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Udacity Nanodegree Project 01
Explore Weather Trends

Overview:

I have been provided the temperature database from where I have extracted the data related to global temperature and my city temperature. I analyzed the temperature around the global with the city I live by extracting the data from the database.

Goals :

1. Selecting city and country from the database " city_list ".
2. Extracting the City level data from the database " city_data " and export to CSV file.
3. Extracting the global temperature from the database " global_data " and export to CSV file.

Tools Used :

1. SQL : To extract the data from the database
2. MS Excel :
   - ⇒ To calculate Moving Averages of global and city temperatures
   - ⇒ To plot Line Chart

STEP 1 : Data extraction from the database

1. To check which countries and cities are available in the database.

```
SELECT *
```

```
FROM city_data WHERE Country='United States'
and city ='Baltimore'
```

2. To select data from the City database

```
SELECT avg_temp,year,city,country
FROM city_data
WHERE city='Baltimore’
```

3. I observed there is a column called avg_temp which is same in both city_data and global_data. I want to change the schema so I joined both the tables and changed the column names in both the databases.

```
ALTER TABLE city_data
RENAME COLUMN avg_temp to CIT;
ALTER TABLE global_data
RENAME COLUMN avg_temp to GLB;
```

4. I have joined the two tables using JOIN (INNER JOIN) as avg_temp is same in both the tables.

```
SELECT city_data.CIT, global_data.GLB, global_data.year
FROM global_data
JOIN city_data
ON global_data.year = City_data.year
WHERE city='Baltimore' and Country='United States'
```

STEP 2 : Moving Average

In order to smooth out the lines, I have done a 10 year moving average using command AVERAGE (C2:C11).

Step 3. : Data Visualizations

Finally, I have created a line chart using Excel of Global Average Temperature and Baltimore Average Temperature for 10 year MA as shown in Figure 1. Also, 10 year moving average for Global Temperature as shown in Figure 2.

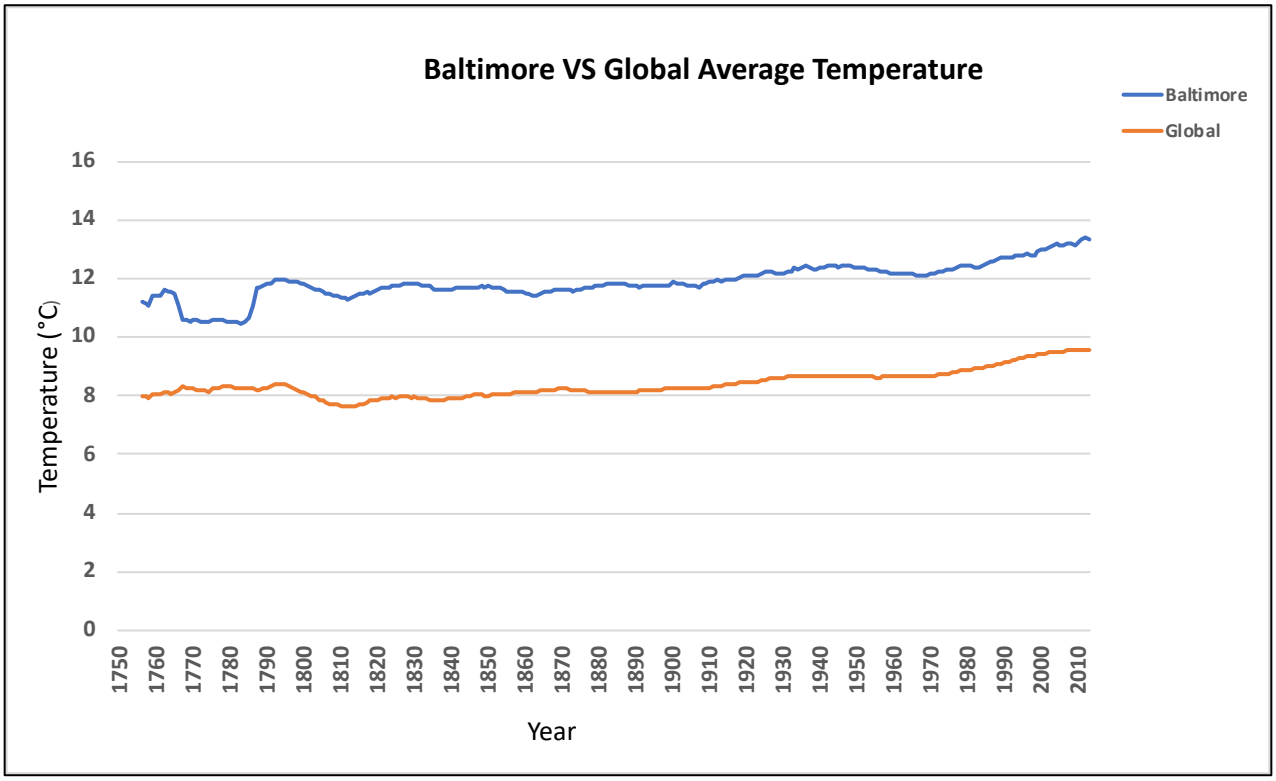

Figure 1 : Global vs Baltimore Temperature Range (10 year moving average)

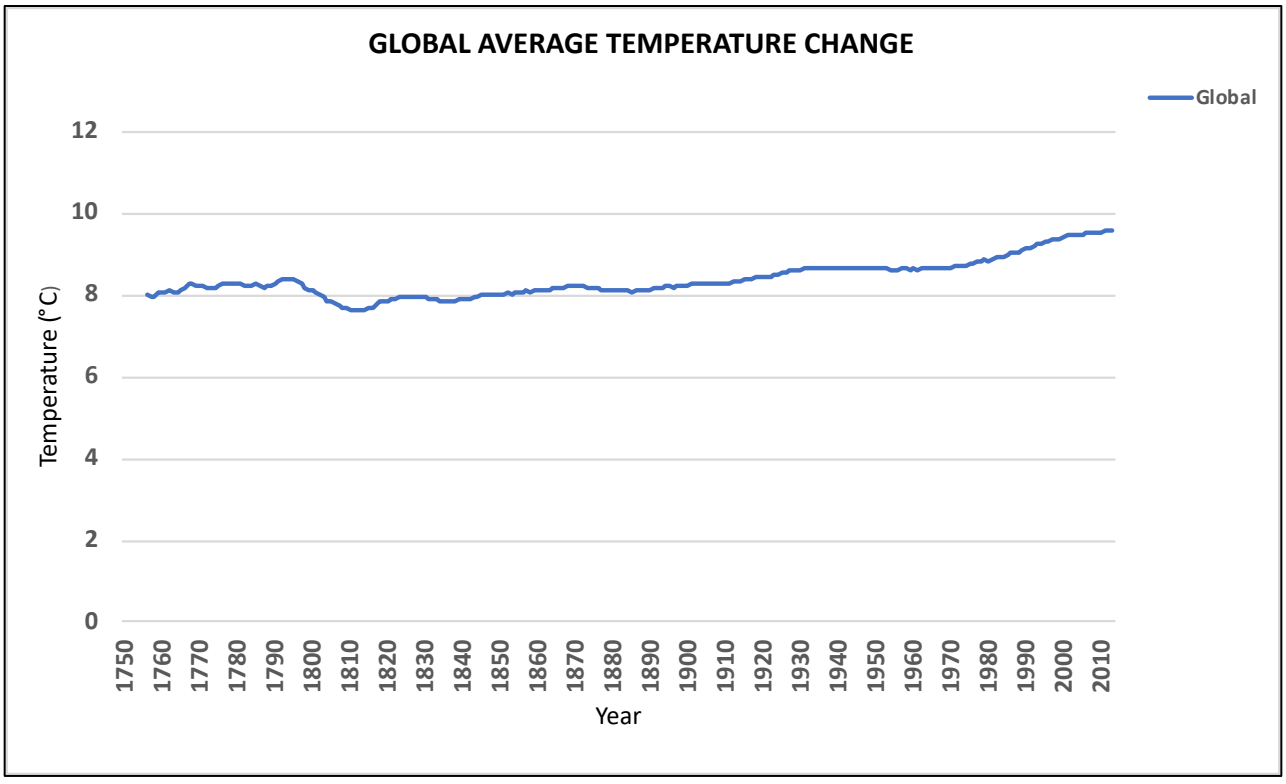

Figure 2 : Global Temperature Range (10 year moving average)

Observations :

1. Global Average Temperature for 10year MA varies between 7.5°C and 8.5°C
2. Baltimore city Average Temperature varies between 10.4°C and 13.4°C
3. The differences in the temperature between the two are not very significant. As observed, Baltimore city has slightly higher temperature compared to the global average temperature.
4. From the above graph, we notice a dip in curve for Baltimore city during 1767 and 1785 as the temperature decreased. In the last few 100 years, the global and city temperatures have been rising due to climatic changes.
5. The change of the climate between the Baltimore city and globe is slightly small, and both of them are rising.

Conclusion:

The final conclusion of this project is, Baltimore is slightly hotter than the global temperature and the global temperatures are rising over the years which supports the case of “Climate change”.