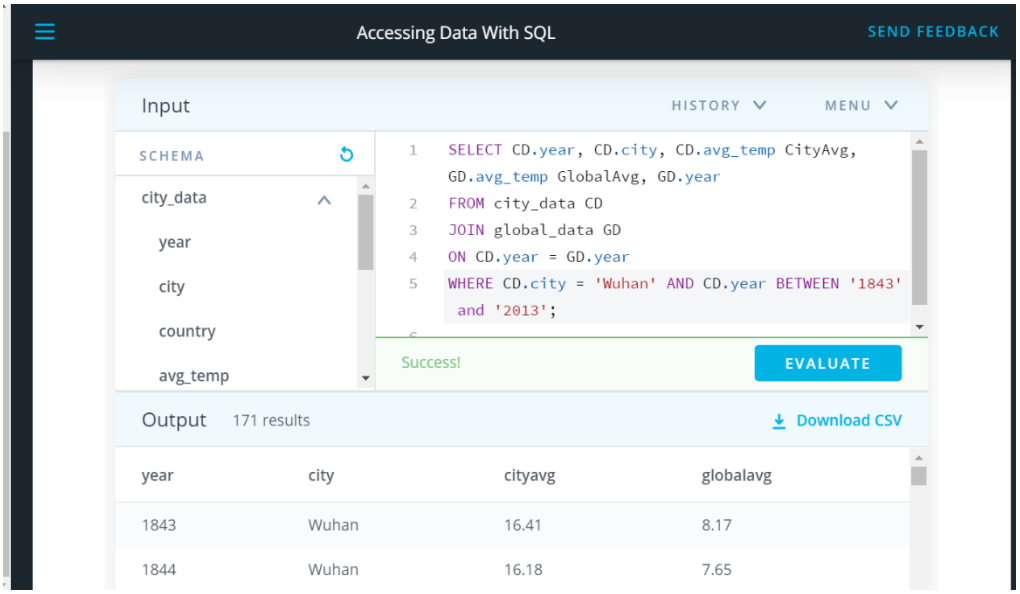
Weather Trends Project

- Step 1 – Extract data from database using SQL (Select relevant columns and rename them the avg_temp columns. Join two databases where years are equal, and city_data 'city' equals Wuhan)
- City_data 'year' column, data available from 1843 to 2013



SELECT CD.year, CD.city, CD.avg_temp CityAvg, GD.avg_temp GlobalAvg, GD.year
FROM city_data CD
JOIN global_data GD
ON CD.year = GD.year
WHERE CD.city = 'Wuhan' **AND** CD.year **BETWEEN** '1843' **and** '2013';

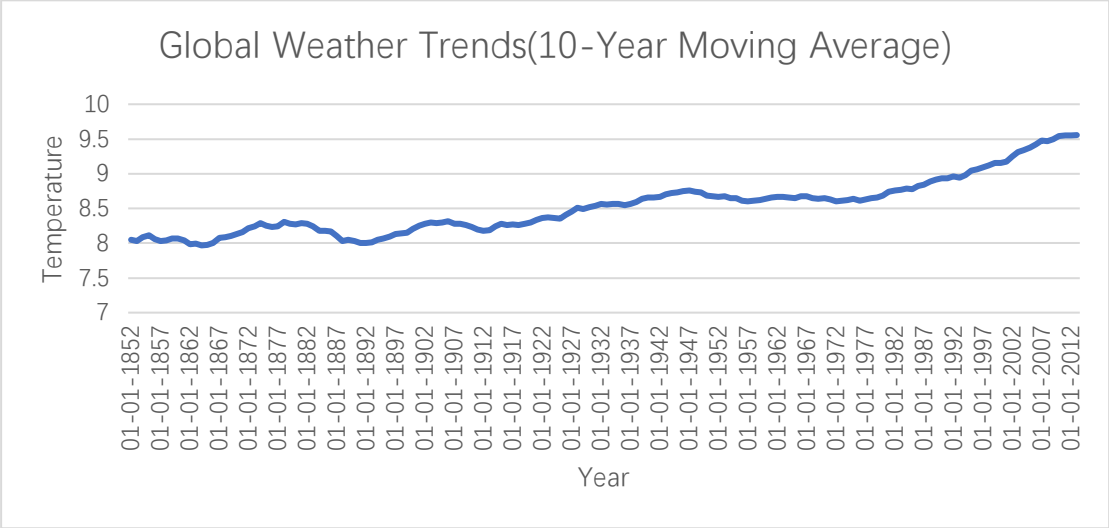
- Step 2 – Export to CSV (Downloaded CSV file) and opened the file using EXCEL

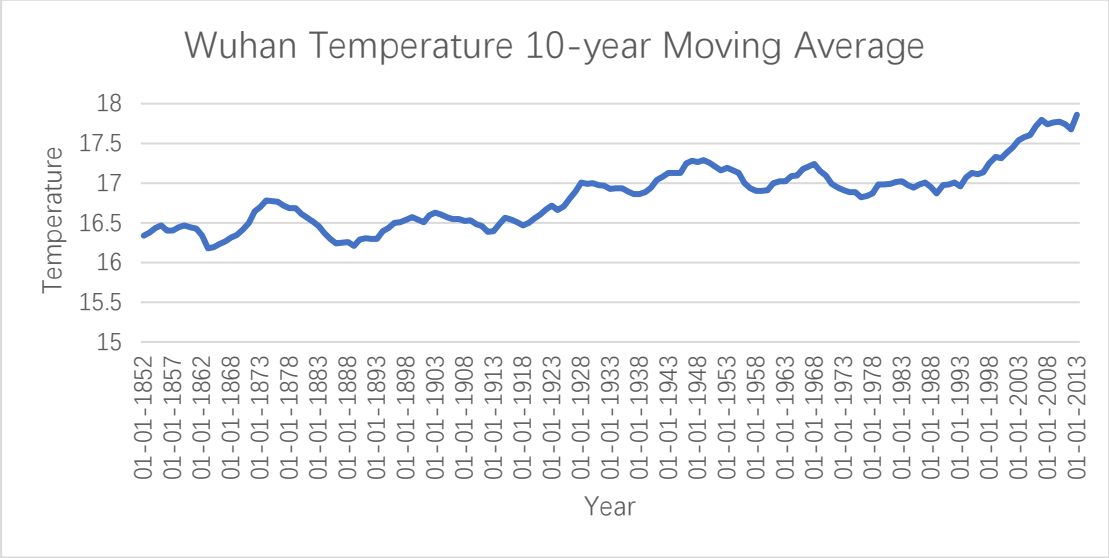
	A	B	C	D
	year	city	cityavg	globalavg
	1843	Wuhan	16.41	8.17
	1844	Wuhan	16.18	7.65
	1845	Wuhan	16.2	7.85
	1846	Wuhan	16.75	8.55
	1847	Wuhan	16.53	8.09
	1848	Wuhan	15.98	7.98
	1849	Wuhan	16.28	7.98
	1850	Wuhan	16.38	7.9
	1851	Wuhan	16.31	8.18
	1852	Wuhan	16.37	8.1
	1853	Wuhan	16.78	8.04
	1854	Wuhan	16.78	8.21
	1855	Wuhan	16.49	8.11
	1856	Wuhan	16.14	8
	1857	Wuhan	16.52	7.76
	1858	Wuhan	16.34	8.1
	1859	Wuhan	16.59	8.25
	1860	Wuhan	16.11	7.96

- Step 3 – On EXCEL I calculated a 10 Year Moving Average for Wuhan and Global by selecting first 10 rows on 'CityAvg' column then calculating the average on the next cell and copy/pasted the formula all the way down to the last cell. Renamed that column – 'city 10-year MA' and then did the same for 'GlobalAvg' and renamed the column next to it 'global 10-year MA'
- Used 10-year average because the data goes back 170 years from 2013 to reduce yearly volatility from the data by analyzing it every decade
- Formatted the cells in 'year' column to the 'date' function so it can read the information as a date when plotting it on the line graph

	A	B	C	D	E	F	G	H
1	year	city		cityavg	city 10-year MA		globalavg	global 10-year MA
2	01-01-1843	Wuhan		16.41			8.17	
3	01-01-1844	Wuhan		16.18			7.65	
4	01-01-1845	Wuhan		16.2			7.85	
5	01-01-1846	Wuhan		16.75			8.55	
6	01-01-1847	Wuhan		16.53			8.09	
7	01-01-1848	Wuhan		15.98			7.98	
8	01-01-1849	Wuhan		16.28			7.98	
9	01-01-1850	Wuhan		16.38			7.9	
10	01-01-1851	Wuhan		16.31			8.18	
11	01-01-1852	Wuhan		16.37	16.339		8.1	8.045
12	01-01-1853	Wuhan		16.78	16.376		8.04	8.032
13	01-01-1854	Wuhan		16.78	16.436		8.21	8.088
14	01-01-1855	Wuhan		16.49	16.465		8.11	8.114
15	01-01-1856	Wuhan		16.14	16.404		8	8.059
16	01-01-1857	Wuhan		16.52	16.403		7.76	8.026
17	01-01-1858	Wuhan		16.34	16.439		8.1	8.038
18	01-01-1859	Wuhan		16.59	16.47		8.25	8.065
19	01-01-1860	Wuhan		16.11	16.443		7.96	8.071
20	01-01-1861	Wuhan		16.15	16.427		7.85	8.038
21	01-01-1862	Wuhan		15.46	16.336		7.56	7.984
22	01-01-1863	Wuhan		16.15	16.273		8.11	7.991

- Step 4 – Plotted the date and moving average data on a line graph for Wuhan and another line graph for Global to analyze





- Global average temperatures are much lower than Wuhan's average, ranging from 7 to 10 degrees Celsius whereas Wuhan's average ranges from 15 to 18 degrees Celsius
- Both Global and Wuhan's average temperature has been gradually increasing over time during the last 17 decades. Global's average increased by 1 degree and Wuhan increased by 1.5 degrees Celsius
- Global is getting hotter over time, before that from 1952 to 1912 there were minor fluctuations, from 1912 to 1947 there was an increase then temperatures remained stable until 1977 and from then on the trend line has been on a steady increase since 1977
- Wuhan's temperature has been a more volatile over time but with the overall line going upwards, from 1993 is where a clear increase in temperature shows