# Exploring Weather Trends

## Steps taken to prepare the data to be visualized in the chart

- **Extracting the data:** I wrote a SQL query to extract the data needed from the database provided (SQL). See the query below:

  1. SELECT city.year as cyear, city.city, city.country, city.avg_temp as city_avg_temp, global.year as gyear, global.avg_temp as gavg_temp
  2. FROM city_data city, global_data global
  3. WHERE city.year = global.year
  4. AND city.city = 'Lagos'

- **Opening the CSV:** I used Excel to open the extracted dataset in CSV format (Excel)

- Calculating the moving average: I used the Average function with relative cell references **(=AVERAGE(D26:D32) // 7-year MA)** based on the current year and the 6 previous years starting after before the last missing data and copied down the formula. Likewise for 14-years moving average

- **Creating the line chart:** To compare my city's temperatures with the global temperatures, I plotted a 7-year moving average and 14-year moving average to ensure smoothness of the lines and to make trends more observable (Excel)

- **Visualizing the trends:** My key considerations were the trend lines, the axes values and the year columns from the dataset (Excel)
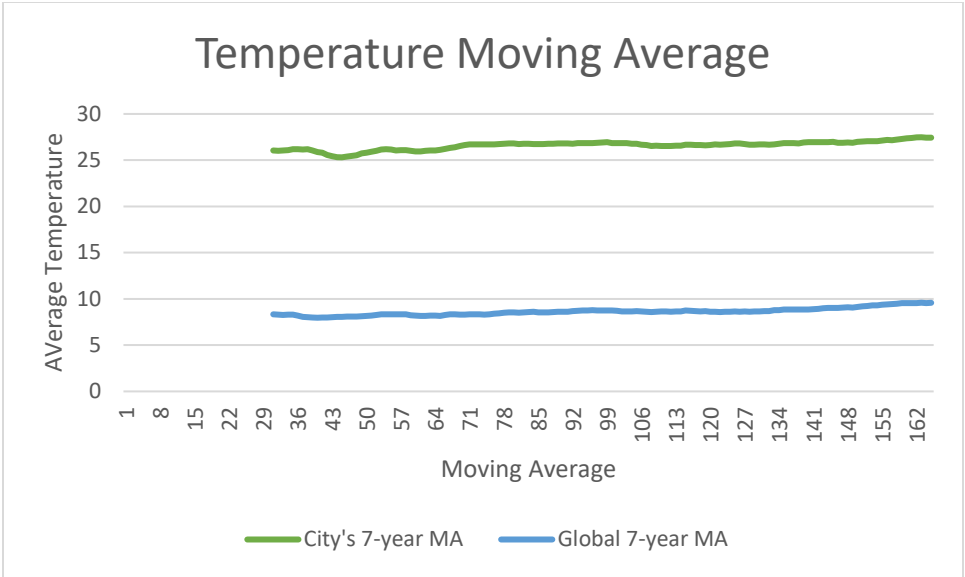
Line chart with local and global temperature trends
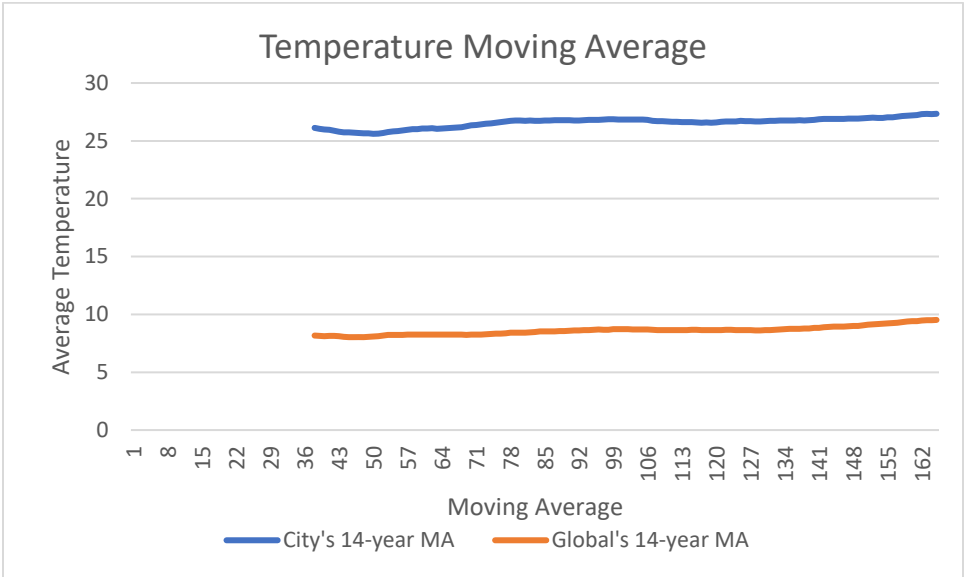


Line chart with local and global temperature trends

## Similarities between world's average temperatures and my city's averages

- Changes in my city's average temperature is relative compare to changes in the global average over time
- The changes the global average is fairly proportional to the changes in my city's average over time (as the global average increases, my city's average also increases and vise-versa)

## Differences between world's average temperatures and my city's averages

- My city is much hotter on average compared to the global average
- The difference between Lagos average and the global average has been consistent

## General Trends

- The world is becoming hotter and this affects local average temperature as well
- The trend has been consistent over the last few hundred years

## Other Findings

- The correlation coefficient of the world's moving average and my city's moving average is 89%
- My city's average temperature is 26.5°C

## References

- SQL query used was learned from Udacity Knowledge- https://knowledge.udacity.com/questions/149707
- Excel formula and techniques for calculating moving average was learned from the classroom- https://classroom.udacity.com/nanodegrees/nd002/parts/93426fc7-0e68-4957-b16b-9fde38776c26/modules/6cfbf770-e84f-4cb7-be34-2ae3e04b42a6/lessons/d551938c-d004-4801-a269-4b8dd784cc3b/concepts/0f213a2e-ab83-42a5-be47-fd52a193c003