

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
```

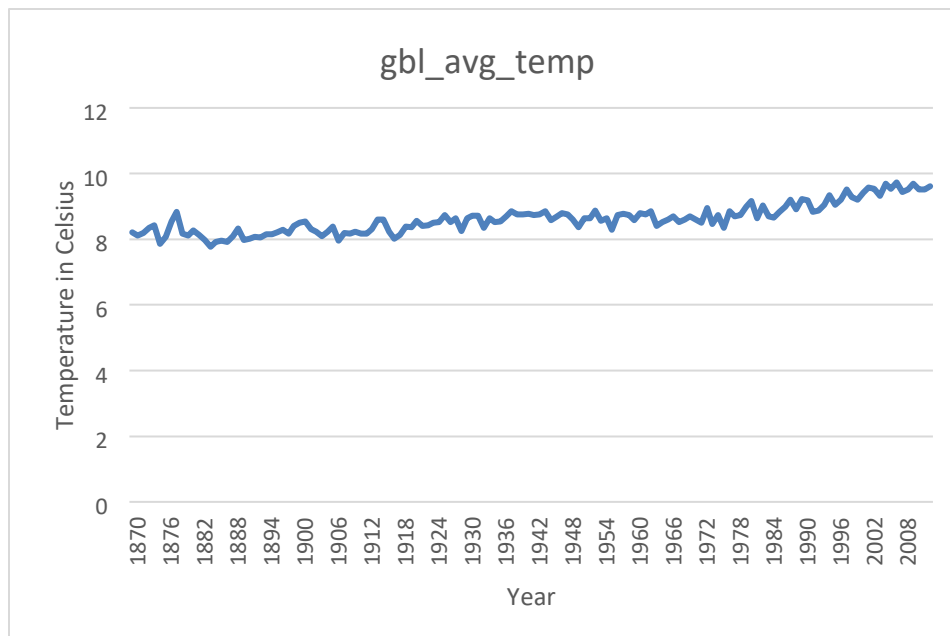
SQL code to get global average temperature:

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

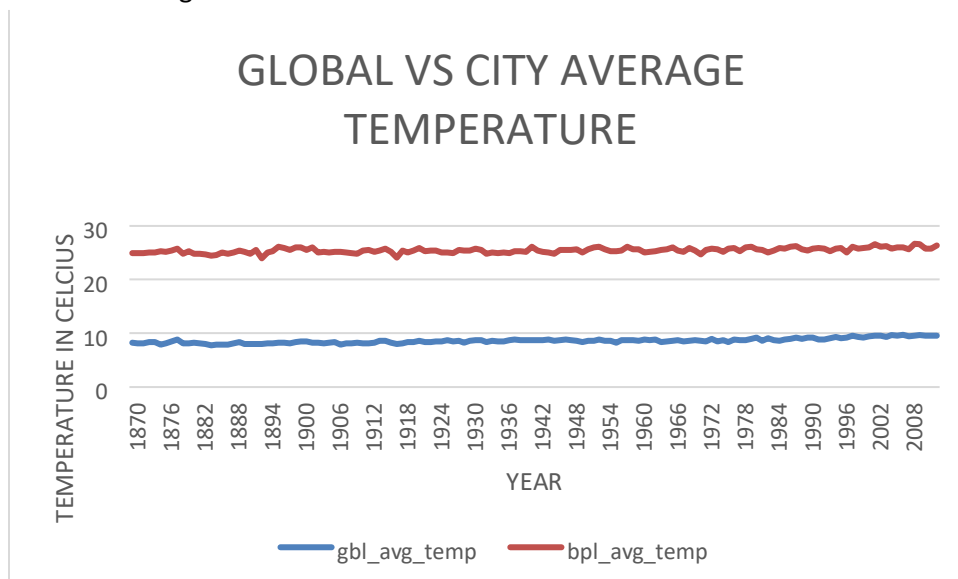
STEP 2: Downloading the csv file

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

X

✓

f_x

=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

7 DAY MOVING AVERAGE TABLE

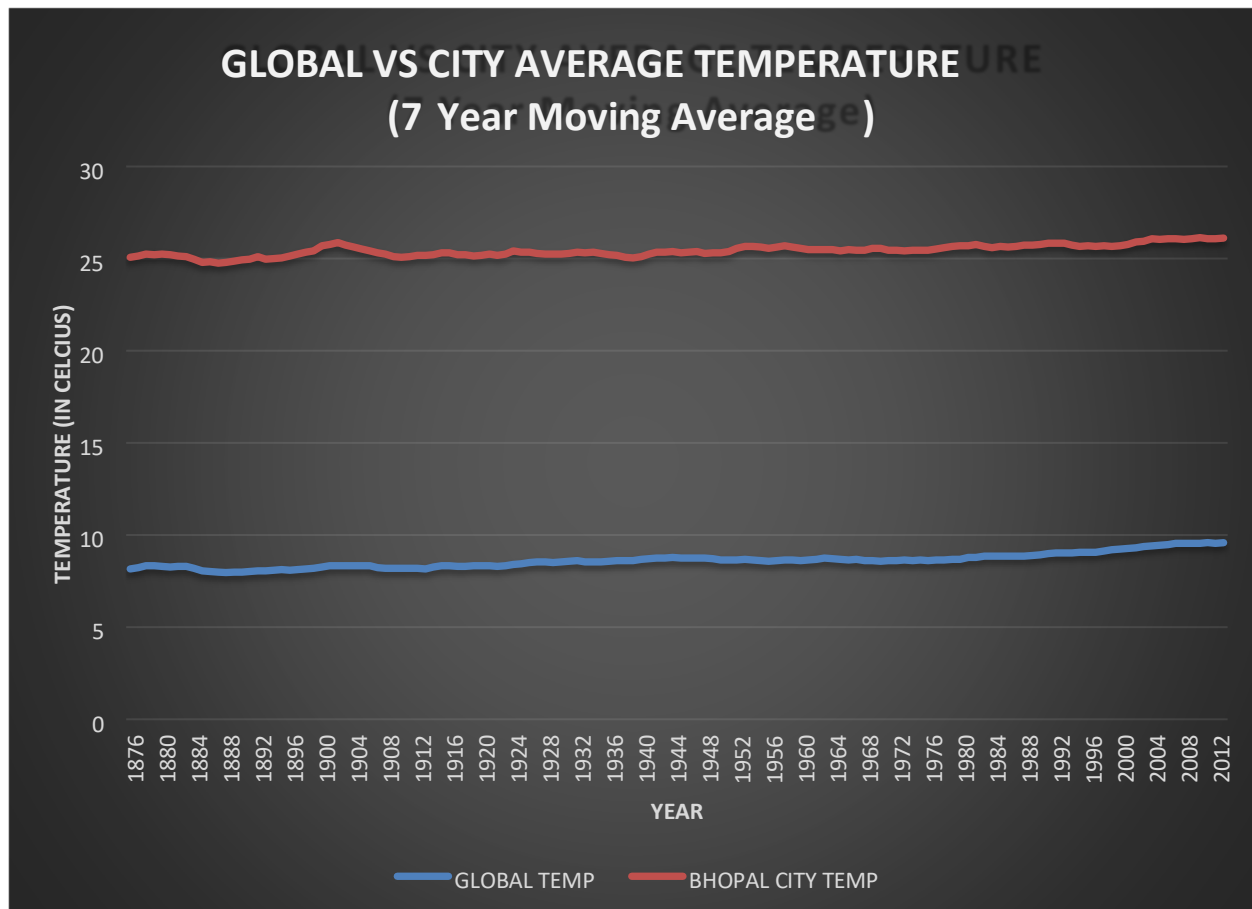
YEAR	GLOBAL TEMP	BHOPAL CITY TEMP
1876	=AVERAGE(B2:B8)	
1877	8.224285714	25.13142857
1878	8.325714286	25.24142857
1879	8.322857143	25.21
1880	8.29	25.24714286
1881	8.267142857	25.22
1882	8.305714286	25.15571429
1883	8.291428571	25.09428571
1884	8.181428571	24.96142857
1885	8.051428571	24.79714286
1886	8.02	24.83571429
1887	7.99	24.75285714
1888	7.964285714	24.77857143

FOR BHOPAL TEMPERATURE:

	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			
4	1872	8.19	24.99			
5	1873	8.35	25.08			
6	1874	8.43	25.03			
7	1875	7.86	25.31			
8	1876	8.08	25.15			
9	1877	8.54	25.37			
10	1878	8.83	25.76			
11	1879	8.17	24.77			
12	1880	8.12	25.34			
13	1881	8.27	24.84			
14	1882	8.13	24.86			
15	1883	7.98	24.72			
16	1884	7.77	24.44			
17	1885	7.92	24.61			

7 DAY MOVING AVERAGE TABLE

YEAR	GLOBAL TEMP	BHOPAL CITY TEMP
1876	8.175714286	=AVERAGE(C2:C8)
1877	8.224285714	25.13142857
1878	8.325714286	25.24142857
1879	8.322857143	25.21
1880	8.29	25.24714286
1881	8.267142857	25.22
1882	8.305714286	25.15571429
1883	8.291428571	25.09428571
1884	8.181428571	24.96142857
1885	8.051428571	24.79714286



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 18th century but it was for short time then it got increase suddenly in early 19th century with minimal fluctuation in global temperature.