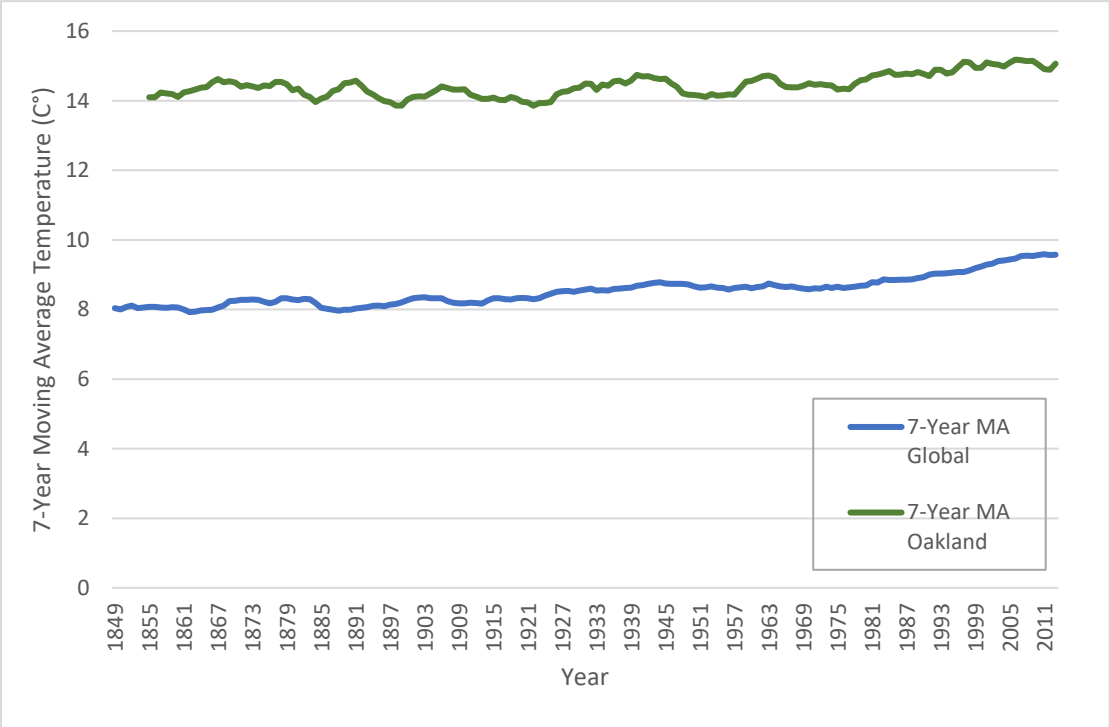
Project 1: Explore Weather Trends
Data Comparisons for Global Average Temperature and Oakland Average Temperature

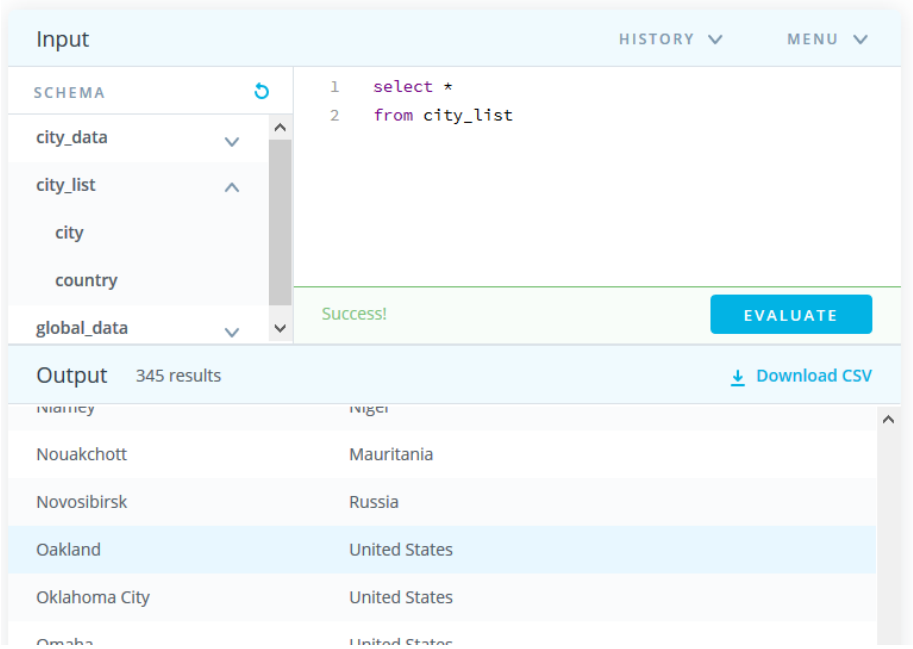
By Michael Reddell

In order to examine weather trends between global temperatures (as measured in Celsius) and local weather temperatures (Oakland, California, USA), data from the years 1750 to 2015 was collected from Udacity's weather database. Due to not having enough data, Oakland data was only used from the years 1849 to 2013. Oakland was found to be, on average, hotter than global temperatures by about 6°C. Between the years of 1882 and 1900, average Oakland temperatures increased and then decreased while in contrast, average global temperatures decreased and then increased. Differences between Oakland average temperatures and global average temperatures stayed fairly consistent over time. An overall trend of an increasing average temperature was found between the years of 1849 and 2013 for both Oakland and global data. Average temperatures for Oakland remained between 13.5°C and 15.5°C. Average temperatures globally remained between 8°C and 10°C. From 1849 to 1915, average temperatures for both data sets remained relatively stagnant. The largest increase in average temperature was observed from 1915 to 2013 in both data sets.

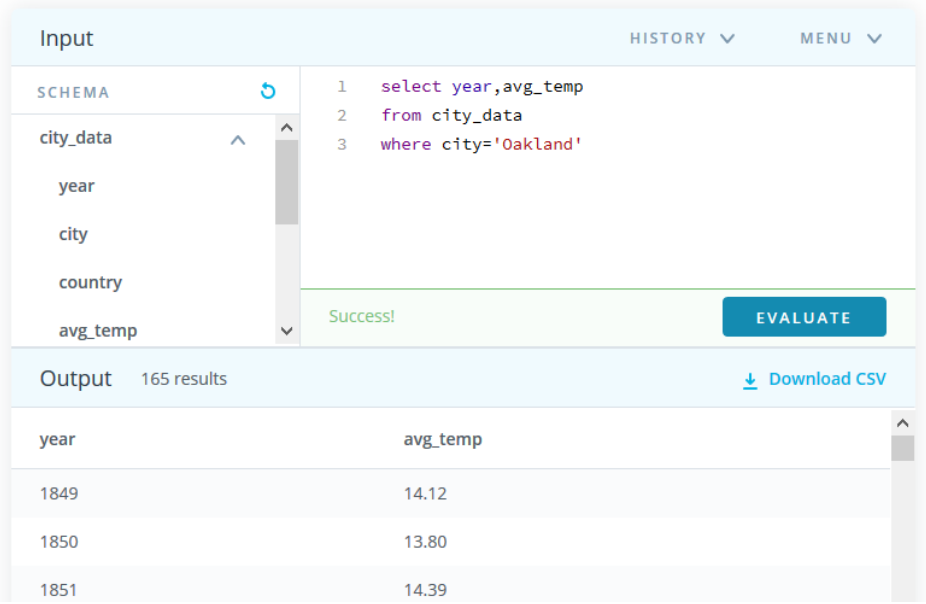


1. Step 1: Extracting Data – data was extracted online from the Udacity database using two SQL queries and then exporting them as CSV files.

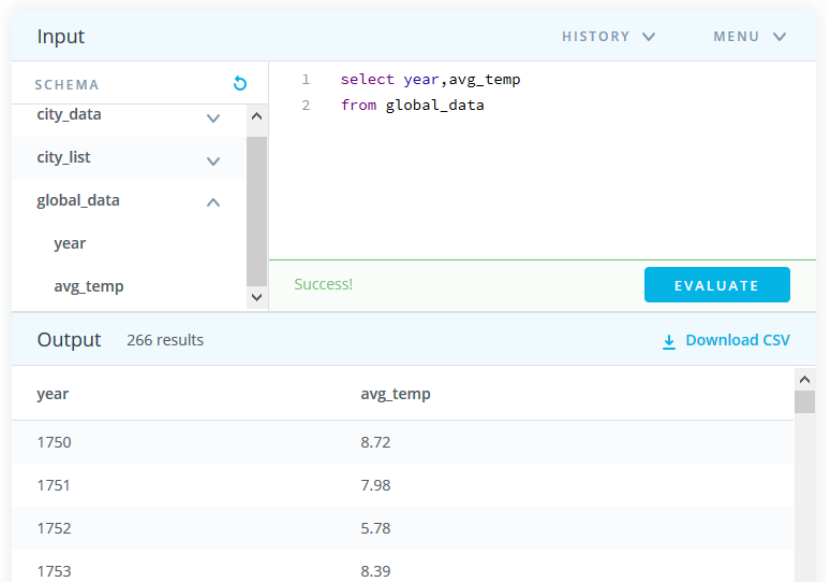
   *prior to extracting data, user used SQL to examine the city_list column in order to choose a local major city. Oakland, California, USA was selected.



*year and avg_temp was then extracted from city_data for Oakland



*year and avg_temp was then extracted from global_data



Step 2: Open up the CSV - both CSV files were opened using Microsoft Excel for Office 365.

Step 3: Create a line chart – average temperature was copied from the Oakland file to a new column in the Global file. Temperatures were started at the year 1849 since data from prior years were unavailable. Two new columns were created that were named “7-Year MA Global” and “7-Year MA Oakland”. These two columns were to represent the 7-year moving averages. In Excel, data for the first 7 years for global average temperature was selected and an average was calculated in excel and entered in the 7-year ma global column. The same formula was used for the average Oakland temperature data and put into the 7-year ma column for Oakland. Next, a line chart was created using data from both of the 7-year moving average columns for the years 1849 to 2013.

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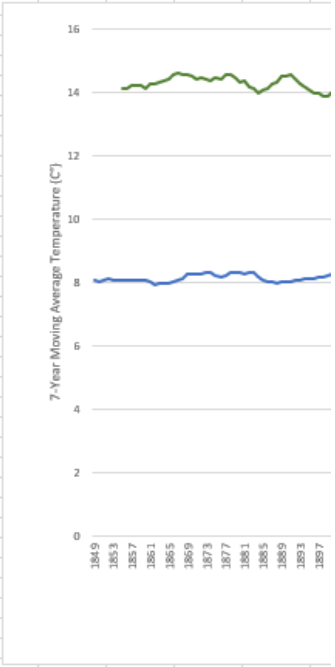
	A	B	C	D	E
1	year	avg_temp	7-Year MA global	avg_temp_oakland	7-Year MA Oakland
2	1750	8.72			
3	1751	7.98			
4	1752	5.78			
5	1753	8.39			
6	1754	8.47			
7	1755	8.36			
8	1756	8.85	8.078571429		
9	1757	9.02	8.121428571		
10	1758	6.74	7.944285714		
11	1759	7.99	8.26		
12	1760	7.19	8.088571429		
13	1761	8.77	8.131428571		
14	1762	8.61	8.167142857		
15	1763	7.5	7.974285714		
16	1764	8.4	7.885714286		
17	1765	8.25	8.101428571		
18	1766	8.41	8.161428571		
19	1767	8.22	8.308571429		
20	1768	6.78	8.024285714		
21	1769	7.69	7.892857143		
22	1770	7.69	7.92		
23	1771	7.85	7.841428571		
24	1772	8.19	7.832857143		
25	1773	8.22	7.805714286		
26	1774	8.77	7.884285714		
27	1775	9.18	8.227142857		
28	1776	8.3	8.314285714		
29	1777	8.26	8.395714286		
30	1778	8.54	8.494285714		
31	1779	8.98	8.607142857		
32	1780	9.43	8.78		
33	1781	8.1	8.684285714		
34	1782	7.9	8.501428571		
35	1783	7.68	8.412857143		
36	1784	7.86	8.355714286		
37	1785	7.36	8.187142857		
38	1786	8.26	8.084285714		
39	1787	8.03	7.884285714		
40	1788	8.45	7.934285714		
41	1789	8.33	7.995714286		
42	1790	7.98	8.038571429		
43	1791	8.23	8.091428571		
44	1792	8.09	8.195714286		
45	1793	8.23	8.191428571		
46	1794	8.53	8.262857143		
47	1795	8.35	8.248571429		
48	1796	8.27	8.24		
49	1797	8.51	8.315714286		
50	1798	8.67	8.378571429		
51	1799	8.51	8.438571429		
52	1800	8.48	8.474285714		
53	1801	8.59	8.482857143		
54	1802	8.58	8.515714286		
55	1803	8.5	8.548571429		
56	1804	8.84	8.595714286		
57	1805	8.56	8.58		
58	1806	8.43	8.568571429		



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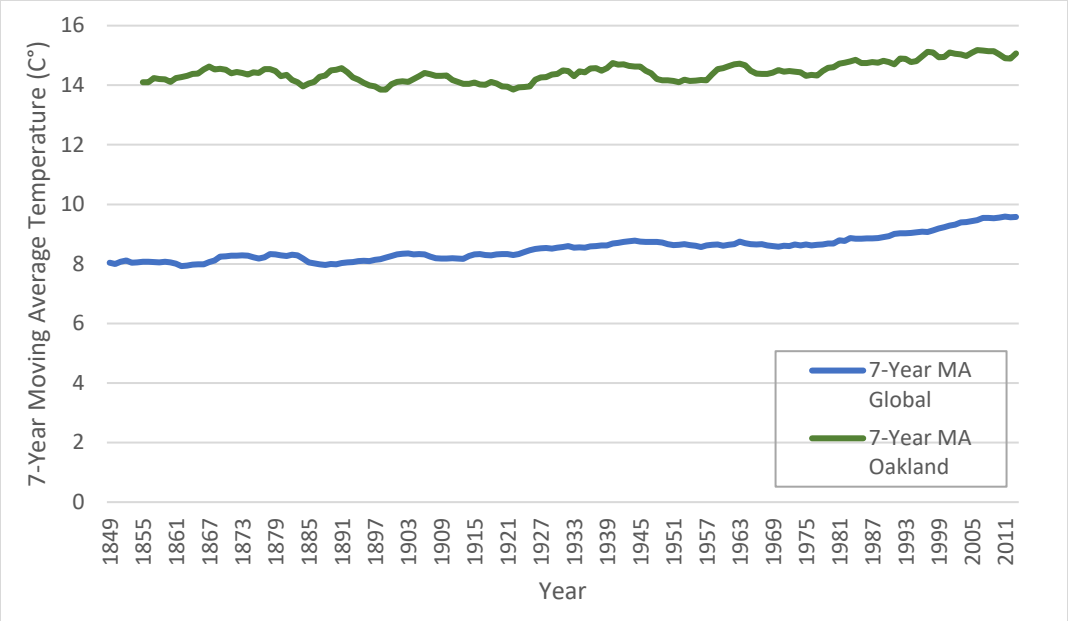

Notes and Observations: When deciding how to visualize trends, I followed the directions that told to use a line chart. At first I charted the data from 1750 to 2015 but then changed it to only include the years for the data that I had for both Oakland and globally. I wanted to make sure the chart looked easy to read and added a legend, the years on the x-axis, and a description of the y-axis which was “7-Year Moving Average Temperatures” since that was the data that I put into my line chart.