GLOBAL WEATHER DATA TRENDS ASSIGNMENT:

SQL Query to extract data from database:

1) SELECT * //to extract all cities in India
   FROM city_list
   WHERE country='India'

2) SELECT * //to extract data for Patna
   FROM city_data
   WHERE city='Patna';

STEPS:

1) Opened up the csv dataset in Microsoft Excel.

2) My city of choice(Patna, India) had quite a few missing values, which I filled up with the average temperature of last 5 years.

3) Calculated the moving average (last 5 years) using the average tool in Excel.

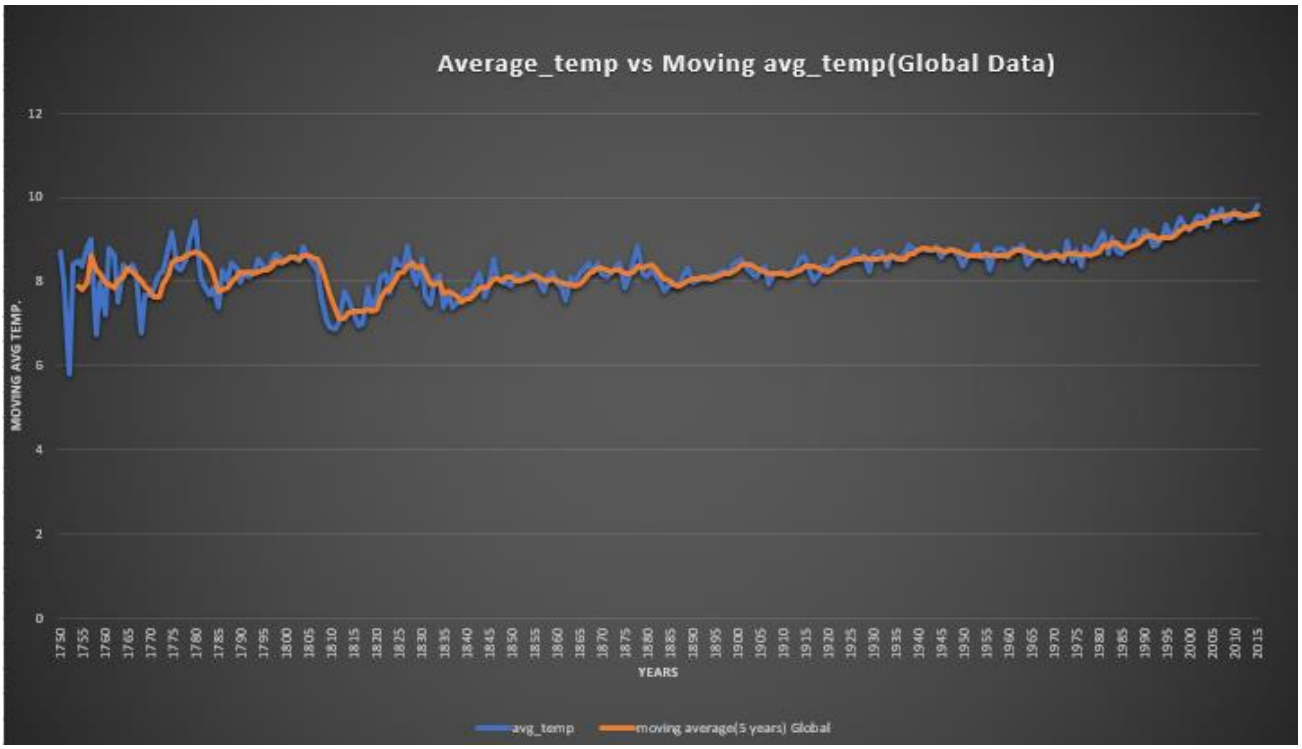
4) The global data temperature was available from 1750, while for Patna the data was available from 1796. So, I plotted the temperatures from 1750 only, while the line chart contains data for Patna from 1796.

5) Plotted the following line charts using Excel's inbuilt plotting features:

-> Average temp. vs moving average temp. (Global)

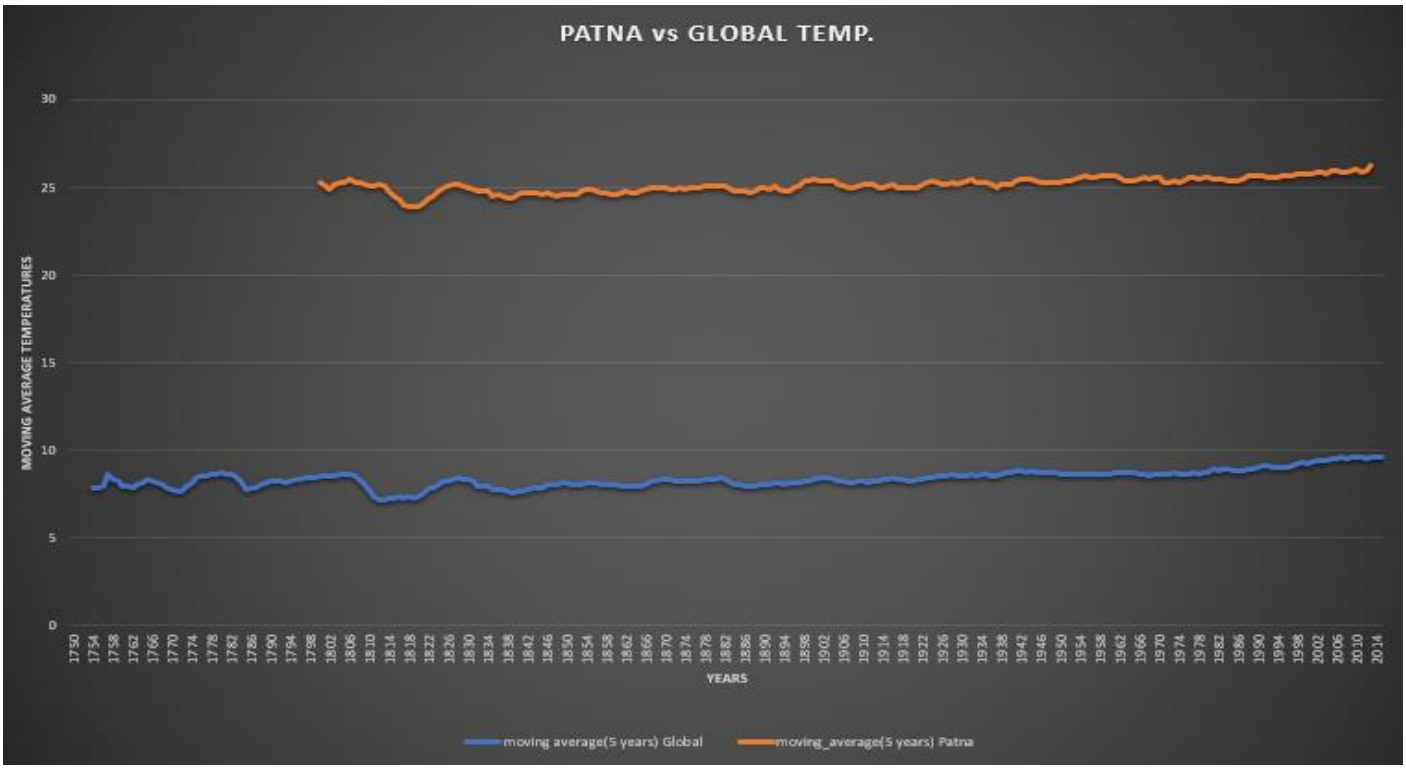
-> Patna vs Global moving avg temp.

LINE CHARTS:



Inference:

- This line chart illustrates the advantage of using moving average temperature data vs average temperature. The fluctuations of average temperature are smoothened out, while still capturing the general trend of the data.
- While the temperatures are in the 7-8.2 ℃ around the 1800s, the avg. temp. after the 1990s is above 9℃, and closing towards 10℃. This is a rather alarming trend which can be attributed to global warming, and such a steep rise is avg. temperatures has not been seen in a long time.



Inference:

- It is clearly visible that Patna is a rather hot place to live in, with avg. temperatures being about 25℃, compared to the 8℃-avg. global temperature.
- Generally, we can see that the gradual rise in global temperatures around the 1990s is replicated in Patna. Average temperature rises from 25℃ to 26+℃.
- The dip in temperatures around the 1815, and the subsequent rise can be seen in both the global data, and the data from Patna.
- The difference in the global temperatures and Patna temperatures is pretty much constant(17.2 ℃).