# Exploring Weather Trends

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UDACITY

**STEP 1**: Extracting the data using the SQL

SQL code to get city average temperature:

```
select year, avg_temp as BPL_avg_temp
            from city_data
    where country ='India'
    and city ilike 'bhopal'
    and year between 1870 and 2013
```

SQL code to get global average temperature:

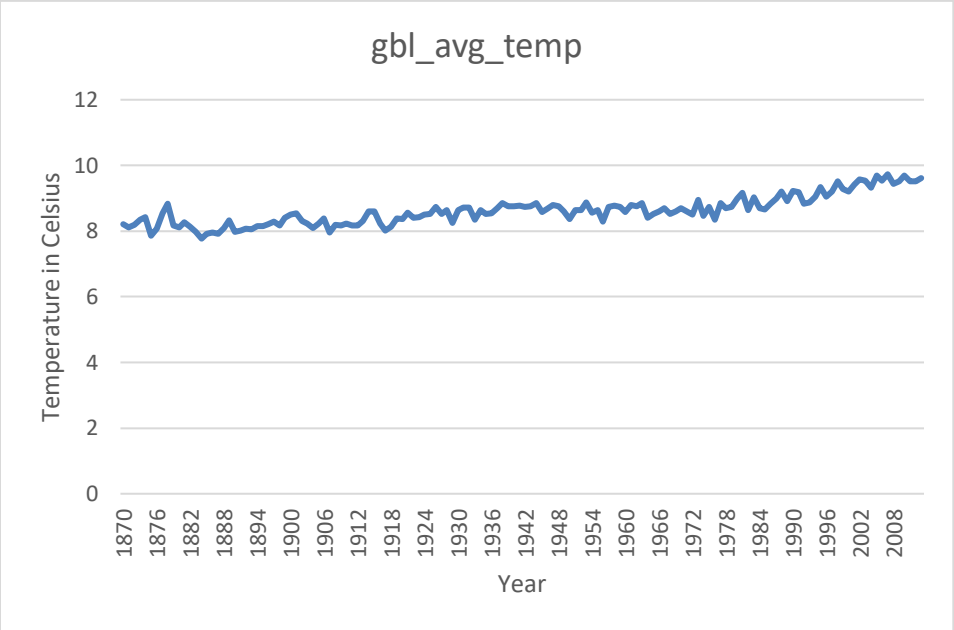
```
select year, avg_temp as GBL_avg_temp
            from global_data
   where year between 1870 and 2013
```

**STEP 2: Downloading the csv file**

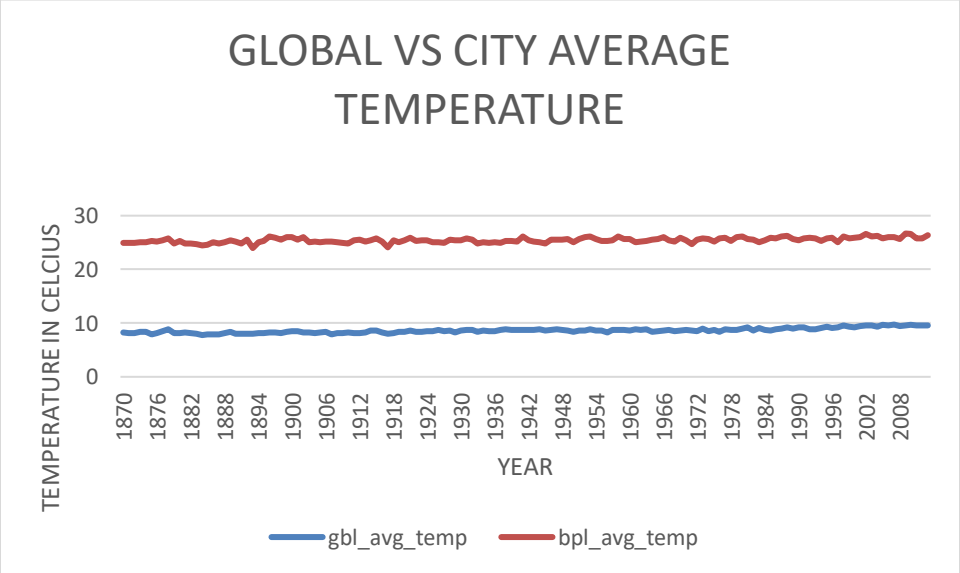
Downloaded the CSV file for further analysis on the extracted data.

STEP 3: MS EXCEL Used for Making a Line Chart for studying the Weather trend

First the individual graphs were drawn for both Global and the city temperature .



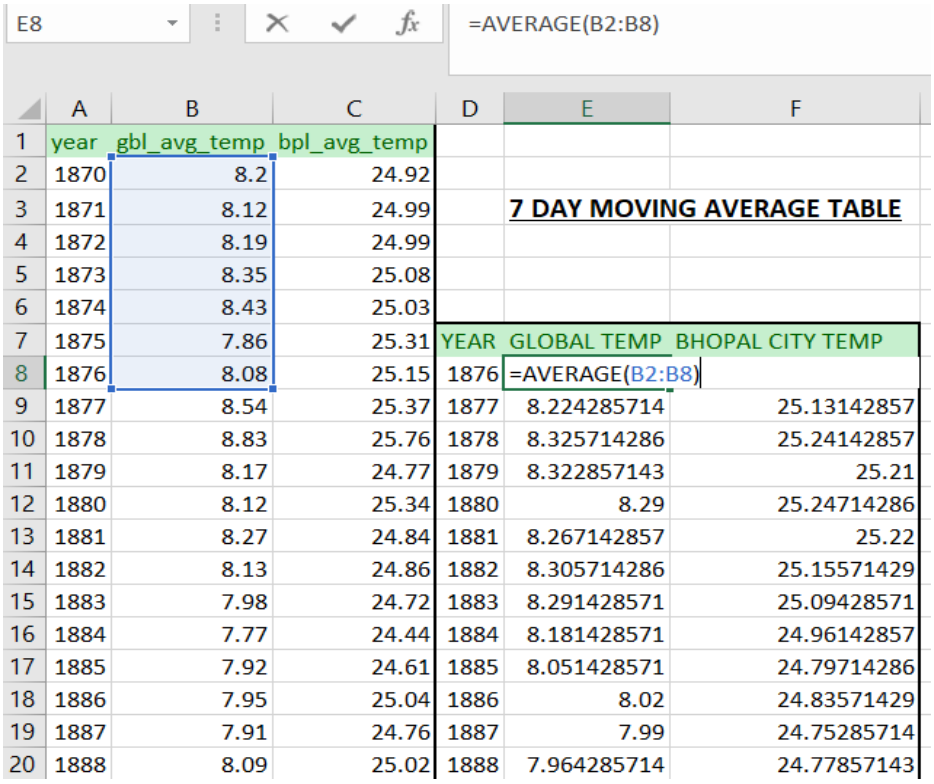

Then both the trend were analysed on the same graph but the graph look more scattered like shown below in the figure.




So finally 7 year moving average were calculated using the MS Excel and so graph was plotted between year 1876 and 2013 as shown in the below figure.

Moving averages calculation shown in excel:

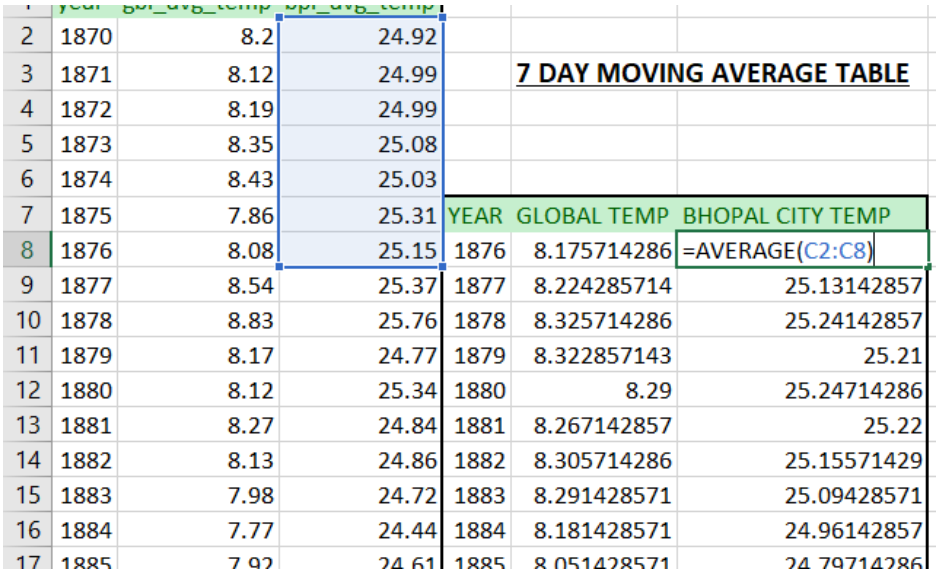
FOR GLOBAL TEMPERATURE:



E8 | =AVERAGE(B2:B8)

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | year | gbl_avg_temp | bpl_avg_temp | | | |
| 2 | 1870 | 8.2 | 24.92 | | | |
| 3 | 1871 | 8.12 | 24.99 | | **7 DAY MOVING AVERAGE TABLE** | |
| 4 | 1872 | 8.19 | 24.99 | | | |
| 5 | 1873 | 8.35 | 25.08 | | | |
| 6 | 1874 | 8.43 | 25.03 | | | |
| 7 | 1875 | 7.86 | 25.31 | YEAR | GLOBAL TEMP | BHOPAL CITY TEMP |
| 8 | 1876 | 8.08 | 25.15 | 1876 | =AVERAGE(B2:B8) | |
| 9 | 1877 | 8.54 | 25.37 | 1877 | 8.224285714 | 25.13142857 |
| 10 | 1878 | 8.83 | 25.76 | 1878 | 8.325714286 | 25.24142857 |
| 11 | 1879 | 8.17 | 24.77 | 1879 | 8.322857143 | 25.21 |
| 12 | 1880 | 8.12 | 25.34 | 1880 | 8.29 | 25.24714286 |
| 13 | 1881 | 8.27 | 24.84 | 1881 | 8.267142857 | 25.22 |
| 14 | 1882 | 8.13 | 24.86 | 1882 | 8.305714286 | 25.15571429 |
| 15 | 1883 | 7.98 | 24.72 | 1883 | 8.291428571 | 25.09428571 |
| 16 | 1884 | 7.77 | 24.44 | 1884 | 8.181428571 | 24.96142857 |
| 17 | 1885 | 7.92 | 24.61 | 1885 | 8.051428571 | 24.79714286 |
| 18 | 1886 | 7.95 | 25.04 | 1886 | 8.02 | 24.83571429 |
| 19 | 1887 | 7.91 | 24.76 | 1887 | 7.99 | 24.75285714 |
| 20 | 1888 | 8.09 | 25.02 | 1888 | 7.964285714 | 24.77857143 |

FOR BHOPAL TEMPERATURE:



| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | 1870 | 8.2 | 24.92 | | | |
| 3 | 1871 | 8.12 | 24.99 | | **7 DAY MOVING AVERAGE TABLE** | |
| 4 | 1872 | 8.19 | 24.99 | | | |
| 5 | 1873 | 8.35 | 25.08 | | | |
| 6 | 1874 | 8.43 | 25.03 | | | |
| 7 | 1875 | 7.86 | 25.31 | YEAR | GLOBAL TEMP | BHOPAL CITY TEMP |
| 8 | 1876 | 8.08 | 25.15 | 1876 | 8.175714286 | =AVERAGE(C2:C8) |
| 9 | 1877 | 8.54 | 25.37 | 1877 | 8.224285714 | 25.13142857 |
| 10 | 1878 | 8.83 | 25.76 | 1878 | 8.325714286 | 25.24142857 |
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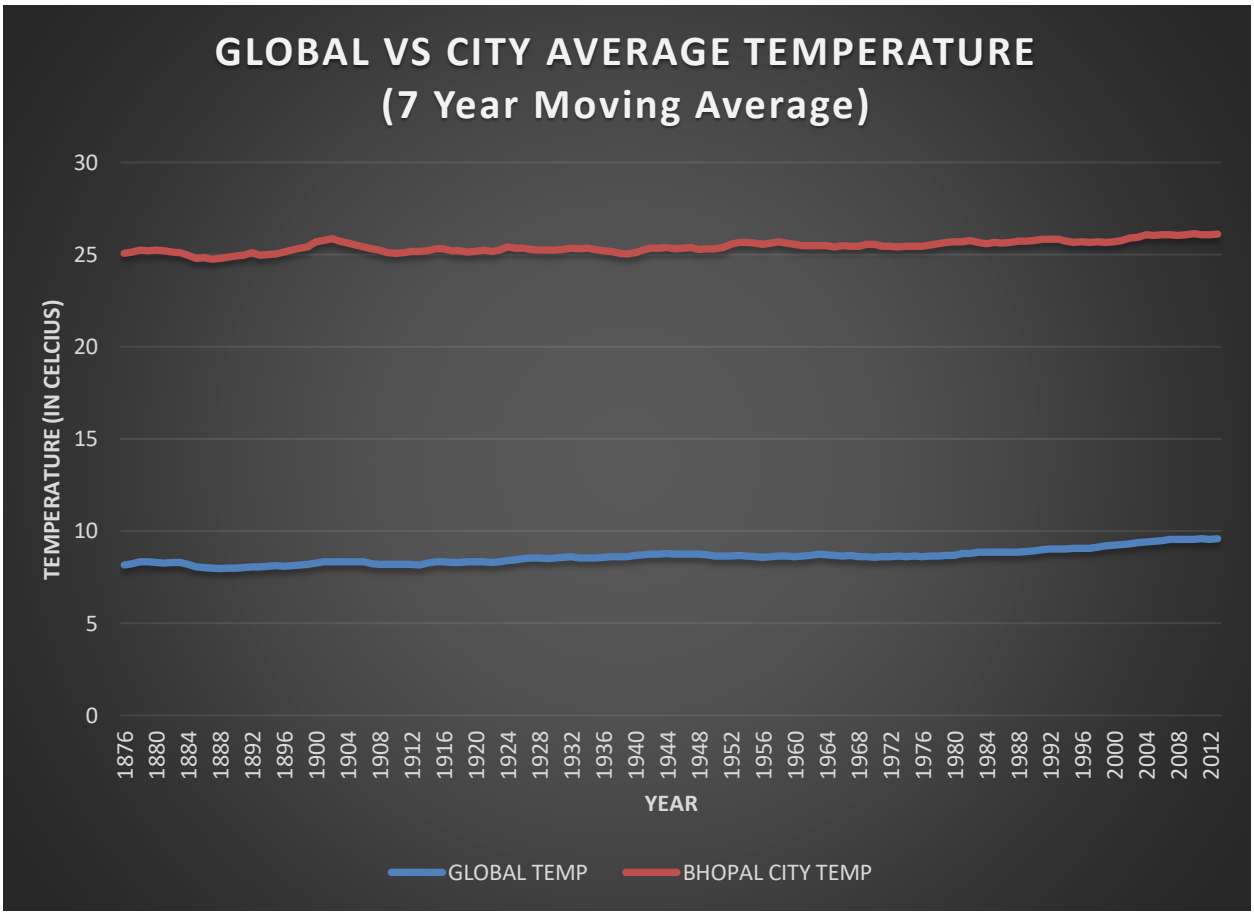


Following Analysis were made from the above graph:

- The Bhopal city was found to be hotter when compared to the global temperature approximately 15 degree more.
- Both global and city temperature were found to have increased temperature over the years.
- The rising trend in both the line chart graph suggest that the global warming have increased and was consistent over 100 years.
- The city faced a decrease in temperature in its late 18$^{th}$ century but it was for short time then it got increase suddenly in early 19$^{th}$ century with minimal fluctuation in global temperature.