Exploring Weather Trends

Data Preparation:

Initially, I extracted data from the database by running SQL queries. Following are the SQL queries:

- To extract avg global temperature -
  Select year, avg_temp from global_data
- To extract avg temperature in my city -
  Select year, avg_temp from city_data where city = 'Delhi'

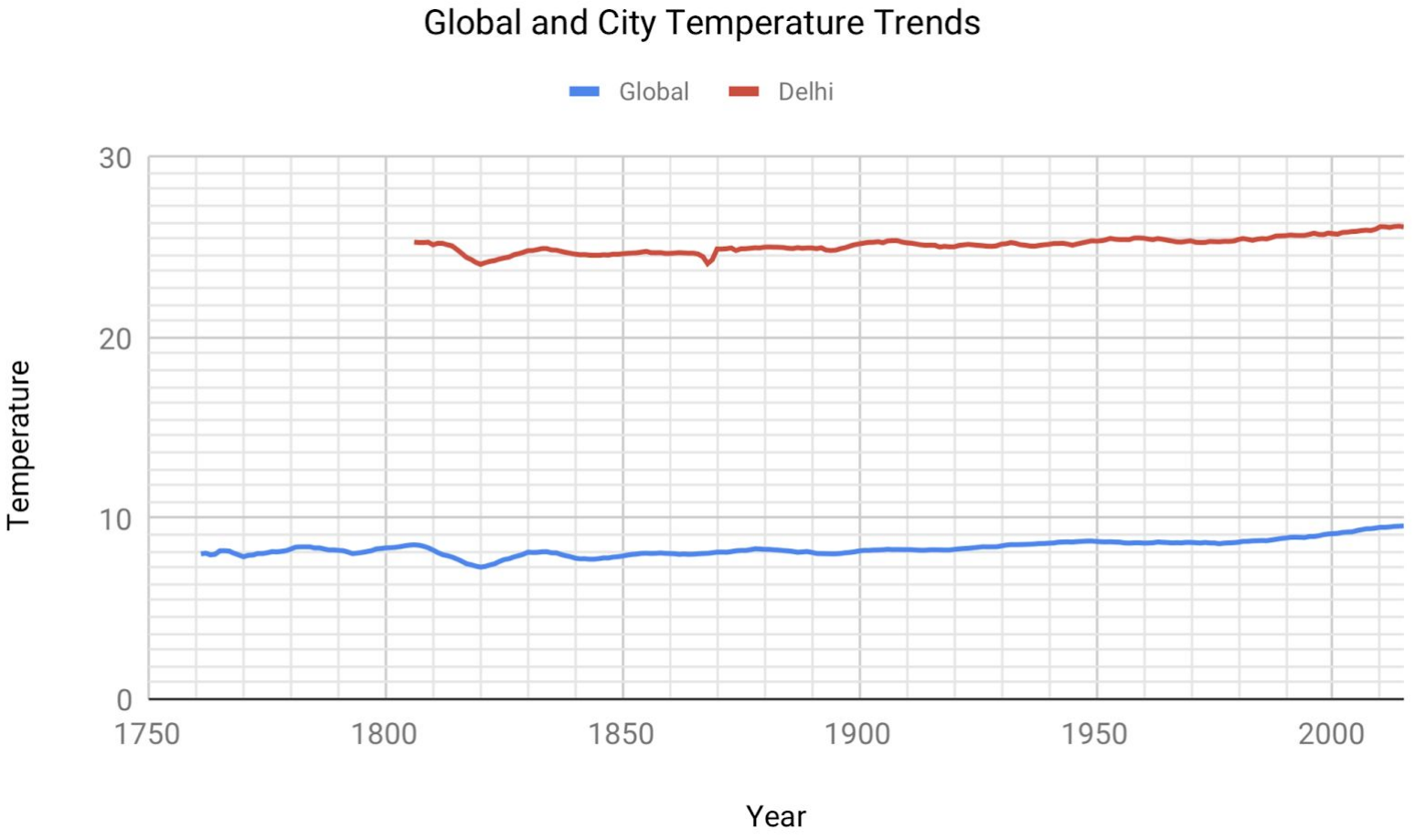
I downloaded the CSV files and opened them in google sheet. I wanted to smooth out the data I had obtained, so I implemented the same moving average formula for global and city average temperatures. I took a moving average over 13 days because there were null values in the data obtained for my city - Delhi and the maximum gap in my data was for 13 consecutive years. If I had taken less than 13 days in calculating a moving average, then my resultant data would have null values which I wanted to avoid. Also, I did not consider taking an average over more than 13 days of data because resultant data showed understandable trends which I wanted to stay intact and not get smoothen out completely.

Visualization:

- I plotted the moving average temperatures from Delhi city and of the globe in the same chart to make the comparison more visually apparent.

- I ensured that data is plotted for its corresponding year for Delhi city and the globe and chose gridlines in such a way that it becomes easier to draw inferences from the chart.

- Lastly, to communicate the trends clearly, I labelled legends to identify which trend represented which average temperature - global or Delhi.



Observations:

- Delhi has always been hotter as compared to the global average. The difference between the global temperature average and the average temperature of Delhi has been mostly consistent and on an average almost 16.6 degrees.
- In my city, the temperature change follows the overall global trend of rising temperature but during 1866-1870 the temperature has fallen sharply in Delhi by approximately 0.5 degrees. This is not observable in the global temperature trend which means this sudden drop in temperature was not a global phenomenon.
- Delhi heated up quickly as compared to the average global temperature during 1897-1907, acting as a contributor to the rise in global temperature.
- The world is overall getting hotter. In the first half of 18th century, we see the global average temperature drop and then it gradually rises but it is only after 1900 we see the world get hotter than it was in 1800 and the average global temperature continues to rise.