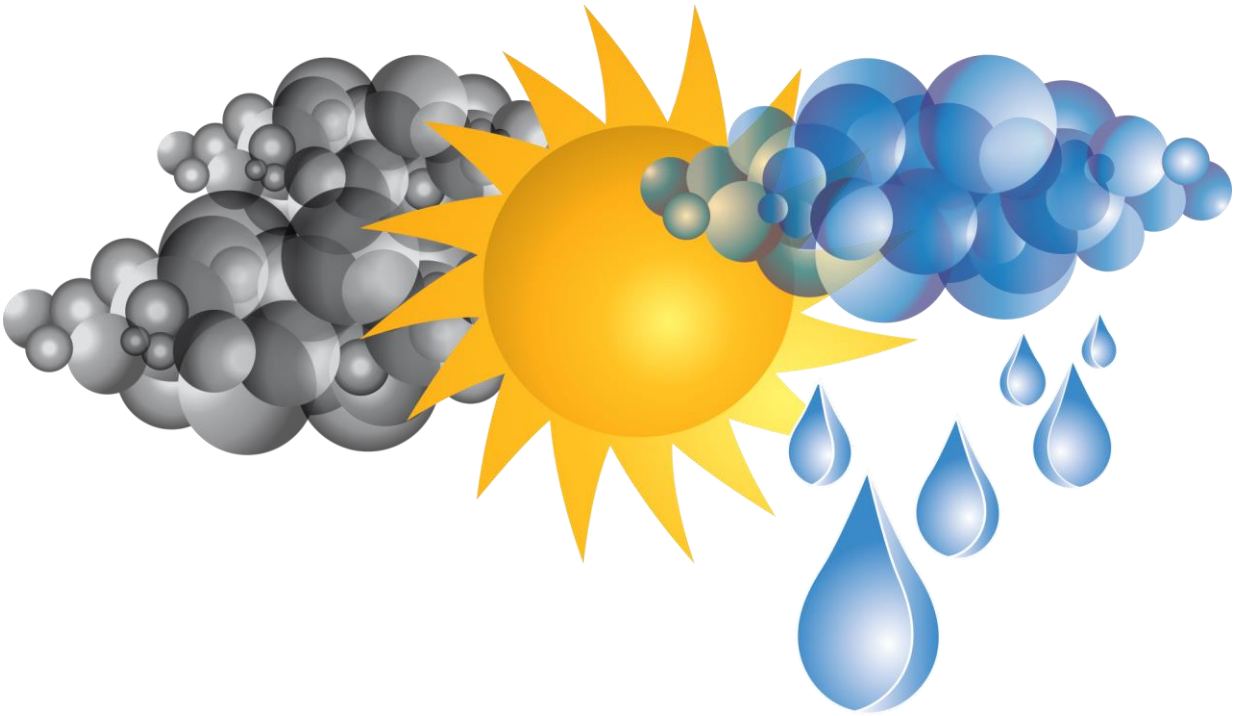

Exploring Weather Trends

BANGALORE, INDIA

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Version 1.0

Abstract

In this project, local and global temperature data has been analyzed and the temperature trends in Bangalore, India has been compared to overall global temperature trends.

Data extraction has been done by writing SQL queries then exported to CSV.

MS Excel has been used to calculate moving average over decades of years in order to get the best visualized line chart comparing data of Bangalore vs. Global.

Data Extraction

Following queries has been used to extract the data from the database

There are three tables in the database:

city_list - This contains a list of cities and countries in the database.
city_data - This contains the average temperatures for each city by year (ºC).
global_data - This contains the average global temperatures by year (ºC).

To survey the database:

```
SELECT *
FROM   city_data;

SELECT *
FROM   city_list;

SELECT *
FROM   global_data;
```

To extract a complete data from both city_data and global data JOIN operator was applied. I pulled the data for Bangalore city, India

```
SELECT cd.year,
       cd.city,
       cd.country,
       cd.avg_temp Bangalore_Avg_Temp,
       gd.avg_temp Global_Avg_Temp
FROM   city_data cd
       JOIN global_data gd
         ON cd.year = gd.year
WHERE  cd.city LIKE '%Bangalore%'
       AND cd.avg_temp IS NOT NULL
ORDER  BY cd.year ASC;
```

Input HISTORY MENU

SCHEMA

city_data

city_list

global_data

```
1  select cd.year,cd.city,cd.country,cd.avg_temp
   Bangalore_Avg_Temp,gd.avg_temp Global_Avg_Temp from
   city_data cd join global_data gd on cd.year =
   gd.year where cd.city like '%Bangalore%' and
   cd.avg_temp is not null order by cd.year asc;
```

Success! EVALUATE

Output 211 results Download CSV

year	city	country	bangalore_avg_temp	global_avg_temp
1796	Bangalore	India	24.49	8.27
1797	Bangalore	India	25.18	8.51
1798	Bangalore	India	24.65	8.67
1799	Bangalore	India	24.81	8.51
1800	Bangalore	India	24.85	8.48
1801	Bangalore	India	24.49	8.59
1802	Bangalore	India	25.44	8.58
1803	Bangalore	India	25.22	8.50

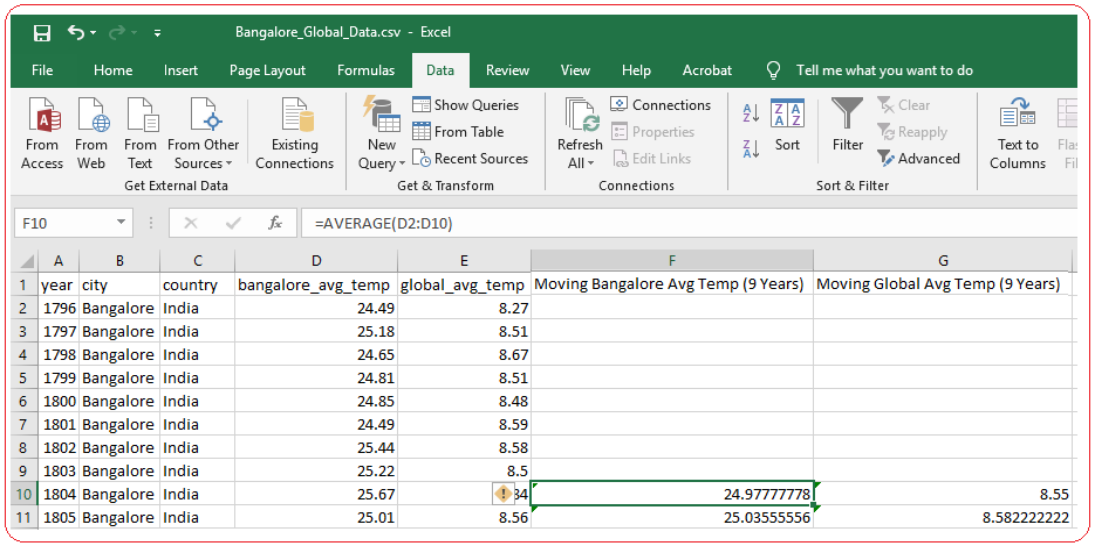
Menu EXPAND

Moving Averages:

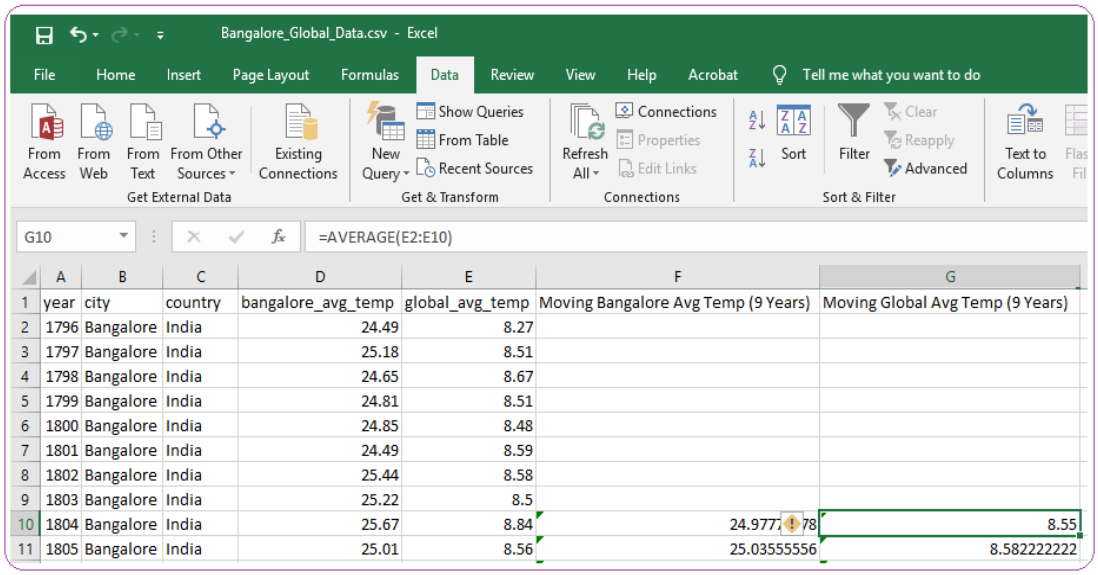
- To observe the trends in temperature I calculated moving average (MA).
- I used 9 years Moving Temp. Average to get the smooth line chart.

Excel commands for Moving Averages:

Moving Average	Excel Commands
For 9 Years Moving Temperature Average for Bangalore city	=Average(D2:D10)
For 9 Years Moving Temperature Average for Global	=Average(E2:E10)



	A	B	C	D	E	F	G
1	year	city	country	bangalore_avg_temp	global_avg_temp	Moving Bangalore Avg Temp (9 Years)	Moving Global Avg Temp (9 Years)
2	1796	Bangalore	India	24.49	8.27		
3	1797	Bangalore	India	25.18	8.51		
4	1798	Bangalore	India	24.65	8.67		
5	1799	Bangalore	India	24.81	8.51		
6	1800	Bangalore	India	24.85	8.48		
7	1801	Bangalore	India	24.49	8.59		
8	1802	Bangalore	India	25.44	8.58		
9	1803	Bangalore	India	25.22	8.5		
10	1804	Bangalore	India	25.67	84	24.97777778	8.55
11	1805	Bangalore	India	25.01	8.56	25.03555556	8.582222222



	A	B	C	D	E	F	G
1	year	city	country	bangalore_avg_temp	global_avg_temp	Moving Bangalore Avg Temp (9 Years)	Moving Global Avg Temp (9 Years)
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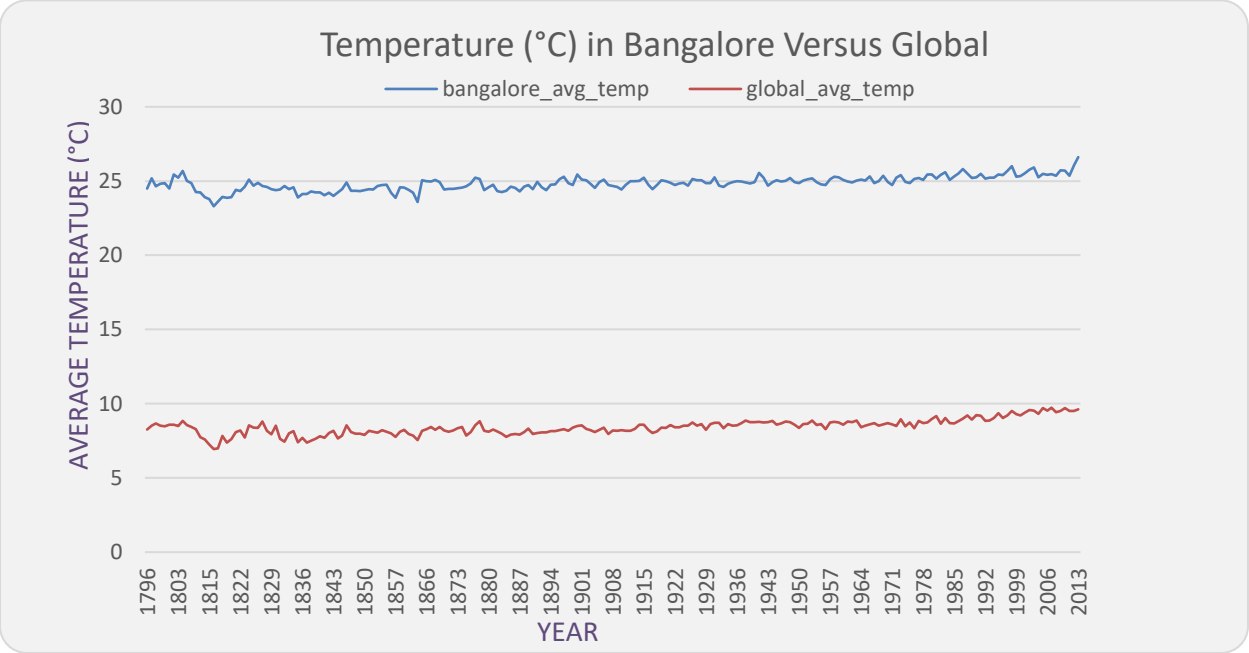
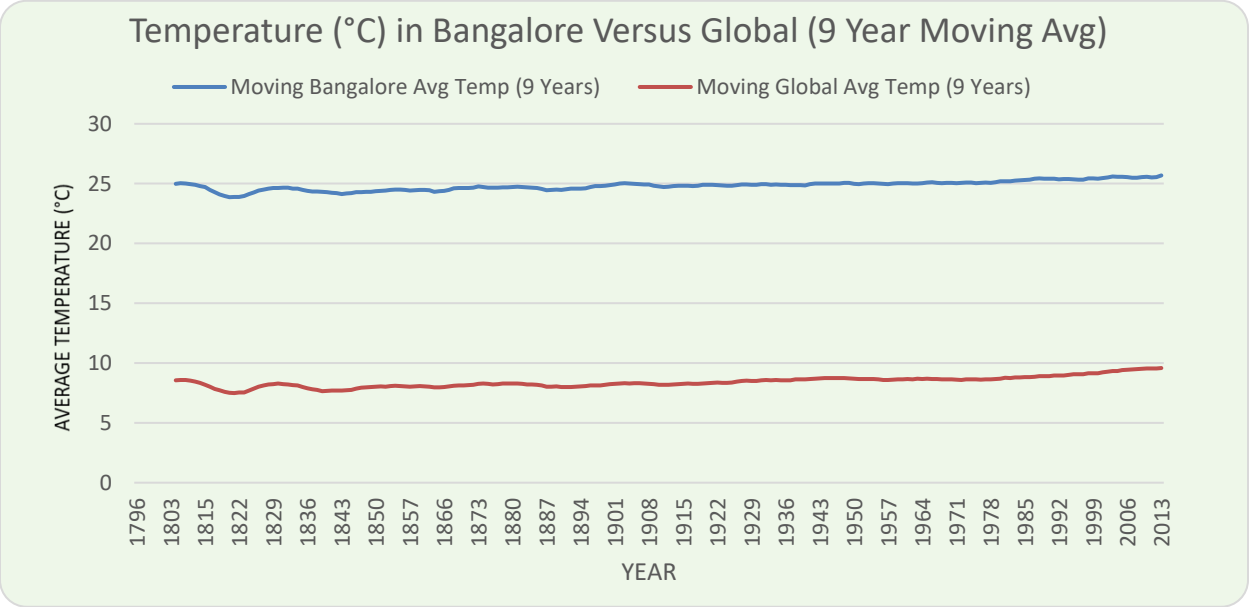
Data Visualization:





Observations:

- If comparing the Global average temperature and Bangalore average temperature then the Bangalore city is hotter than Global average temperature.

- Minimum Average Temperature recorded in Bangalore as 23.3 °C in 1816 and Maximum Average Temp recorded as 26.61 °C in 2013

- Minimum Average Temperature recorded in Global as 6.94 °C in 1816 and Maximum Average Temp recorded as 9.73 °C in 2007

- Both Bangalore and Global average temperature lines have the similar kind of trends. During early years, both trends seems to have ups and downs then approx. around 1992 the moving average temperature starts to increase at a steady rate.

- Both graphs show increase in average temperature with time, which means earth is getting hotter.

- we can see that eventually the graph is moving upwards which means the global temperature is rising which is directly proportional to increase in temperatures of the city.