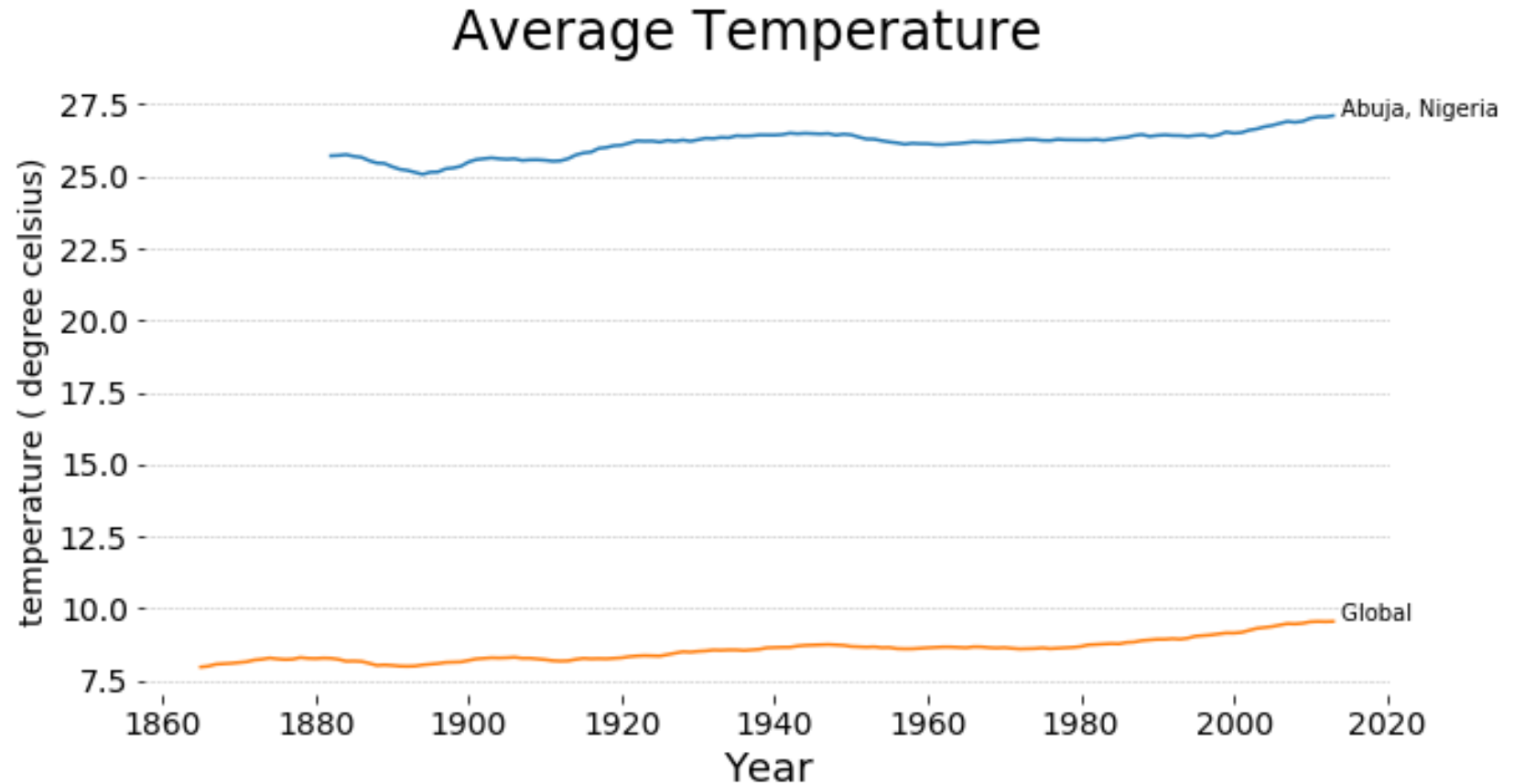


Time plot for global and city (Abuja) temperature



Observations

1. On average, the temperature of Abuja the capital city of Nigeria was more than the global average and this was consistent from the start to the end of the plot.
2. The continued increase of the global trend shows that the world is getting warmer. This shows that global warming is not a myth.
3. Although Abuja consistently had an average temperature higher than the global average, its trend line had almost the same shape as that of the global average. This implies that an increase or decrease in global temperature would also reflect in Abuja at the same time.
4. The only significant drop in Global temperature happened between 1880 and 1890.
 - There is a strong positive correlation of 0.90 between global and city average temperature.

STEPS

1. I wrangled the data from the database using the following query (and downloaded the result to my PC):

```
SELECT city_data.year, city_data.avg_temp city_avg_temp, global_data.avg_temp global_avg_temp  
  
FROM city_data  
  
JOIN global_data  
  
ON city_data.year= global_data.year  
  
WHERE city = 'Abuja'
```

2. I loaded the data into Jupyter Notebook and did the following

```
# import packages
import pandas as pd
import matplotlib.pyplot as plt

#read the data
data = pd.read_csv('ave_temp.csv', index_col='year')

data['city_MA'] = data.rolling(window=10)['city_avg_temp'].mean()      # Abuja ten years moving average
data['global_MA'] = data.rolling(window=10)['global_avg_temp'].mean() # Global ten years moving average
```

Plotting graph

```
fig, ax = plt.subplots(1, 1, figsize=(10, 5))

fig.suptitle("Average Temperature",fontsize=24)
plt.plot(data['city_MA'])
plt.plot(data['global_MA'])

ax.spines['top'].set_visible(False)
ax.spines['bottom'].set_visible(False)
ax.spines['right'].set_visible(False)
ax.spines['left'].set_visible(False)

plt.xlabel("Year",fontsize=18)
plt.ylabel("temperature ( degree celsius)", fontsize=14)

plt.xticks(fontsize=14)
plt.yticks(fontsize=14)

plt.text(2013, 27.104, ' Abuja, Nigeria')
plt.text(2013, 9.556, ' Global')

plt.grid(True, 'major', 'y', ls='--', lw=.5, c='k', alpha=.3)
plt.savefig('ma.png')

plt.show()
```

- I used Python's `.rolling()` function and `.mean()` method to calculate the 10 year moving average for both city and global values as shown in previous slides.
- A key consideration in choosing how to visualize a time series data is the graphs ability to not distort but clearly show trends over a long period of time. I resolved to use line plot as it is the best fit for this type of data.