PROJECT ON

EXPLORING WEATHER TRENDS

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1. **What tools did you use for each step? (Python, SQL, Excel, etc.)**

    a. I used two SQL queries to extract my data from the database:

        - Global Data:

          Select * from global data;

        - Local data: (for San Jose, CA)

          Select * from city_data
          Where city = 'San Jose';

    b. I evaluated the query and exported the data to CSV files using the "Download CSV" link.
    c. I used MS Excel to convert the CSV file into an XSLX file, calculate the Moving Average, and create the line charts.

2. **How did you calculate the Moving Average?**

    I tried 7 and 14 years moving averages to see which average is better to smooth out the data. To calculate the Moving Average in MS excel, I used the Average formula (= average (number1:number2)) as the same as the lesson's format. For more clarification, the images are showing below:
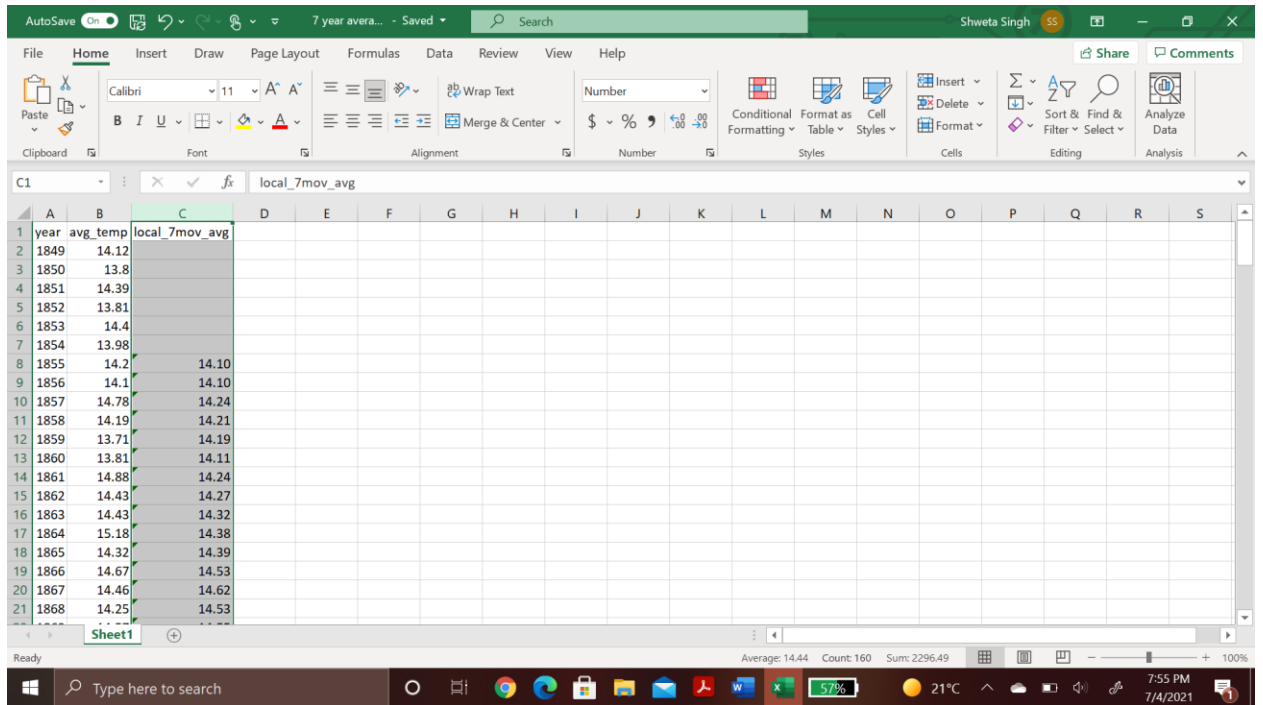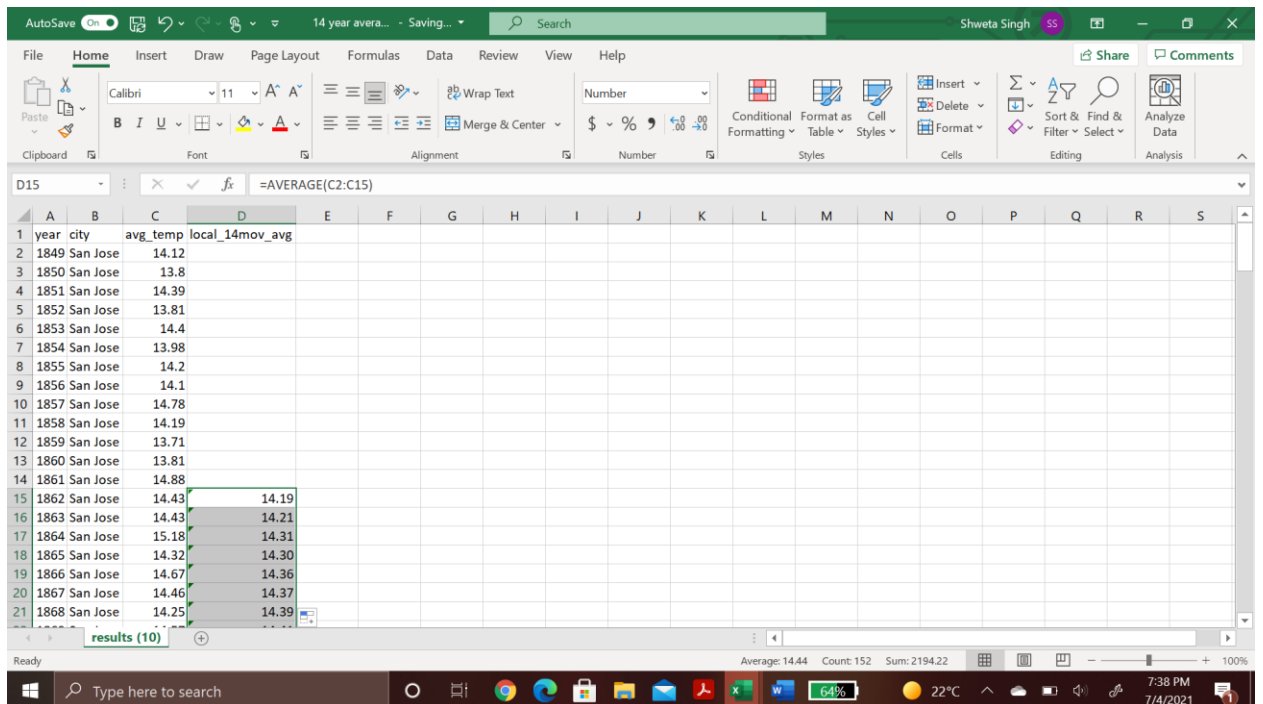
Fig 1. 7- Year Moving Average

Fig 2: 14 – Year Moving Average.

3. What were your key considerations when deciding how to visualize trends?

The key consideration was to determine the timeframe for data visualization. The local temperature data for San Jose I have been using covers 1849 to 2013, whereas the global data covers 1750 to 2015. Therefore, the analysis of the moving average performed between 1849 to 2013. I have plotted line charts to compare local city average temperature data to global average temperature data. The average temperatures are on the y-axis, and the years are on the x-axis. The following line charts are showing below:
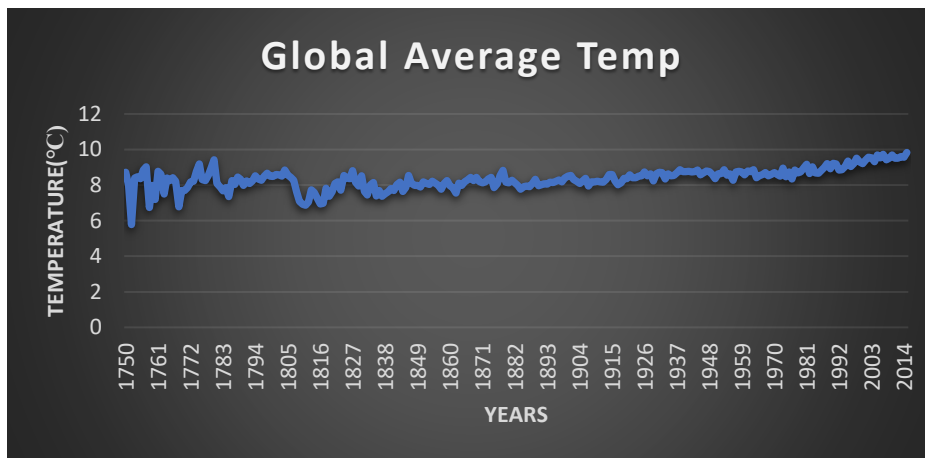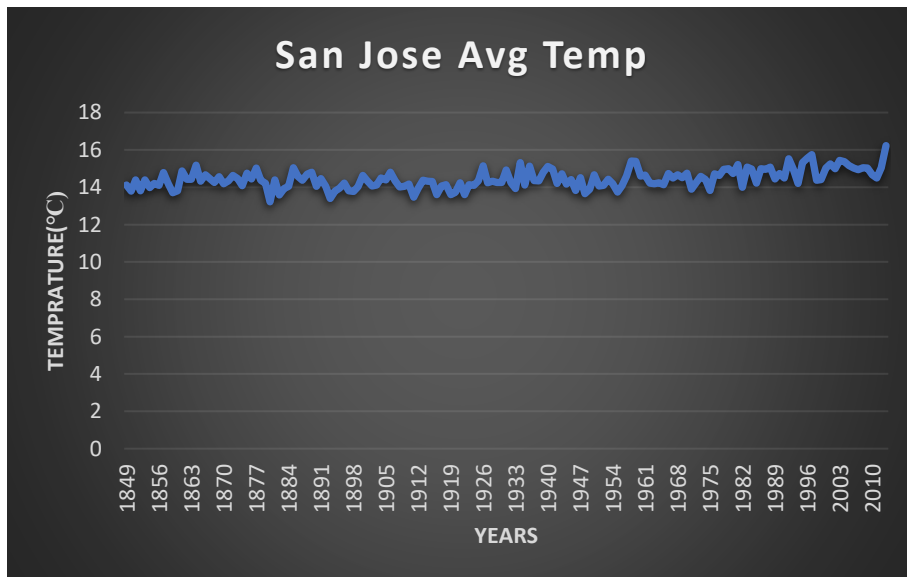

Fig 3: Global Average Temperature
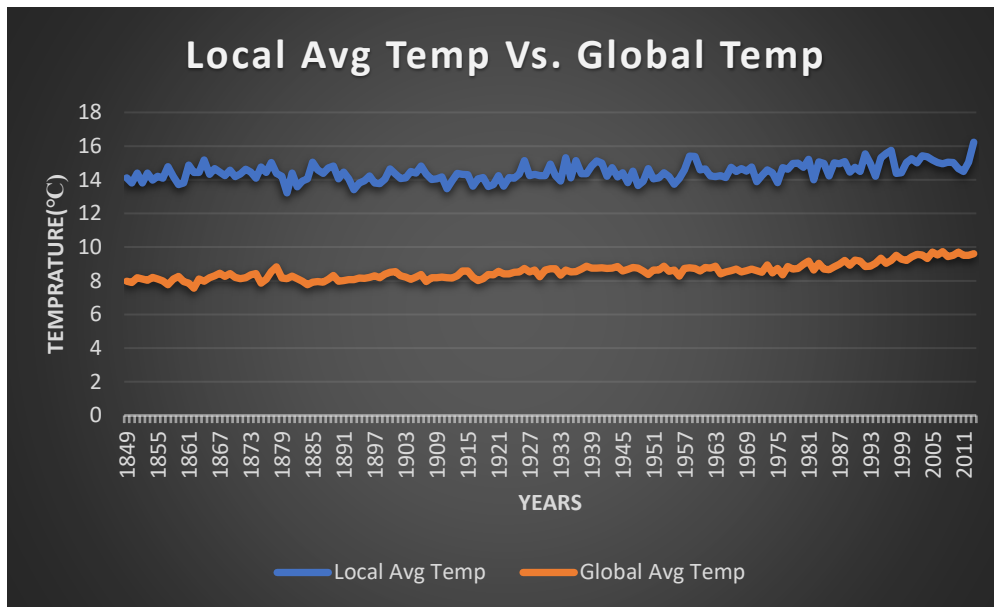

Fig 4: Local City Average Temperature

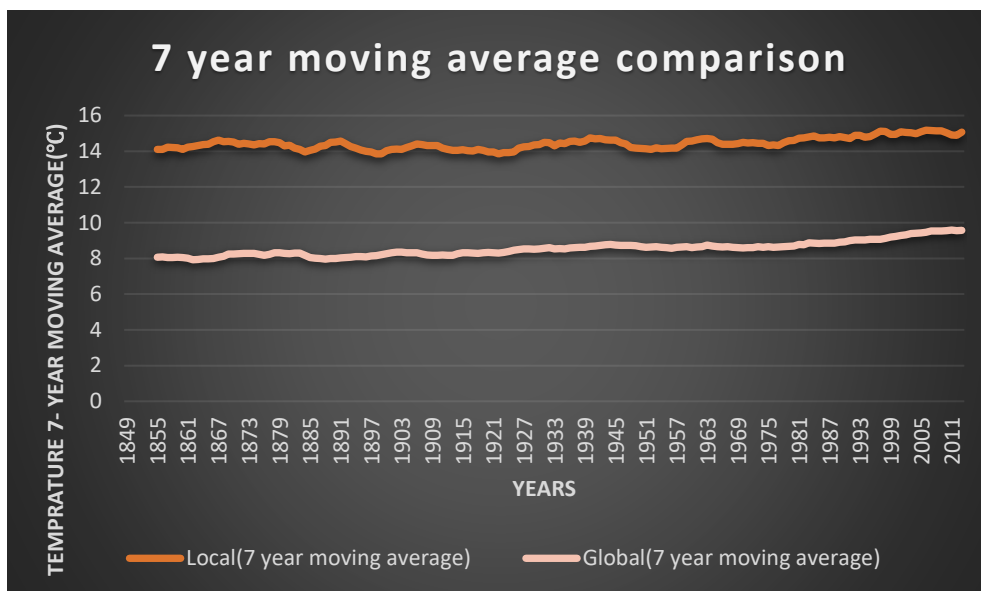Fig 5: Local Avg Temperature Vs. Global Avg Temperature

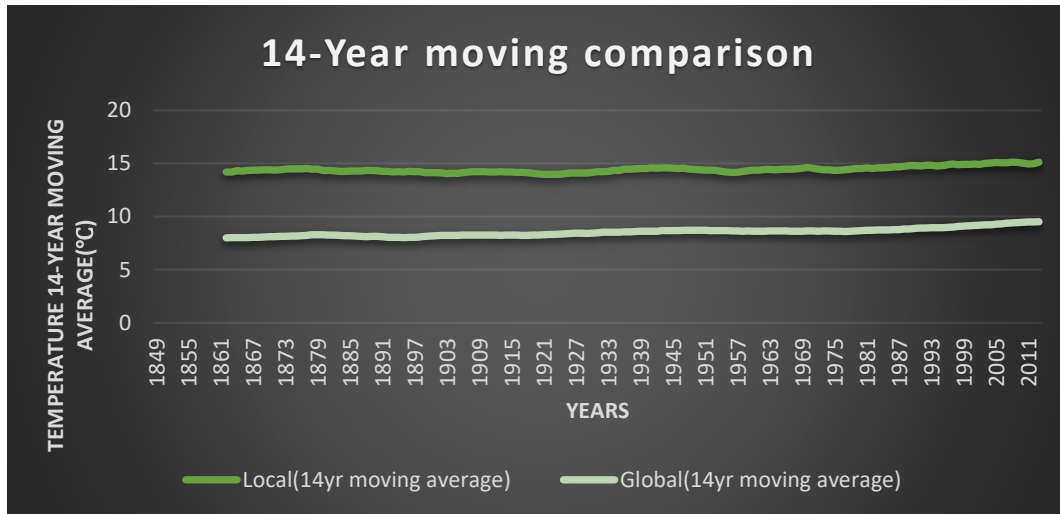Fig 6: 7- Year Moving Average Comparison

Fig 7: 14- year Moving Average Comparison

4. **Observations:**
   - The average temperature in a local city (San Jose) is hotter than the global temperature.
   - San Jose is hotter when the average is compared with the global average, but the overall trend for both global and local (San Jose) average shows that the world is getting hotter.
   - The global moving average has less fluctuation in comparison to the local moving average.
   - There have been times when there are drops in both global and San Jose average temperatures. For instance, there is a drop in both lines from 1879 to 1882, and then another drop is in 1914 to 1918.