

UDACITY
DATA ANALYST NANODEGREE PROGRAM

PROJECT
EXPLORING WEATHER TRENDS

AKHIL REDDY KOVVURI

TERM-1, PROJECT-1

12/18/2018

VIRGINIA, UNITED STATES

Outline:

- In this project, I have analyzed the weather trends between the city Virginia (United States) and world temperature over the span of 265 years i.e 1750 to 2015.
- Data is being extracted from the Udacity workspace by writing SQL Queries.
- There are three data base tables which includes: city_list, city_data, global_data to extract data.

Data Extraction:

- To extract city from city_list, I used the SQL Query:
`SELECT * FROM city_data WHERE city = 'Virginia Beach' AND country = 'United States';`

Input

HISTORY ▾

MENU ▾

SCHEMA ↻

city_data ▾

city_list ▾

global_data ▾

1 `SELECT * FROM city_data WHERE city = 'Virginia Beach' AND country = 'United States';`

Success!

EVALUATE

Output 271 results

Download CSV

- To extract global average temperatures from global_data3, I used the SQL Query:
`SELECT * FROM global_data;`

Input

HISTORY ▾

MENU ▾

SCHEMA ↻

city_data ▾

city_list ▾

global_data ▾

1 `SELECT * FROM global_data ;`

Success!

EVALUATE

Output

266 results

[Download CSV](#)

year	avg_temp
1750	8.72
1751	7.98
1752	5.78
1753	8.39
1754	8.47
1755	8.36
1756	8.85

- After extracting the data, download the csv files to perform analysis on the data like calculating moving averages and making visualizations

Tools used:

Excel: In this project, I used Excel to perform analysis and visualizations

Data Visualization:

Moving Average:

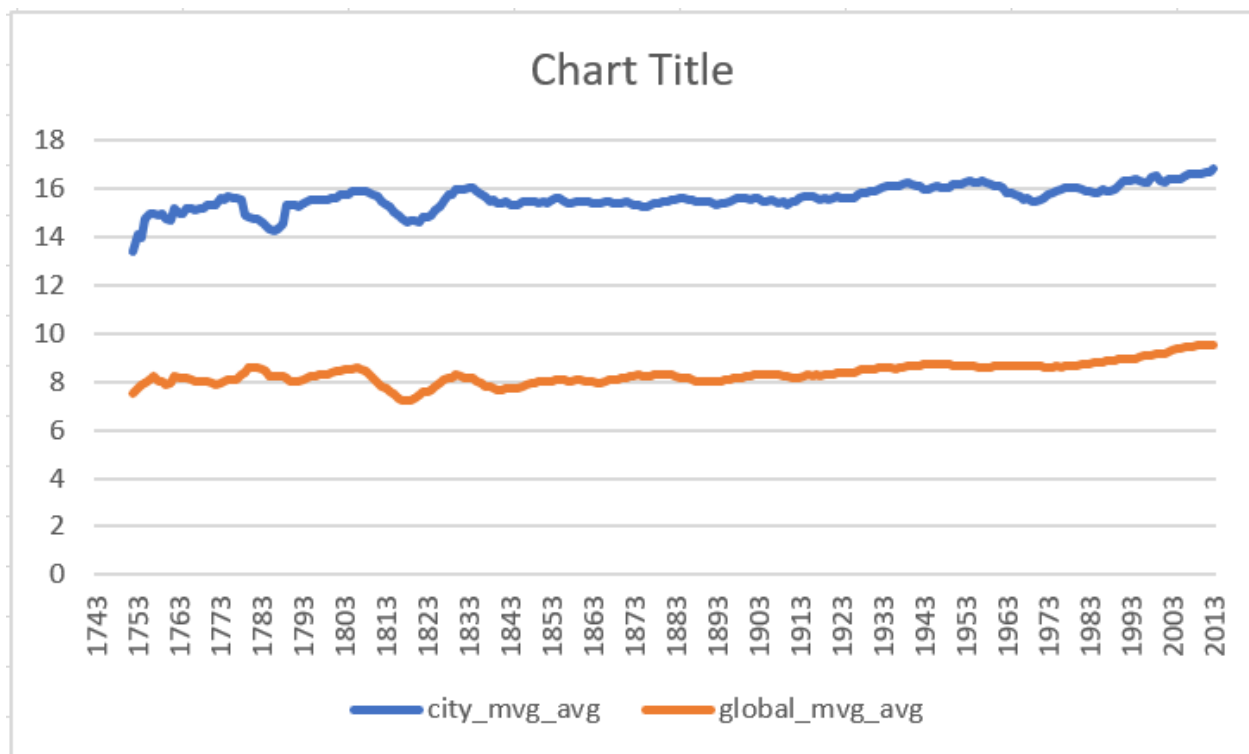
The data extracted has 257 records. In order to smooth out the lines and making trends more observable we must calculate moving averages for both city and global temperatures.

I have calculated the Moving Average for the each 10 years:

year	city	country	avg_temp	City_Moving_avg		
1743	Virginia Be	United Sta	11.16			
1744	Virginia Be	United Sta	17.2			
1745	Virginia Be	United Sta	8.74			
1746	Virginia Be	United States				
1747	Virginia Be	United States				
1748	Virginia Be	United States				
1749	Virginia Be	United States				
1750	Virginia Be	United Sta	16.07			
1751	Virginia Be	United Sta	16.57			
1752	Virginia Be	United Sta	10.61	=Average(D2:D11		
1753	Virginia Be	United Sta	15.66	AVERAGE(number1, [number2], ...)		
1754	Virginia Be	United Sta	16.09			
1755	Virginia Be	United Sta	13.41			
1756	Virginia Be	United Sta	16.39			
1757	Virginia Be	United Sta	15.19			
1758	Virginia Be	United Sta	14.23			
1759	Virginia Be	United Sta	15.18			
1760	Virginia Be	United Sta	14.02			
1761	Virginia Be	United Sta	16.17			
1762	Virginia Be	United Sta	15.55			
1763	Virginia Be	United Sta	13.62			
1764	Virginia Be	United Sta	16.02			
1765	Virginia Be	United Sta	15.39			
1766	Virginia Be	United Sta	16.17			

Line chart:

After calculating the moving averages for both global and city temperatures, I have created a line chart to compare my city temperature with the global temperature.



Observations:

1. From the line chart, it is clear that my city (virginia beach) temperature is greater than the global temperature.
2. Virginia Beach(city) is hotter when compared to the global temperature and the difference between their temperatures are consistent over the time.
3. In the period between 1813 to 1823 both city and global temperatures have been decreased.
4. Overall, the world is getting cooler and the trend has been consistent over the last few hundred years

Key considerations:

1. On X-axis there is 10-year period difference from 1743 to 2013.
2. On Y-axis the units are measured in "Centigrade".

3. Use of excel function (Average) to calculate moving average
4. City moving average is labelled in blue color line and global moving average is labelled in orange color line
5. Using excel to create line chart for making visualization