PROJECT 1: EXPLORING WEATHER TRENDS

1. The datasets were extracted and downloaded from Schema Database using SQL query. Here are the codes used for the extraction.

   i. For city_data:

```
SELECT year, city, avg_temp
FROM city_data
WHERE year BETWEEN 1849 AND 2013
    AND city = 'Abuja';
```

   ii. For global_data:

```
SELECT *
FROM global_data;
```

2. Microsoft Excel was used to plot all the graphs and calculations in this study.

Descriptive Statistics

	Temperature ^{0}C
Mean global temp	8.36
Min global temp	7.11
Max global temp	9.61
Mean Abuja temp	26.13
Min Abuja temp	24.94
Max Abuja temp	27.16

The mean global temperature is 8.36 ^{0}C, its minimum and maximum temperature are 7.11^{0}C and 9.61 ^{0}C respectively. While the mean Abuja temperature is 26.13 ^{0}C and its associated minimum and maximum temperature are 24.94^{0}C and 27.16 ^{0}C respectively. Hence, it shows that Abuja temperature is hotter than the global temperature.

Plots

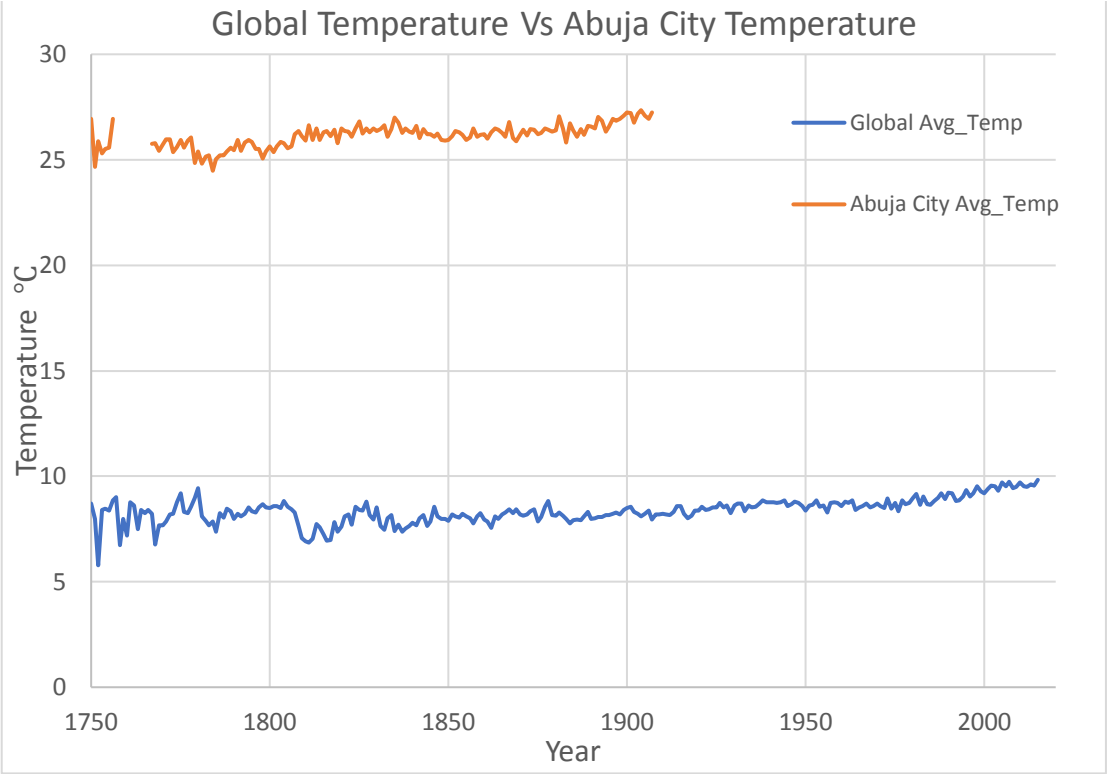

Fig. 1. Raw plot of Global temperature and Abuja City temperature.

From fig. 1, For these long-term trends to be meaningful and observable, we need to calculate their Moving Average (MA) in order to smooth out the volatility in the trends.

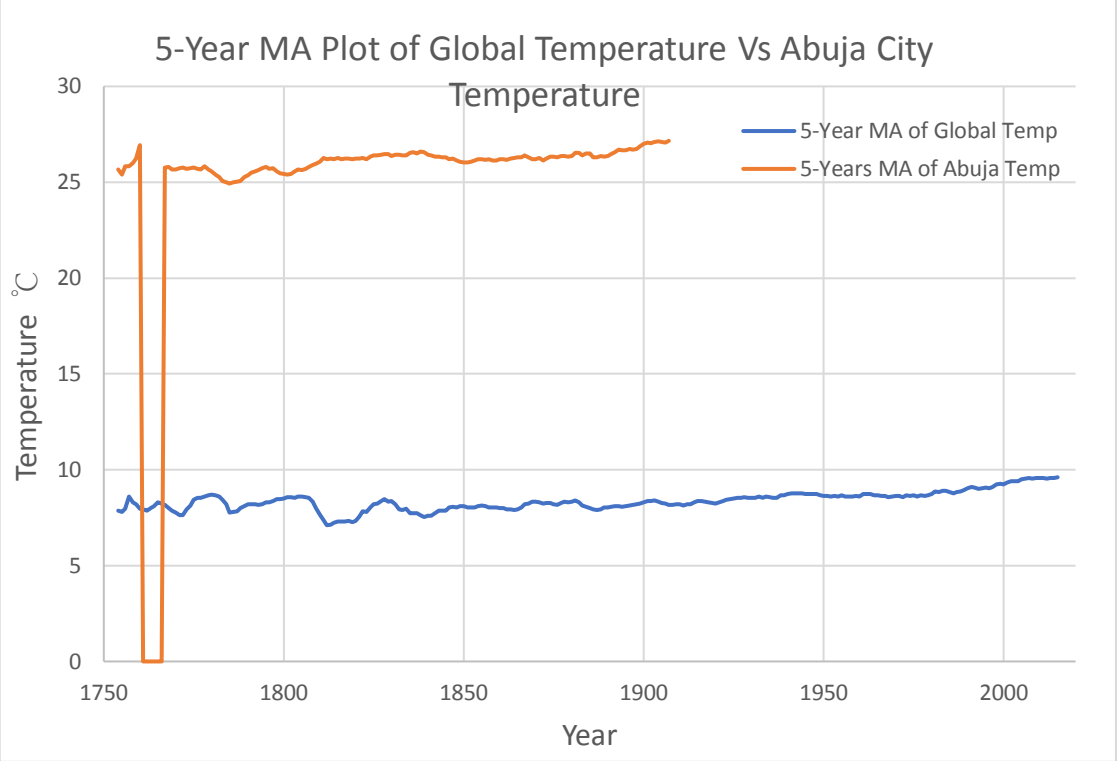

Fig. 2: 5-Year MA plot of Global temperature and Abuja City temperature.

i. From the fig. 2, we can see that the temperature of Abuja city was at its peak around the year 1760 with temperature of about 25 ^{0}C, also, there is a sharp drop in temperature around 1765-1766 which was as a result of the missing values we had in our dataset. But, from around 1809 – 2013, the temperature maintained a constant trend.

ii. The global temperature dropped at about 7 ^{0}C around 1819, from there on, it continued in a uniform trend up to 2015 with temperature of about 8 -9 ^{0}C.

iii. Also, from fig. 2, we can see that the average global temperature is around 8^{0}C.

iv. Finally, the average Abuja temperature is around 26^{0}C.