Explore Weather Trends

Extract the data

Write a SQL query to extract the city level data then export to CSV:

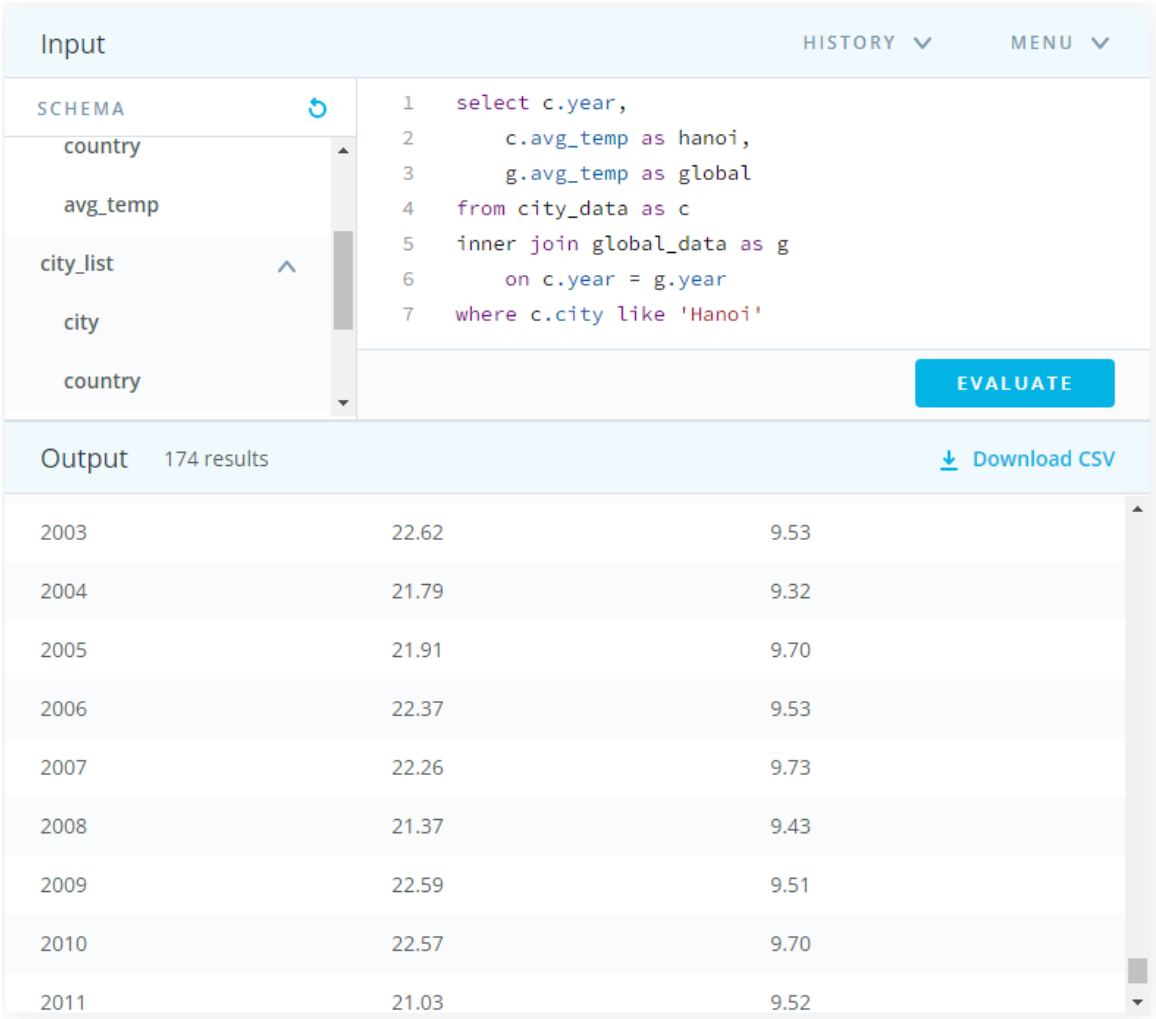
select * from city_data

where city like 'Hanoi'

Write a SQL query to extract the global data then export to CSV:

select * from global_data

Or write SQL query to combine Hanoi and Global data like below:



Open up the CSV

Using Excel tool to open file csv

Hanoi data

	year	city	country	avg_temp
2	1840	Hanoi	Vietnam	21
3	1841	Hanoi	Vietnam	21.3
4	1842	Hanoi	Vietnam	21.16
5	1843	Hanoi	Vietnam	21.26
6	1844	Hanoi	Vietnam	20.78
7	1845	Hanoi	Vietnam	20.68
8	1846	Hanoi	Vietnam	21.25
9	1847	Hanoi	Vietnam	20.83
0	1848	Hanoi	Vietnam	20.73
1	1849	Hanoi	Vietnam	20.94
2	1850	Hanoi	Vietnam	21.11
3	1851	Hanoi	Vietnam	21.26

Global data

year	avg_temp
1750	8.72
1751	7.98
1752	5.78
1753	8.39
1754	8.47
1755	8.36
1756	8.85
1757	9.02
1758	6.74
1759	7.99
1760	7.19
1761	8.77
1762	8.61

Combine Hanoi Global data

year	hanoi	global
1840	21	7.8
1841	21.3	7.69
1842	21.16	8.02
1843	21.26	8.17
1844	20.78	7.65
1845	20.68	7.85
1846	21.25	8.55
1847	20.83	8.09

Create a line chart

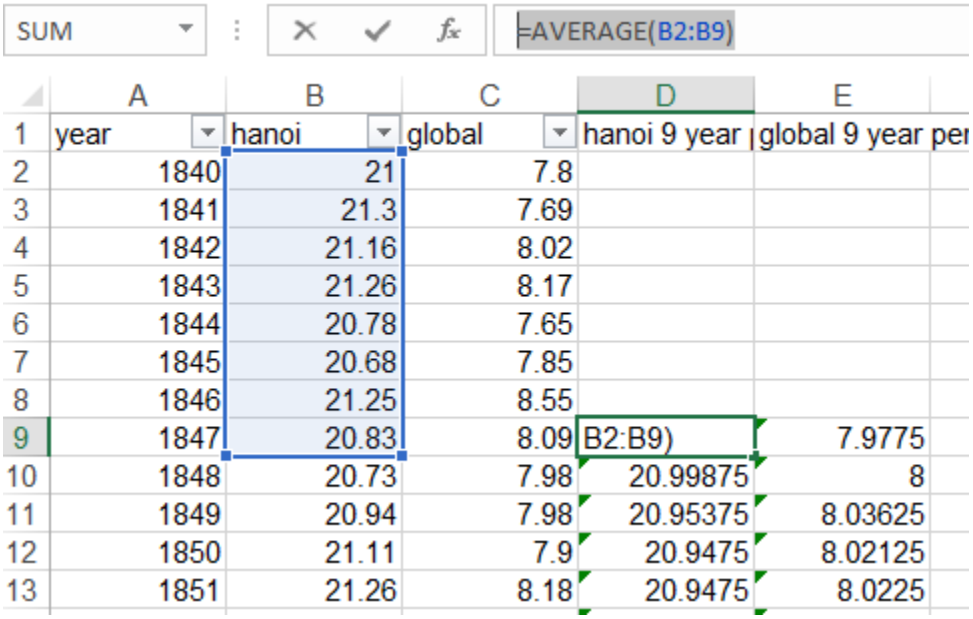
From Combine Hanoi data, we calculate Moving Average for 9 years Period.

For Hanoi data, write AVERAGE for the 9 first year's value in B column and copy formula down to others cells in D column:

=AVERAGE(B2:B9)

Same with Global, write AVERAGE for the 9 first year's value in C column and copy formula down to others cells in E column

So, we have Hanoi Global and 9 years Period Moving Average table

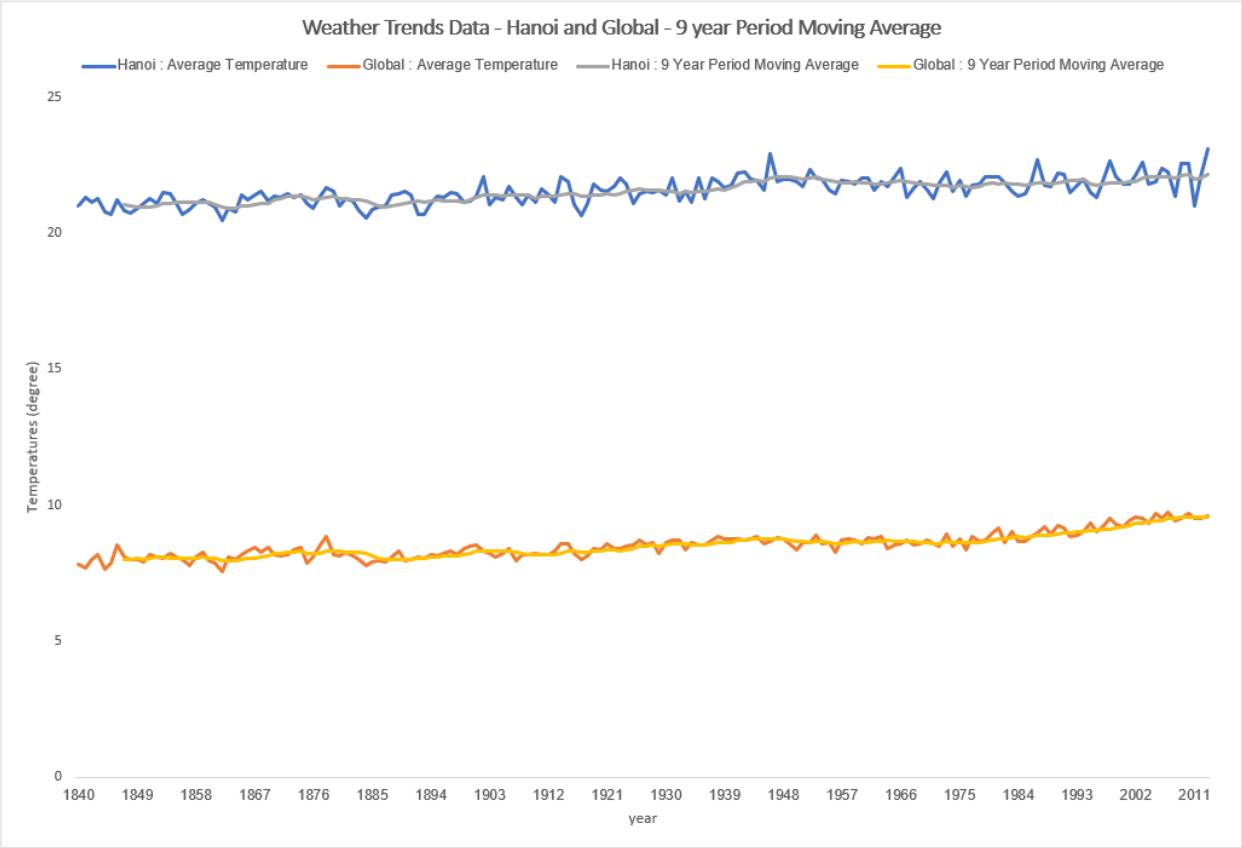


	A	B	C	D	E
1	year	hanoi	global	hanoi 9 year	global 9 year per
2	1840	21	7.8		
3	1841	21.3	7.69		
4	1842	21.16	8.02		
5	1843	21.26	8.17		
6	1844	20.78	7.65		
7	1845	20.68	7.85		
8	1846	21.25	8.55		
9	1847	20.83	8.09	B2:B9)	7.9775
10	1848	20.73	7.98	20.99875	8
11	1849	20.94	7.98	20.95375	8.03625
12	1850	21.11	7.9	20.9475	8.02125
13	1851	21.26	8.18	20.9475	8.0225

In excel, create pivot table

Row Labels	Hanoi : Average Temperature	Global : Average Temperature	Hanoi : 9 Year Period Moving Average	Global : 9 Year Period Moving Average
1840	21	7.8		
1841	21.3	7.69		
1842	21.16	8.02		
1843	21.26	8.17		
1844	20.78	7.65		
1845	20.68	7.85		
1846	21.25	8.55		
1847	20.83	8.09	21.0325	7.9775
1848	20.73	7.98	20.99875	8
1849	20.94	7.98	20.95375	8.03625
1850	21.11	7.9	20.9475	8.02125
1851	21.26	8.18	20.9475	8.0225
1852	21.12	8.1	20.99	8.07875
1853	21.51	8.04	21.09375	8.1025
1854	21.45	8.21	21.11875	8.06
1855	21.1	8.11	21.1525	8.0625
1856	20.69	8	21.1475	8.065

Then create line chart like below:



We also calculate min and max of Hanoi and Global temperature:

Min of hanoi	Max of hanoi	Min of global	Max of global
20.48	23.1	7.56	9.73

Make observations

The line chart pointed out that:

- Overall, Hanoi's average temperatures hotter than global average, Hanoi's average temperatures is two times more Hanoi's average temperate
- We can see Hanoi's temperatures was increasingly volatile, getting hotter and cooler
- Global average temperatures are increase, the world getting hotter.
- From 1930-1975 (40 years) the global temperature increased 0.5 degree. From 1975-2013 (40 years) the global temperature increased 1.2 degree. So in over the last few hundred years, the global temperature can increase 6 degrees.