Exploring Weather Trends

1- The Tool I Have used for The First Step is (SQL) and the Query used to Extract the Data is:

For Local ('Riyadh') Data:

```
select year, city,avg_temp from city_data where city ='Riyadh' and year
between'1834'and'2013' order by year
```

For Global data:

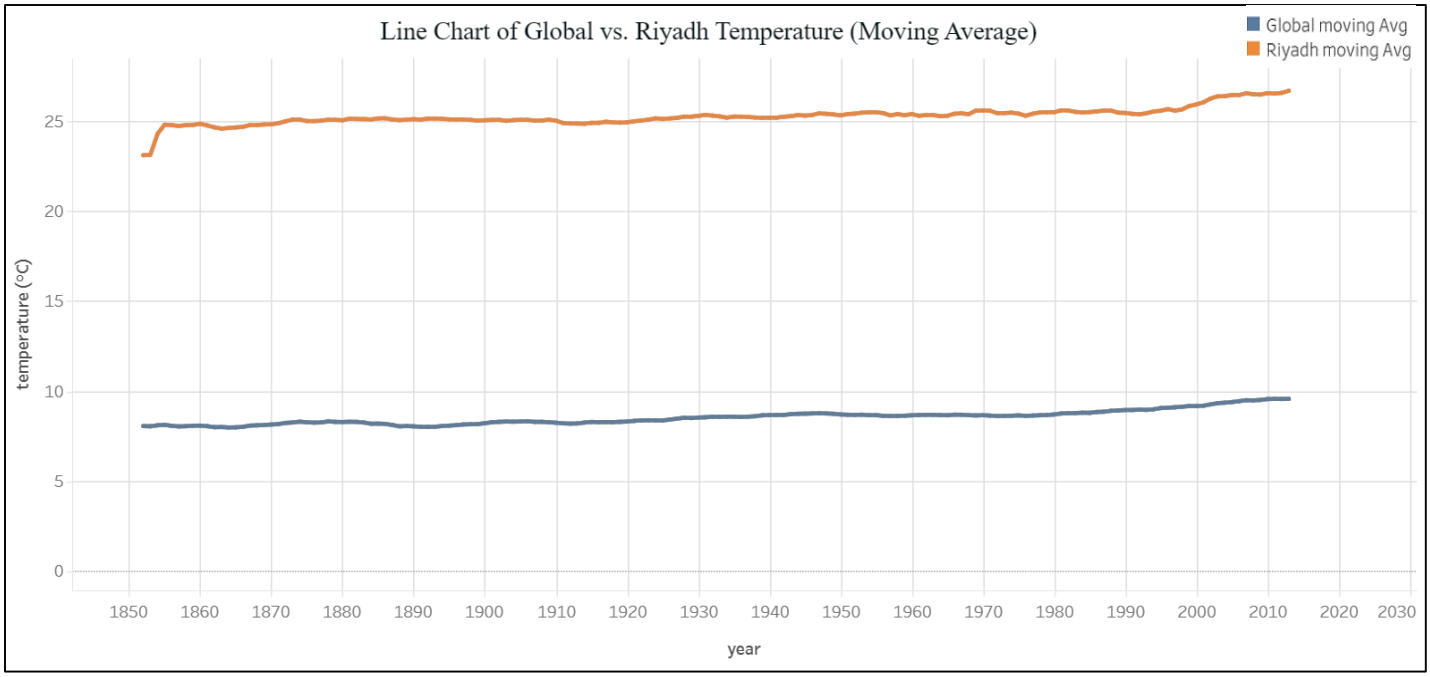
```
select * from global_data where year between'1834'and'2013' order by year
```

2- The Tool I have used in Second Step is (Excel), after Downloading the Output for the Query as (CSV), I opened the File in Excel to calculate the Moving Average.

Note: I noticed that the Local Years Between (1834-2013) and Global Years Between (1750-2015), so I Measured for Global the Years Between (1834-2013) to Measure the Moving Average of an Equal Period.

- The Function used for calculate the Moving Average for (10 Years) for **Global** Average Temperatures is (= AVERAGE (E2:E11)) and The Function for Moving Average for (10 Years) for **Local** (Riyadh) Average Temperatures is (= AVERAGE (C2:C11)).

3- The Tool I have used in Third Step is (Tableau), after calculating the Moving Average in (Excel) and saved, I opened the (Excel) File in (Tableau) and I create a line chart.



Line Chart Shows the Moving Average for (10 years) for **Global** Average Temperatures, and Moving Average for (10 years) for **Local** (Riyadh) Average Temperatures To see the Line Chart in Tableau for More Details:
(https://public.tableau.com/views/movingaverage_16231909813850/MovingAverage?:language=en-US&:retry=yes&:display_count=n&:origin=viz_share_link)

Observations:

- Based on the Line Graph, Global and Local Temperatures Will Rise over the Years.
- Based on the Line Graph, Global and Local Temperatures Have Changed Almost Similarly over the Years and are Getting Hotter.

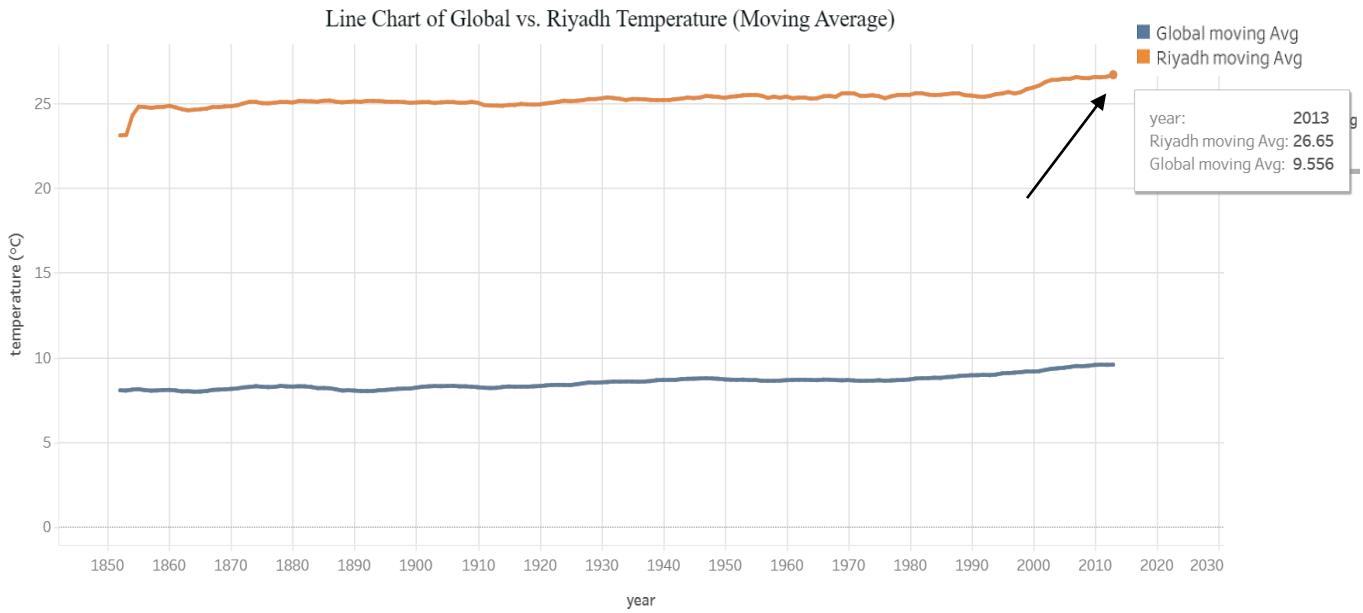
Global and local moving average statistics for (average temperature):

statistics For Moving Average For Riyadh	
Mean	25.23
Median	25.18
Mode	25.09
Standard Deviation	0.49
Sample Variance	0.24
Range	3.58
Minimum	23.07
Maximum	26.65

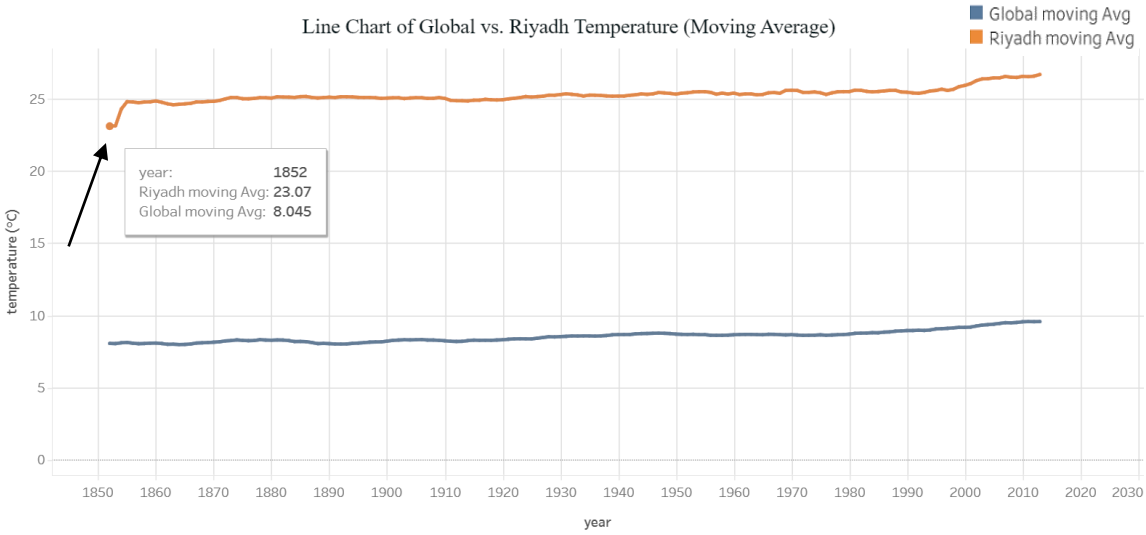
statistics For Moving Average For Global	
Mean	8.52
Median	8.55
Mode	8.29
Standard Deviation	0.40
Sample Variance	0.16
Range	1.59
Minimum	7.97
Maximum	9.56

Statistical Observations:

- The **Mean** for Local- Riyadh - Moving Average is (25.23 C°) was Higher Compared to The **Mean** for Global Moving Average (8.52 C°).
- The **Standard Deviation** for Local- Riyadh - Moving Average is (0.49 C°) was Higher Compared to The **Standard Deviation** for Global Moving Average (0.40C°).
- The **Sample Variance** for Local- Riyadh - Moving Average is (0.24 C°) was Higher Compared to The **Sample Variance** for Global Moving Average (0.16C°).
- The **Range** for Local- Riyadh - Moving Average is (3.58C°) was Higher Compared to The **Range** for Global Moving Average (1.59C°).
- The **Median** for Local- Riyadh - Moving Average is (25.18C°) was Higher Compared to The **Median** for Global Moving Average (8.55C°).



The Highest (**Max**) Temperatures for Local Moving Average is (26.65 C°) and The Highest (**Max**) Temperatures for Global Moving Average is (9.56 C°), and All of them in a (year 2013). This shows the Average Temperatures for Riyadh is Hotter than Average temperatures for World.



The Lowest (**Min**) Temperatures for Local Moving Average is (23.07 C°) and The Lowest (**Min**) Temperatures for Global Moving Average is (8.04 C°). This shows the Average Temperatures for Riyadh is Hotter than Average temperatures for World.