



# EXPLORE WEATHER TRENDS

## PROJECT-1

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## Summary

In this project, we will analyze local and global temperature data and compare the temperature trends of Seattle city to overall global temperature trends.

## Extracting the Data:

Following commands were used to extract the data from tables using SQL query.

DATA	SQL query
<b>to extract the city from the table city_list.</b>	<pre>SELECT* FROM city_list WHERE city LIKE 'Seattle' AND country = 'United States';</pre>
<b>to extract the average temperatures of the city from the table city_data.</b>	<pre>SELECT * FROM city_data WHERE city = 'Seattle' AND country = 'United States'</pre>
<b>to extract the average global temperature from the table global_data.</b>	<pre>SELECT * FROM global_data</pre>

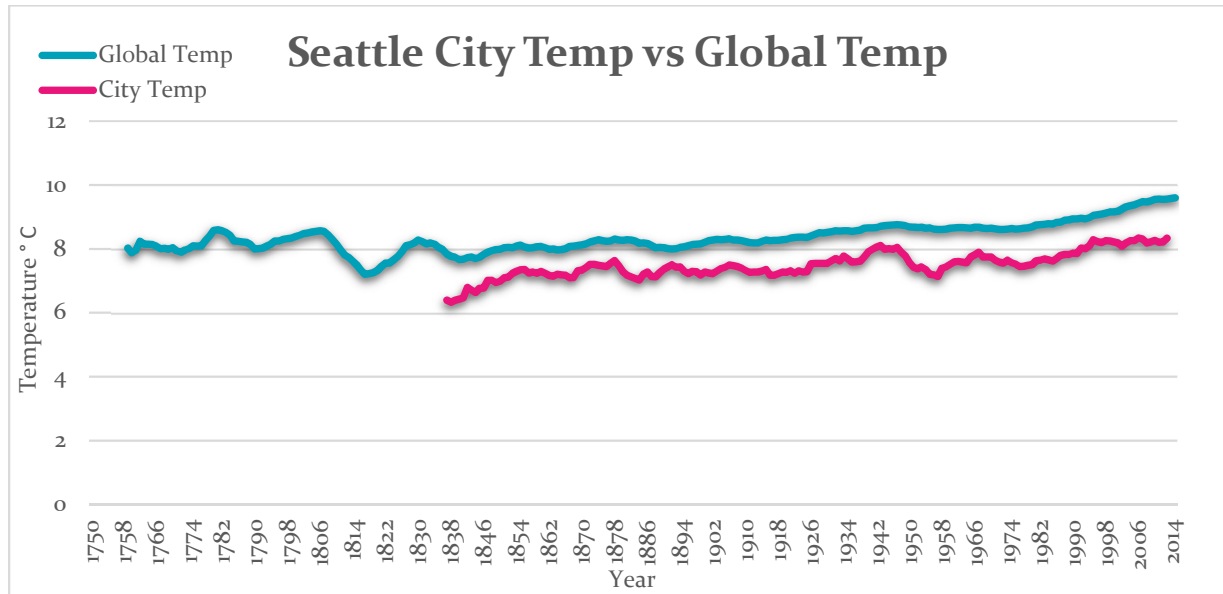
All these files are downloaded as CSV.

## Data Analysis:

1. Microsoft Excel is used for analyzing the CSV file.
2. Moving Average is calculated using Excel command.
3. 10 year moving average is used to smooth out data in the csv file city\_data and global\_data. 10 year moving average is considered because make trends more clear and shows less fluctuations in data.  
Sample Formula for 10 year Moving Average =AVERAGE (D2:D11)

## LINE CHART:

A line chart is created using excel which compares the Seattle city's temperatures with the global temperatures.



## OBSERVATIONS:

Following are the observations from the line chart

1. City's average temperature is on lesser side than global average temperature. Indicating that Seattle is colder than the global temperature.
2. City's average temperature is rising over a period of time. From the line chart it indicates a start point of 6.4 and by 2013 it reached an average temp of 8.3
3. Global temperature varies between 8.03 and 9.6.
4. Global temperature trend in the chart tells us that world is getting hotter.
5. According to the graph, the difference between global temperature and Seattle temperature is consistent over time, even though both trends seems to have up and down in early years.

## Correlation Coefficient

The coefficient of correlation for Seattle city temp and Global Temperature is  $\sim .89$  (calculated using excel formulae). This indicates a positive relation between the two variables.

## CONCLUSION

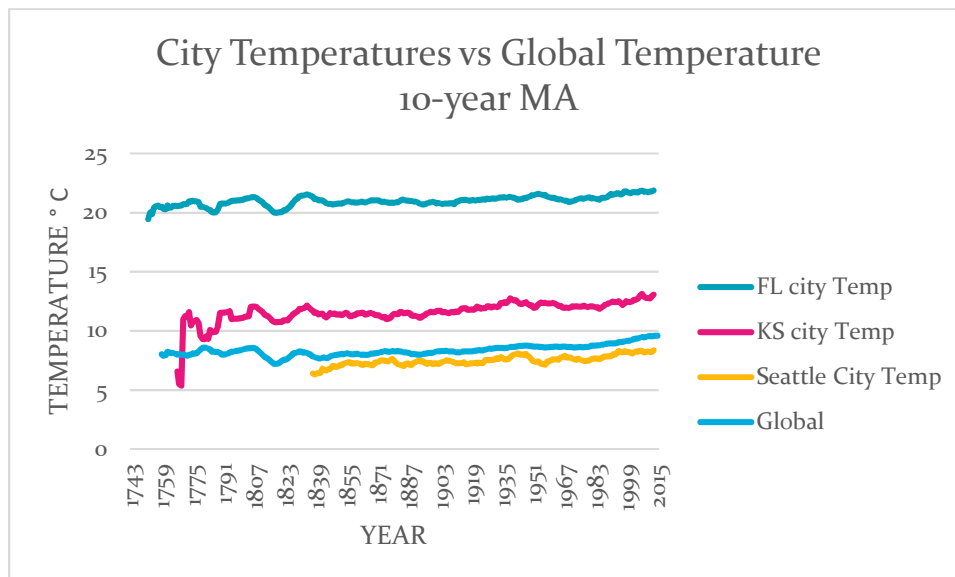
Even though Seattle city Temperature is lower than Global Temperature, city is getting hotter in due course of time.

## Considering More Cities in United States.

In order to explore the weather trends across the United States from North to South, we can include Kansas City (Midwestern State), Jacksonville (Florida) (Southeastern State) along with Seattle (North western State).

Temperature changes over Time (Based on 10 years moving average)

LINE CHART showing Different City Temperatures against Global Temperature.



## OBSERVATIONS

- Southern states are on the warmer side when compared to global temperature.
- Globally there is an increase of temperature by one or two degrees Celsius than previous years.
- Northern states are on the cooler side when compared to the global temperature.

## CONCLUSION

The average global temperature is increasing and the trend is accelerating.