

PROJECT TITLE: Exploring Weather Trends

AIM: To analyze local (Lagos) and global temperature data and compare the temperature trends of Lagos to overall global temperature trends.


TOOLS: SQL was used for data extraction

EXCEL was used to create the line chart


Key considerations for visualizing the trends: moving averages (5YEARS). I chose 5years in order to smooth out the lines and thereby making trends more observable. I also used correlation analysis.

STEPS

- Extraction of data: I extracted the data for the city (Lagos) and the globe from the Udacity-Provided-Database by writing SQL queries and exported to CSV.

For		Global	data
SCHEMA		1	Select *
city_data	▼	2	From global_data
city_list	▼	3	
global_data	▼	4	
		5	

For city (Lagos, Nigeria) data

SCHEMA		1	Select *
city_data	▼	2	From city_data
city_list	▼	3	where city = 'Lagos'
global_data	▼	4	
		5	

- Opening of the files and moving average calculations: I opened the files in excel and calculated the moving averages using 5years interval.

This were calculated by going down to the fifth year (1754) and the AVERAGE () function was used to calculate the average temperature for the first five years of the average temperature. I also did same for the city as seen in the images below:

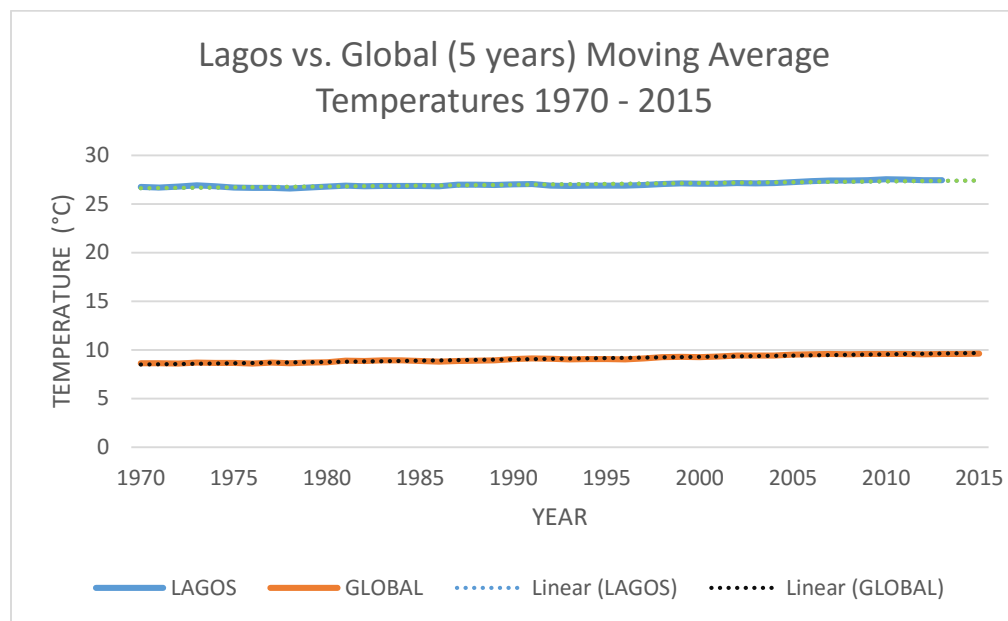
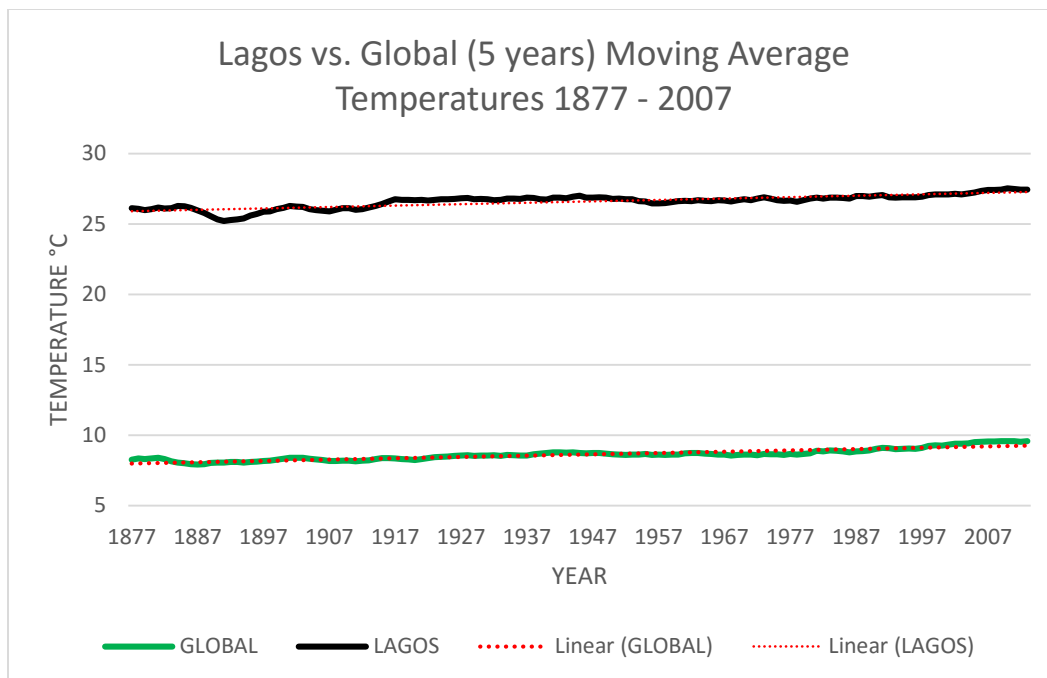
The moving average for global data

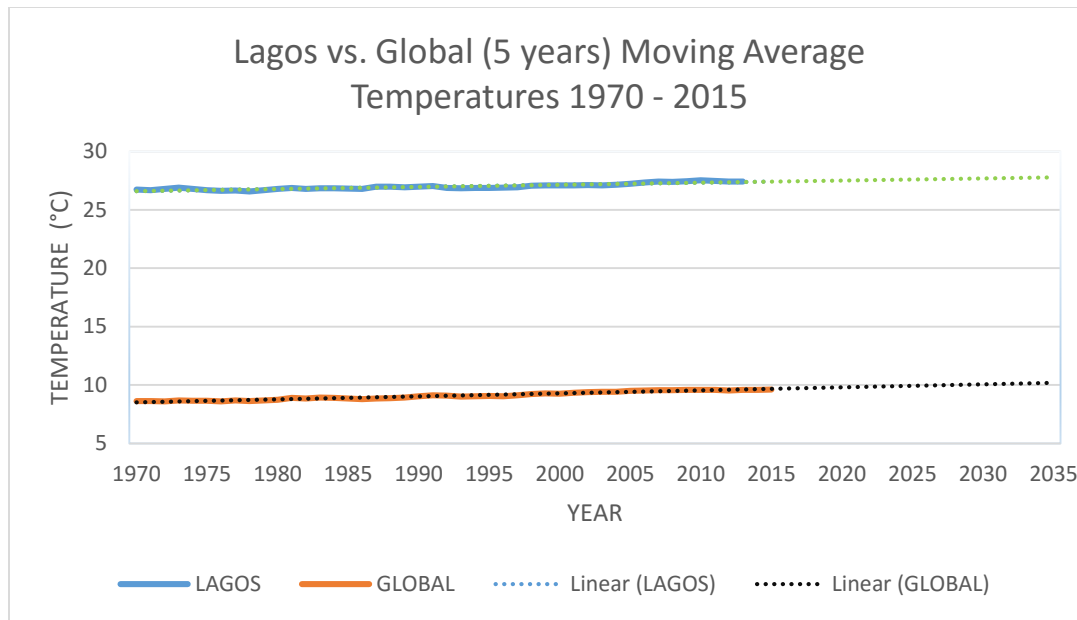
AVERAGE		:	X	✓	<i>f_x</i>	=AVERAGE(B2:B6)
	A	B	C	D	E	F
1	year	avg_temp	5-yr MA			
2	1750	8.72				
3	1751	7.98				
4	1752	5.78				
5	1753	8.39				
6	1754	8.47	=AVERAGE(B2:B6)			
7	1755	8.36	7.796			

The moving average for city data

avg_temp	5-yr MA
26.46	
26.08	
25.82	
25.82	
26.35	=AVERAGE(C26:C30)
26.26	26.066
25.67	25.984

- Creating the line chart: I created a line chart that compares the city's (Lagos) temperatures with the global temperatures by plotting the moving average (using 5years interval as the moving average) rather than the yearly averages.





CORRELATION

	<i>Lagos temp 5-yr MA</i>	<i>Global temp 5-yr MA</i>
Lagos temp 5-yr MA	1	
Global temp 5-yr MA	0.861475527	1

Lagos average temperature and Global average temperature are positively correlated (0.86)

Observations:

- Lagos is much hotter on average bases compared to the global average. The difference has been consistent as Lagos has never for once cooler than the global.
- The overall trend indicate that the world is getting hotter and the trend has been consistent over the last few hundred years.
- Comparing the changes in temperature of Lagos over time with the global temperature, around 18s, the temperature of Lagos went down, increased in early 19s and was consistent a bit around 1927. Then it started increasing steadily over time while the global temperature is increasing bit by bit over time.
- The future forecast also shows that the world will still continue to get hotter.
- Based on the correlation, both the city and the average world are getting hotter.