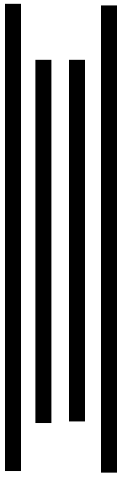
Udacity Data Analyst Project 01:

Explore Weather Trends



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Introduction

One of the hottest topics that has been discussed widely from a decade is global warming. Today we are analyzing the data by comparing the city vs global time series data to see whether global warming has caused overall temperature rises in city level(city near me) vs global level.

Tools

To explore data and visualize data to reach into the conclusion various tools has been utilized.

- Data Extraction: - SQL
- Data preparation and Visualization: - Excel

Methods

Various method has been followed during the whole process to find the impact of global warming on temperature.

- Data Extraction
- Data Preparation
- Visualization

Now, let's dive deeper into methods.

- **Data Extraction** : To extract the data from the specific table of the database, I have used SQL. Below is the SQL code that extract the Year, Country, City Name, City Average Temperature and Global Average temperature based on the year.

----------SQL CODE----------

```
WITH cte as(
select CD.* From City_Data as CD
inner join city_list as cl
on cl.country= cd.country
and cl.city= cd.city
where cl.country like '%United States%'
and cl.city like '%Los Angeles%')
SELECT GD.Year,CTE.CITY,CTE.Country,CTE.avg_temp as
City_Average,GD.avg_temp as Global_Average
fROM GLOBAL_DATA as GD
inner join CTE
on CTE.Year= GD.Year
```

----------End SQL CODE----------

- **Data Preparation: -** In order to visualize the data, first we need to make sure that data that has been extracted are the required piece if not we need to manipulate the data to make sure it accommodate the requirements. Since, we have a data set that contains a record from so many year, therefore, we need to have a moving average chart so that we can clearly determine the trend. For this task, I have calculated the moving average of every 10th year for city and global level data so that we can clearly visualize the data.
- **Visualization : -** After preparing the data in earlier step, I export all the data to make a line chart. First, I made a line chart to perform comparison between City average and Global average.

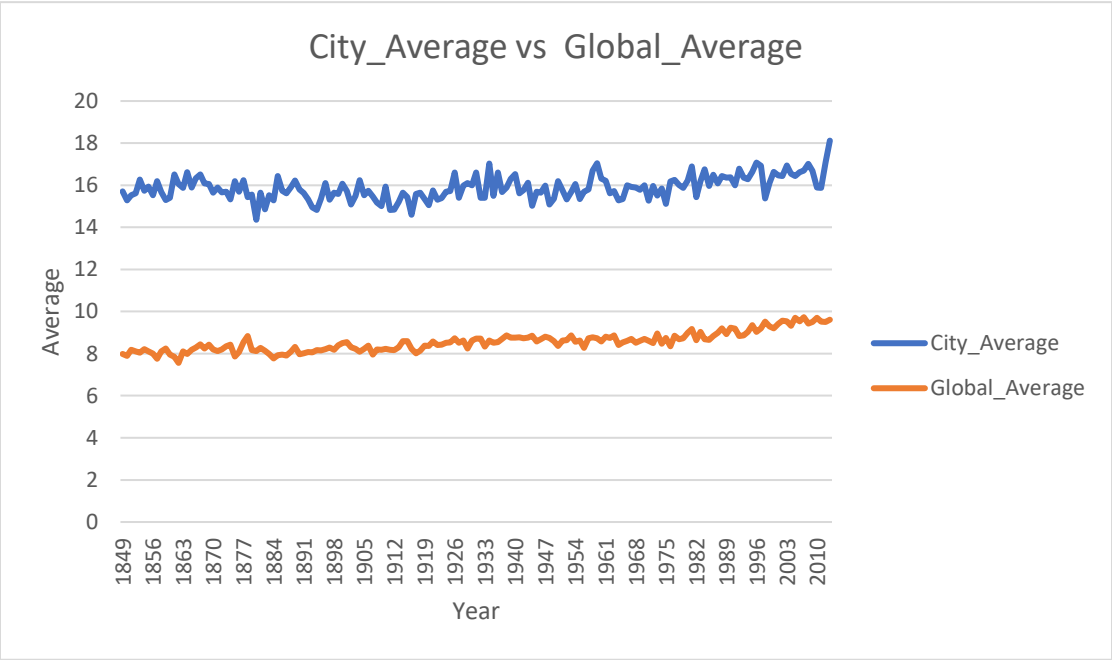

Fig 1: - City Average vs Global Average

Fig 1 is used to demonstrate how temperature has been changing overtime in LA and globally. Since we can see there is change in temperature so to find out the clear trend I used the moving average for 10th year.

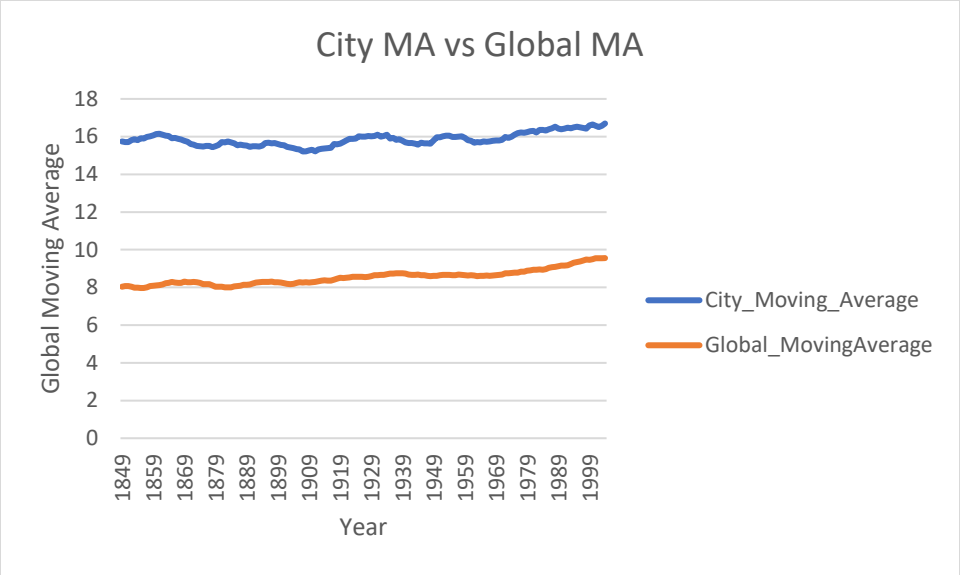

Fig 2:- City Moving average vs Global Moving Average

Looking at the figure 2 we can distinctly see that average temperature has been increasing in city level and in global level as well. Also, we can see the distinct difference that how city moving average is so higher than the global. Just to make sure that we can see more in-depth picture, I have created separate single moving average chart for city (Fig 3) and global (fig 4)

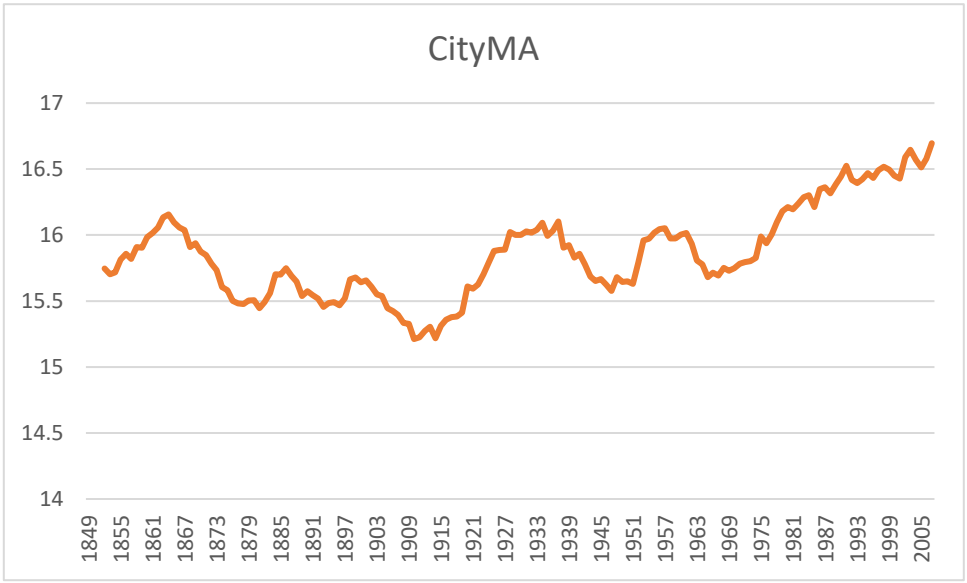

Fig 3: - City Moving Average

Looking at the chart we can clearly see the trend of increasing temperature in Los Angeles over period of time.

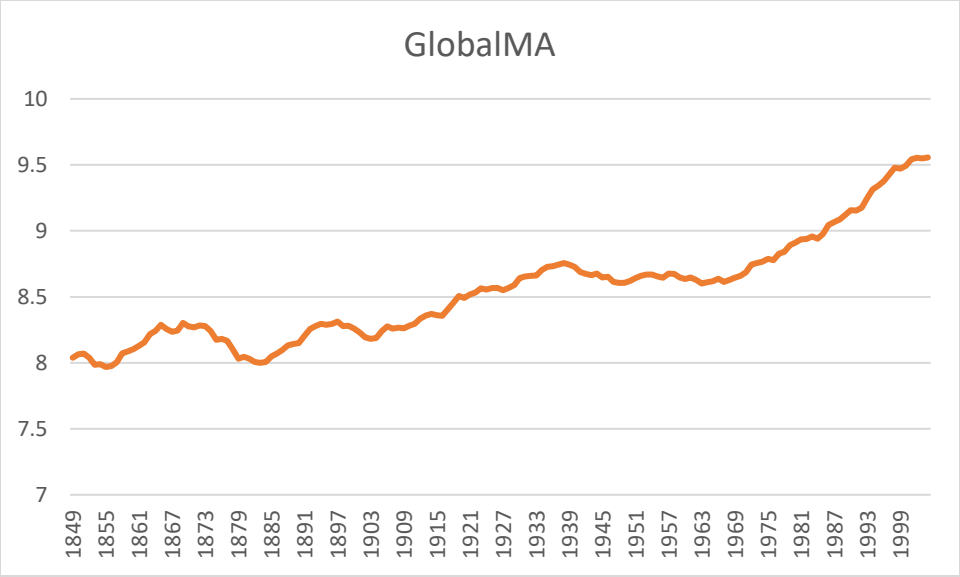

Fig 4: - Global Moving Average

Looking at the fig 4 also we can say that global average temperature is increasing as well.

Conclusions

Looking at the line graph of average temperature and moving average temperature of Los Angeles and Global we can say that temperature are increasing rapidly. Also, Los Angeles temperature is increasing rapidly in compare to the global level. This clearly proves that global warming is playing an important role in changing of temperature and world is getting hotter over time.