# Exploring Weather Trends

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## Overview:

In this project, I have analyzed local temperature of Riyadh, capital city of Saudi Arabia for the period between 1843 to 2013 in accordance with the global temperature data and compared.

## Goals:

1. Extract the data from a database on Udacity portal and export to CSV file.
2. Visualize the data.
3. Observation based on chart.

## Tools Used:

1. SQL
2. Excel
3. Google Sheets

## STEP 1: Extraction of Data

1. To see if city of Riyadh is provided in the given dataset:

```
Select *
        From city_list
        Where city like 'Riyadh'
```

2. I wanted to join both table (Global_data & City_data) together but I need first to change the Avg_temp column name in both table:

   A. **alter table city_data rename column avg_temp to avg_temp_city**
   B. **alter table global_data rename column avg_temp to avg_temp_global**

3. Join the two tables and have the relevant data:

```
Select global_data.year, global_data.avg_temp_global, city_data.avg_temp_city

        From global_data join city_data
```

```
on global_data.year = city_data.year

Where city like 'Riyadh'
```

## STEP 2: Calculate the moving average & Visualizations

The importance of calculating the moving average is smooth out data and make it easier to observe long term trends. Excel was used in this process by calculating the moving average of the first 7 cells using the below function:

**=AVERAGE( C2:C8)**

And continue the same process all the way to the end of the dataset.

- **Visualizations**

I have got the following output:

1. Global Average Temperature V.S Riyadh Average Temperature

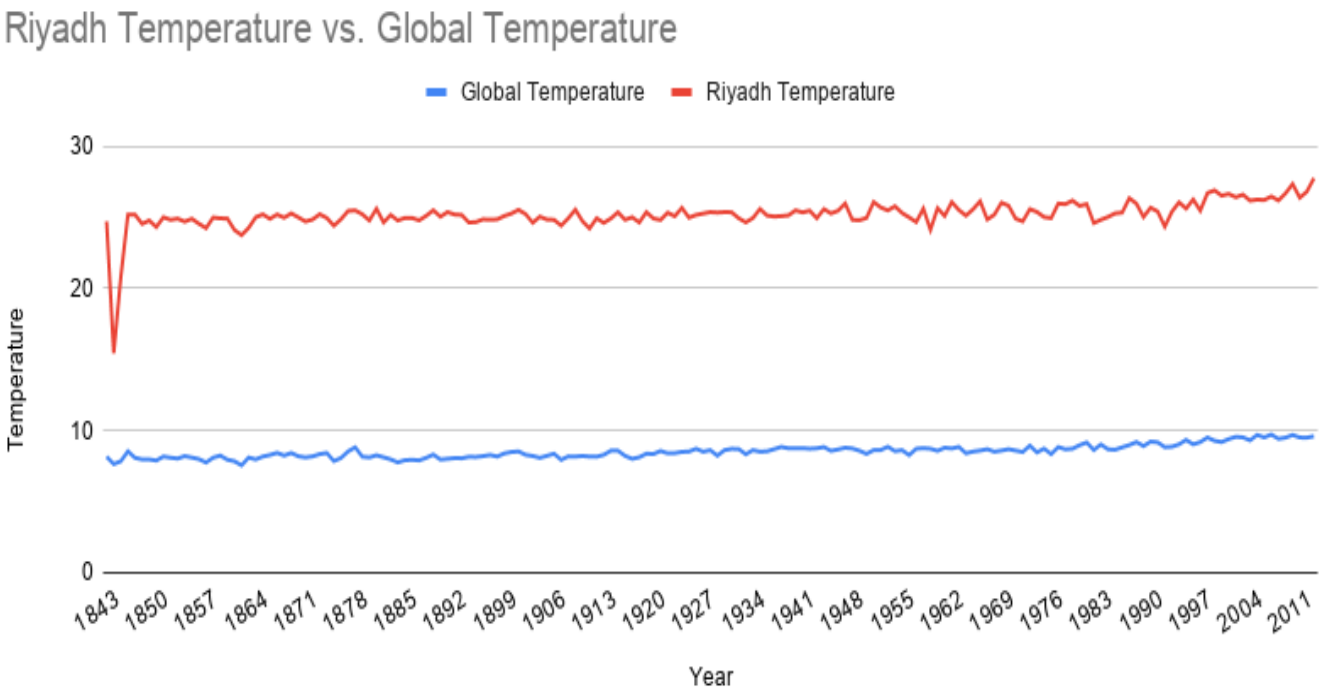


Figure 1 Riyadh Temperature V.S Global Temperature

2. Global Average Temperature V.S Riyadh Average Temperature

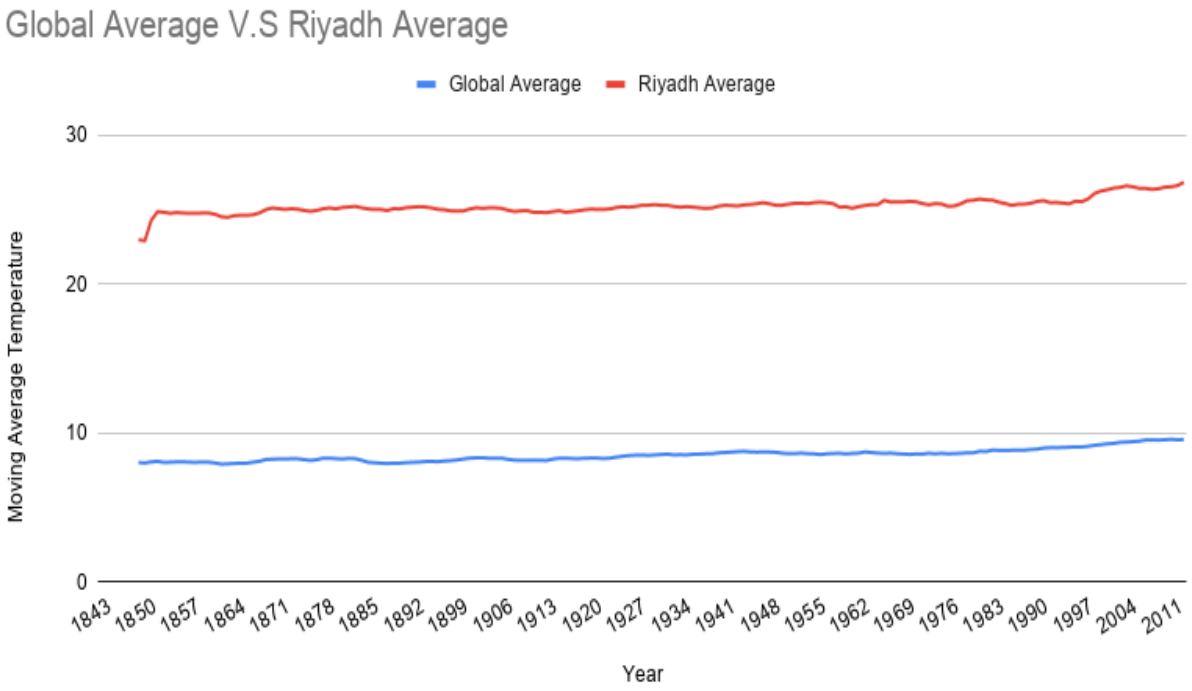


Figure 2 Global Average Temperature V.S Riyadh Average Temperature

## Observations:

I have observed that two factors affects the smoothness of the graph, one is the moving average factor and that can be shown by the above graphs and the second factor is the range of x-axis (Year) .

**Observations from the line chart:**

1. There is a very big difference between the average temperature of Riyadh ang the rest of the world.
2. The global average temperature is on the rise and that may be caused by global warming.
3. Riyadh seems to be hotter than any other place in the world.

4. After checking other cities temperatures and compare to the two above graphs, I found that the regions lie in the MENA countries have greater temperatures as compared to the global average.
5. The moving average method is using to smooth the line chart.