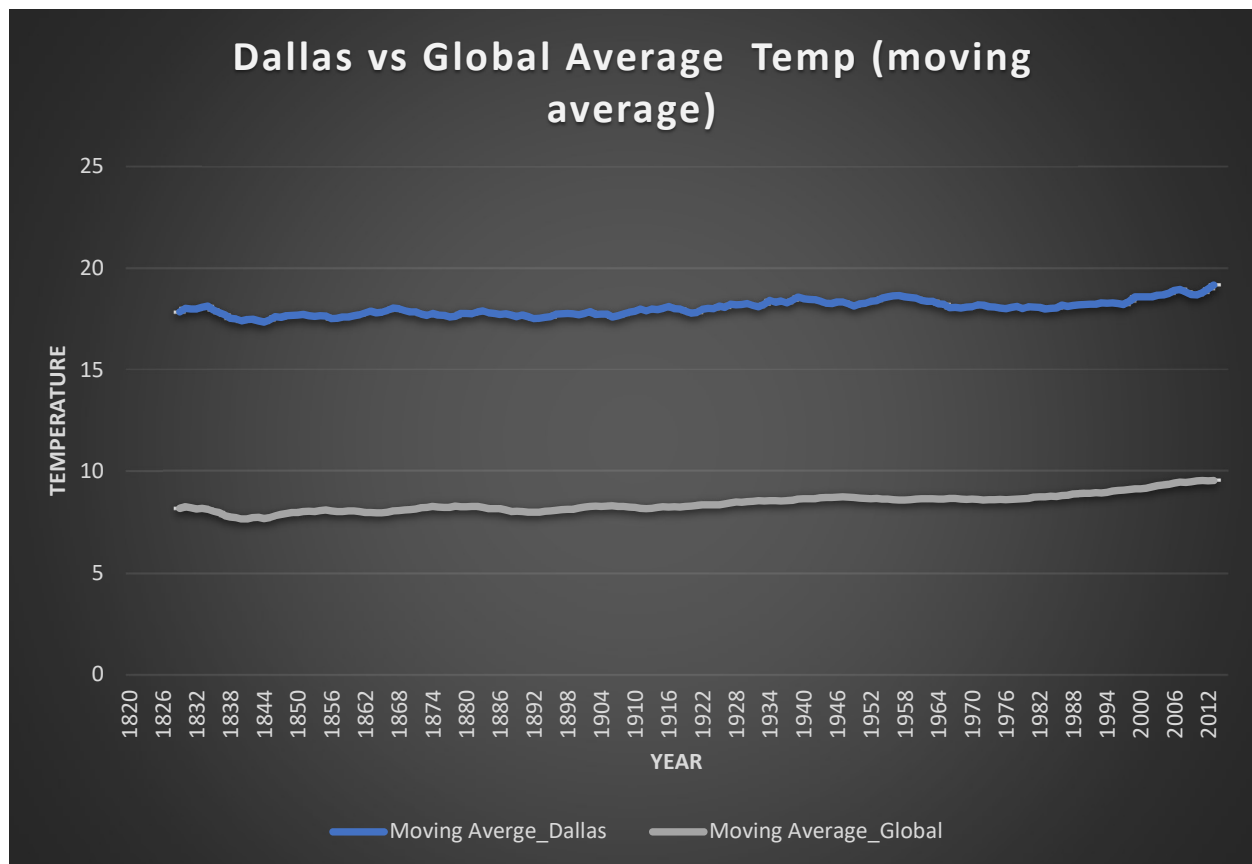


Fig 1. Line plot showing 10 year moving average comparing Dallas and global average temperatures

The following observations can be made from the plot in Fig1 :

- Dallas is on average hotter than the global average by approximately 10 degrees
- The difference in temperature over time is consistent
- The trendline for moving average of temperature for both Dallas and Globally follows a similar direction over the long run. The trendline suggests that average temperature have risen by around 2 degrees between 1820 to 2013.
- We can also see that there's a change in the trendline in the recent decades i.e. 1980 onwards. Here, the slope of the trendline seems to increase which means the rate of increase of average temperature is larger.