Explore Weather Trends

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In this Data project, I have decided to extract and analyse the 2 datasets 'city_data' and 'global_data'. My main purpose is to compare the local temperature of Shanghai (China) to the global temperature and find out the temperature trends. I used the SQL Server database from Udacity portal to extract and manipulate the datasets and created data visualisation on Microsoft Excel.

Approach

1. To extract the data from SQL Server database and then export the finalised table to a CSV file
2. Use Microsoft Excel to calculate moving averages and create data visualisation from the extracted data
3. Make Observations based on the chart

Data Extraction

To make my analysis easier, I first created a query to find out if the city 'Shanghai' is available or not in the 'city_list' dataset.

```
SELECT *
FROM city_list
WHERE city = 'Shanghai'
```

Rather than extracting the two datasets to separate CSV files, I decided to join the two tables and export it to only one CSV file. During the process, I found out that global_data and city_data both have the same variable 'avg_temp'. Therefore, I renamed the two variables.

```
ALTER TABLE global_data
RENAME COLUMN avg_temp to global_avg_temp;

ALTER TABLE city_data
RENAME COLUMN avg_temp to local_avg_temp;
```

1. After renaming the variables, I joined the two tables accordingly.

```
6
7    SELECT global.year,
8    global_avg_temp,
9    local_avg_temp
10   FROM global_data AS global
11   INNER JOIN city_data AS local
12   ON global.year = local.year
13   WHERE city = 'Shanghai';
```

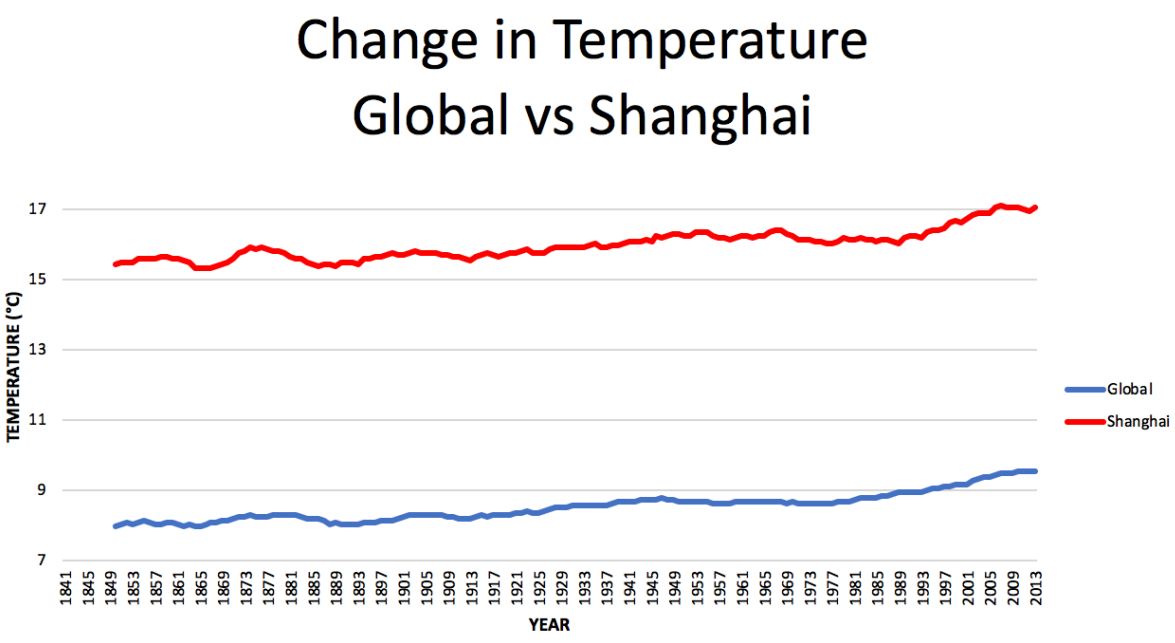
The code was successful, and I was given the option to download the table in a CSV file.

Excel Code for Moving Averages

In order to analyse the temperature trends, I calculated the moving averages and I used a 10-year moving average to smooth out the data.

```
=AVERAGE(B2:B11)
```

Line Chart for Change in Temperature: Global vs Shanghai



Observation

- According to the line chart, the average global temperature is between 7.97 to 9.56 Degree Celsius, however, the average temperature for Shanghai is between 15.32 to 17.11 Degree Celsius.

- Both average temperature trends have been consistent

- Temperature started to gradually increase at the same time since 1977.

- Between the years 1840 and 2010, the average global temperature increased by 2 Degree Celsius

- The average temperature for Shanghai increased by 2 Degree Celsius as well between 1840 and 2010

- Temperature is increasing over time which could be because of climate change

- When comparing the two different temperature trends, Shanghai is certainly hotter than the average global temperature.

Conclusion

According to my analysis it is shown that the average global temperature is increasing gradually over time and the world is getting hotter which signifies climate change