EXPLORE WEATHER TRENDS

Project: Explore Weather trends

Lagos, Nigeria

OVERVIEW

The temperature dataset was provided by Udacity via the workspace. Using the data provided, I created a visualization and a write-up describing the similarities and differences between global temperature trends and temperature trends in the city I currently live.

TOOLS USED:

1. SQL: To query and extract the data from the database
2. PYTHON:
   - Pandas & numpy:
     - For data cleaning
     - To calculate the moving averages of global and city temperatures
   - Matplotlib:
     - For visualizing the data

Data Querying

1. To check which countries and cities are available in the database.
   ```
   SELECT *
       FROM city_list
       WHERE city = 'Lagos';
   ```

2. To extract the city-level data
   ```
   SELECT *
       FROM city_data
       WHERE city = 'Lagos';
   ```
   File saved as city.csv

3. To extract the global temperature data while also Joining that of the city to it
   ```
   SELECT g.year, g.avg_temp global_temp,
               c.avg_temp city_temp
     FROM global_data g
     JOIN city_data c
       ON g.year = c.year
               WHERE city = 'Lagos';
   ```

   File saved as city_global.csv

Data Cleaning

Empty rows were found in the city_temp column, hence all the rows with null values were dropped using pandas

```python
df1_clean = df1.dropna()
```

MOVING AVERAGES (MA)

>> This was calculated so as to smoothen the data

>> I have done 10 year Moving Average to get the smooth line chart.
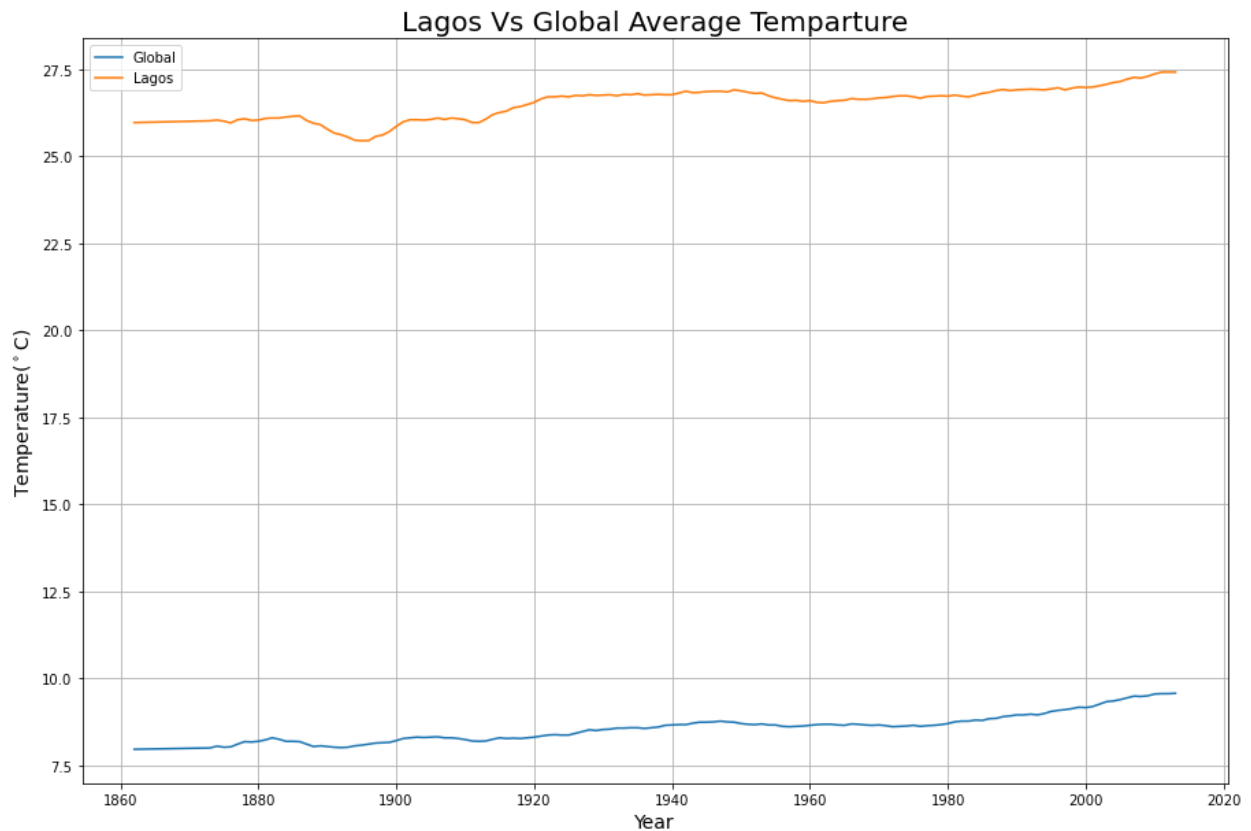
>> Numpy and padas were used in calculating MA.

```python
Moving Average (MA) Calculation

df1_clean
df1_clean['global_MA_10'] = np.round(df1_clean.iloc[:,1].rolling(window=10).mean(),2)
df1_clean['city_MA_10'] = np.round(df1_clean.iloc[:,2].rolling(window=10).mean(),2)

                                                                        Python
```
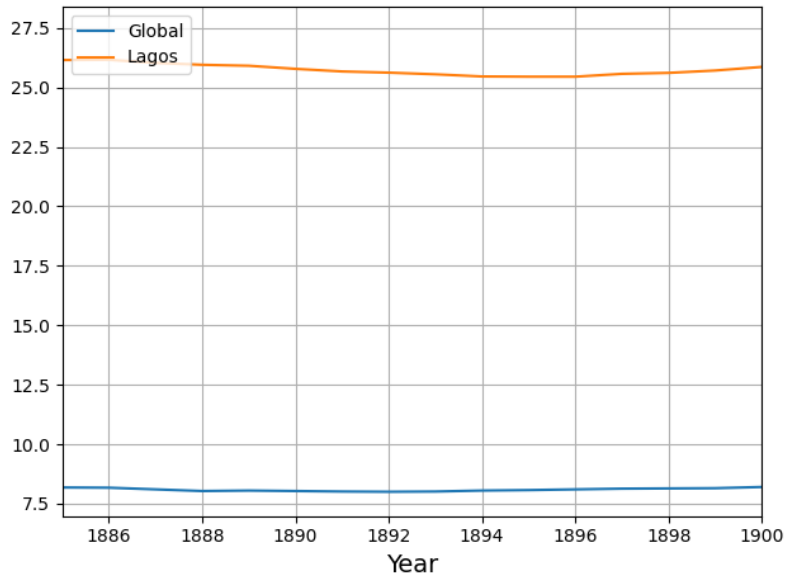
DATA VISUALIZATION

A line chart was used since we are tracking temperature changes over periods of time (in this case year).

Lagos Vs Global Average Temparture

OBSERVATIONS

1. The Global Average Temperature varies between 7.95℃ to 9.56℃
2. The city of Lagos's Average Temperature varies between 25.45℃ to 27.42℃
3. From the graph, we can tell Lagos is hotter than the global temperature

4. The above graph zooms in more into a particular period, and we can tell Lagos experienced its lowest temperature towards the end of the 19th century (between 1894 to 1896)

5. I observed the temperature of both global and Lagos average temperatures are ups and downs during the early years, However, between1986 and 2013 both the temperatures have continuously increased, with 2013 recording the highest temperature for both in 154 years!!!