Exploring Weather Trends - Project

Summary

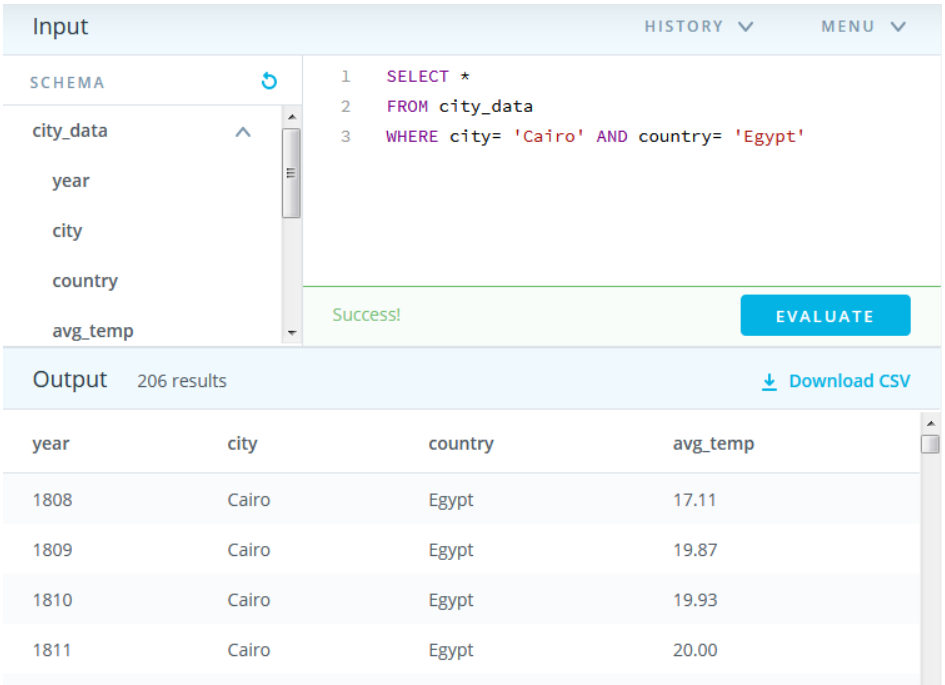
In this project, I will analyze local city (Cairo) and global temperature data and compare the temperature trends where I live to overall global temperature trends.

Outline

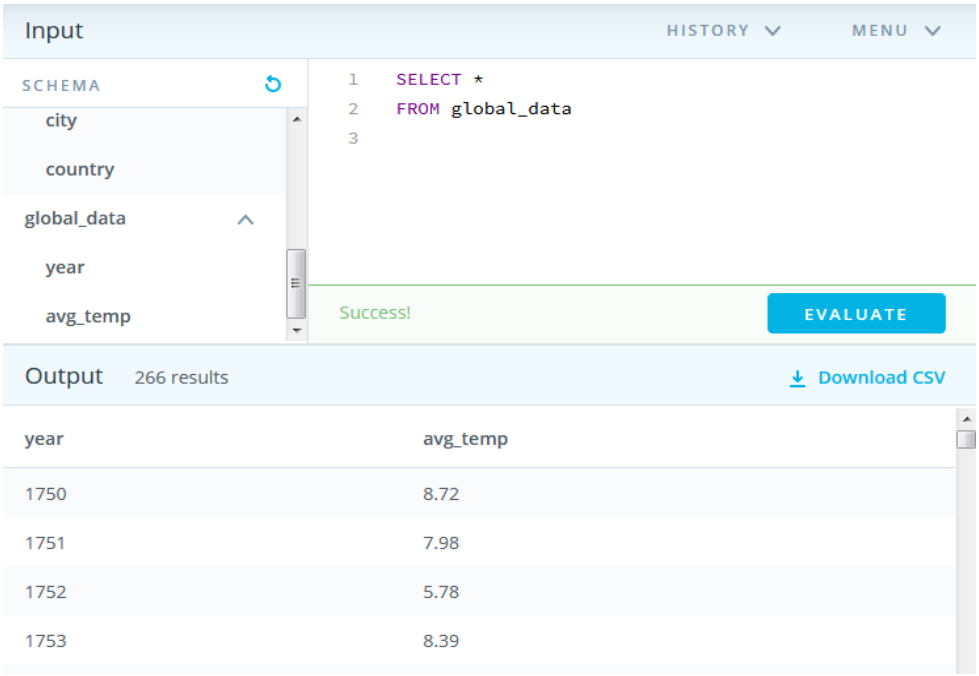
- Tools used :
  - **Excel - SQL**
- Moving average Calculation:
  - Decided to make the moving average one for both Global and city Temperature with a decade basis.
- Key considerations when decided how to visualize the trends:
  - I removed all Global Temp before **1808** as there are no data for my nearest largest city (Cairo) and after **2013** for the same reason.

Extract the data

- Tool used for extracting data : **SQL**
- SQL query to extract the city level data and then Export to CSV.



- SQL query to extract the global data and then Export to CSV.



Open up the CSV

- Tool used for Opening up CSV: Excel

City Temp	Global Temp

	year,city,country,avg_temp
1	year,city,country,avg_temp
2	1808,Cairo,Egypt,17.11
3	1809,Cairo,Egypt,19.87
4	1810,Cairo,Egypt,19.93
5	1811,Cairo,Egypt,20.00
6	1812,Cairo,Egypt,19.93
7	1813,Cairo,Egypt,20.51
8	1814,Cairo,Egypt,20.43
9	1815,Cairo,Egypt,20.30
10	1816,Cairo,Egypt,20.51
11	1817,Cairo,Egypt,21.88
12	1818,Cairo,Egypt,11.60
13	1819,Cairo,Egypt,20.31
14	1820,Cairo,Egypt,20.58
15	1821,Cairo,Egypt,20.63
16	1822,Cairo,Egypt,20.72
17	1823,Cairo,Egypt,20.71
18	1824,Cairo,Egypt,21.44
19	1825,Cairo,Egypt,21.00
20	1826,Cairo,Egypt,20.94
21	1827,Cairo,Egypt,21.63
22	1828,Cairo,Egypt,20.99
23	1829,Cairo,Egypt,20.91
24	1830,Cairo,Egypt,21.25
25	1831,Cairo,Egypt,20.52
26	1832,Cairo,Egypt,20.20
27	1833,Cairo,Egypt,20.81
28	1834,Cairo,Egypt,20.69

	A
1	year,avg_temp
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
9	1757,9.02
10	1758,6.74
11	1759,7.99
12	1760,7.19
13	1761,8.77
14	1762,8.61
15	1763,7.50
16	1764,8.40
17	1765,8.25
18	1766,8.41
19	1767,8.22
20	1768,6.78
21	1769,7.69
22	1770,7.69
23	1771,7.85
24	1772,8.19
25	1773,8.22
26	1774,8.77
27	1775,9.18
28	1776,8.30

- Started by converting CSV File to Excel File and separating data into different Columns then the alignment as follow:

City Temp

	A	B	C	D
1	Year	city	country	City avg_temp
2	1808	Cairo	Egypt	17.11
3	1809	Cairo	Egypt	19.87
4	1810	Cairo	Egypt	19.93
5	1811	Cairo	Egypt	20
6	1812	Cairo	Egypt	19.93
7	1813	Cairo	Egypt	20.51
8	1814	Cairo	Egypt	20.43
9	1815	Cairo	Egypt	20.3
10	1816	Cairo	Egypt	20.51
11	1817	Cairo	Egypt	21.88
12	1818	Cairo	Egypt	11.6
13	1819	Cairo	Egypt	20.31
14	1820	Cairo	Egypt	20.58
15	1821	Cairo	Egypt	20.63
16	1822	Cairo	Egypt	20.72
17	1823	Cairo	Egypt	20.71
18	1824	Cairo	Egypt	21.44
19	1825	Cairo	Egypt	21
20	1826	Cairo	Egypt	20.94
21	1827	Cairo	Egypt	21.63
22	1828	Cairo	Egypt	20.99
23	1829	Cairo	Egypt	20.91
24	1830	Cairo	Egypt	21.25
25	1831	Cairo	Egypt	20.52
26	1832	Cairo	Egypt	20.2
27	1833	Cairo	Egypt	20.81
28	1834	Cairo	Egypt	20.69

Global Temp

	A	B
1	year	Global avg_temp
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
9	1757	9.02
10	1758	6.74
11	1759	7.99
12	1760	7.19
13	1761	8.77
14	1762	8.61
15	1763	7.5
16	1764	8.4
17	1765	8.25
18	1766	8.41
19	1767	8.22
20	1768	6.78
21	1769	7.69
22	1770	7.69
23	1771	7.85
24	1772	8.19
25	1773	8.22
26	1774	8.77
27	1775	9.18
28	1776	8.3

Create a line chart

- Started by calculating moving average as mentioned above in outline on a decade basis

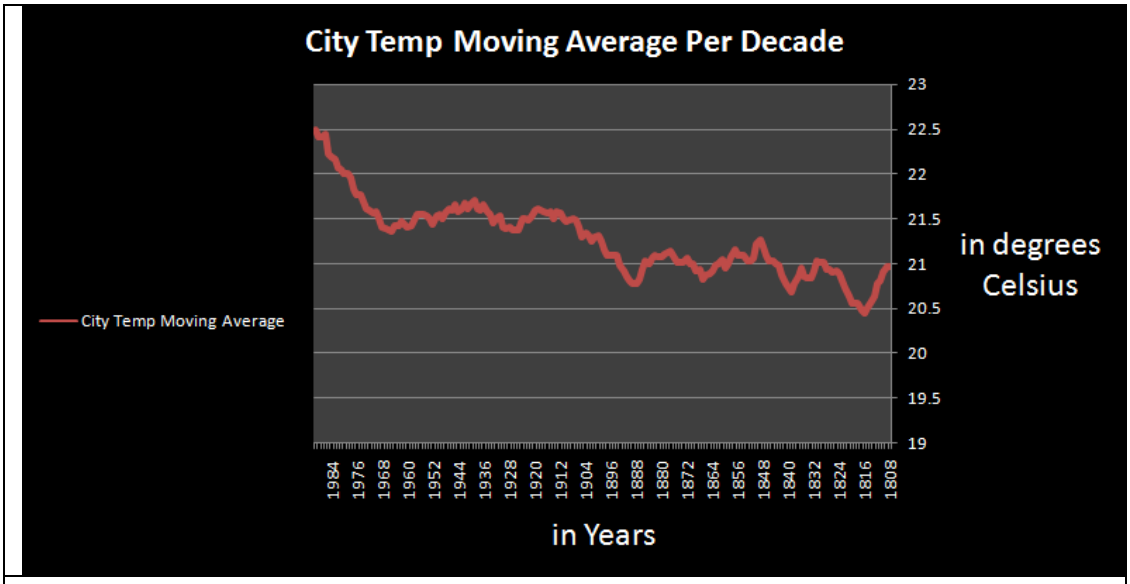
City Temp Moving Average	Global Temp Moving Average

	A	B	C	D	E
1	Year	city	country	City avg_temp	10 Y Moving Average City Temp
2	1808	Cairo	Egypt	17.11	
3	1809	Cairo	Egypt	19.87	
4	1810	Cairo	Egypt	19.93	
5	1811	Cairo	Egypt	20	
6	1812	Cairo	Egypt	19.93	
7	1813	Cairo	Egypt	20.51	
8	1814	Cairo	Egypt	20.43	
9	1815	Cairo	Egypt	20.3	
10	1816	Cairo	Egypt	20.51	
11	1817	Cairo	Egypt	21.88	20.047
12	1818	Cairo	Egypt	11.6	19.496
13	1819	Cairo	Egypt	20.31	19.54
14	1820	Cairo	Egypt	20.58	19.605
15	1821	Cairo	Egypt	20.63	19.668
16	1822	Cairo	Egypt	20.72	19.747
17	1823	Cairo	Egypt	20.71	19.767
18	1824	Cairo	Egypt	21.44	19.868
19	1825	Cairo	Egypt	21	19.938
20	1826	Cairo	Egypt	20.94	19.981
21	1827	Cairo	Egypt	21.63	19.956
22	1828	Cairo	Egypt	20.99	20.895
23	1829	Cairo	Egypt	20.91	20.955
24	1830	Cairo	Egypt	21.25	21.022
25	1831	Cairo	Egypt	20.52	21.011
26	1832	Cairo	Egypt	20.2	20.959
27	1833	Cairo	Egypt	20.81	20.969

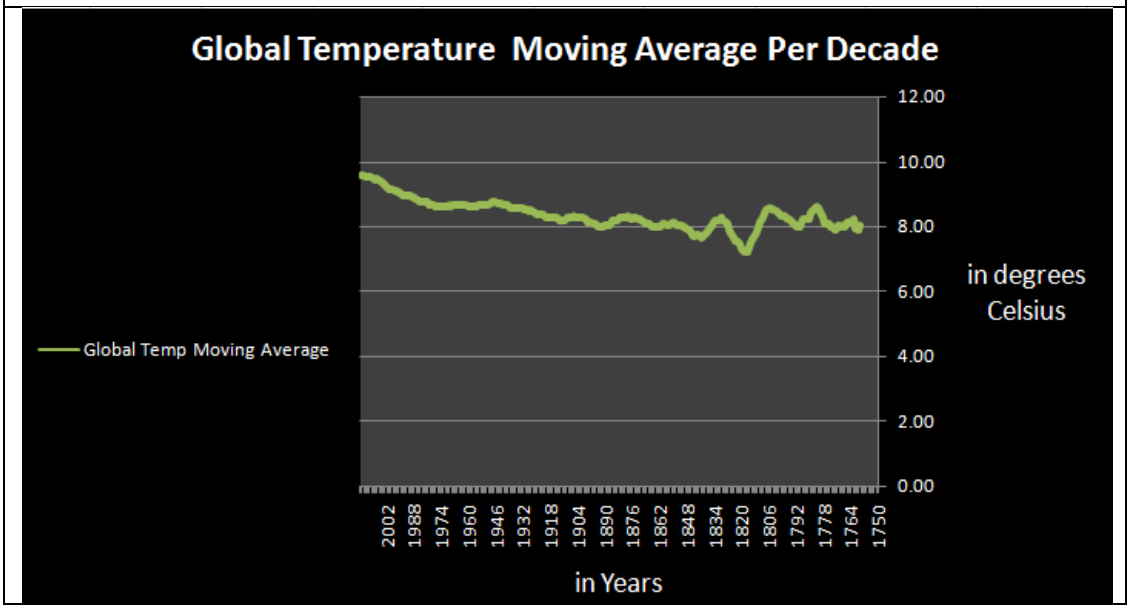
	A	B	C
1	Year	Global avg_temp	10 Y Moving Average Global Temperature
2	1750	8.72	
3	1751	7.98	
4	1752	5.78	
5	1753	8.39	
6	1754	8.47	
7	1755	8.36	
8	1756	8.85	
9	1757	9.02	
10	1758	6.74	
11	1759	7.99	8.03
12	1760	7.19	7.877
13	1761	8.77	7.956
14	1762	8.61	8.239
15	1763	7.5	8.15
16	1764	8.4	8.143
17	1765	8.25	8.132
18	1766	8.41	8.088
19	1767	8.22	8.008
20	1768	6.78	8.012
21	1769	7.69	7.982
22	1770	7.69	8.032
23	1771	7.85	7.94
24	1772	8.19	7.898
25	1773	8.22	7.97
26	1774	8.77	8.007
27	1775	9.18	8.1

- Making a chart for each one of them alone

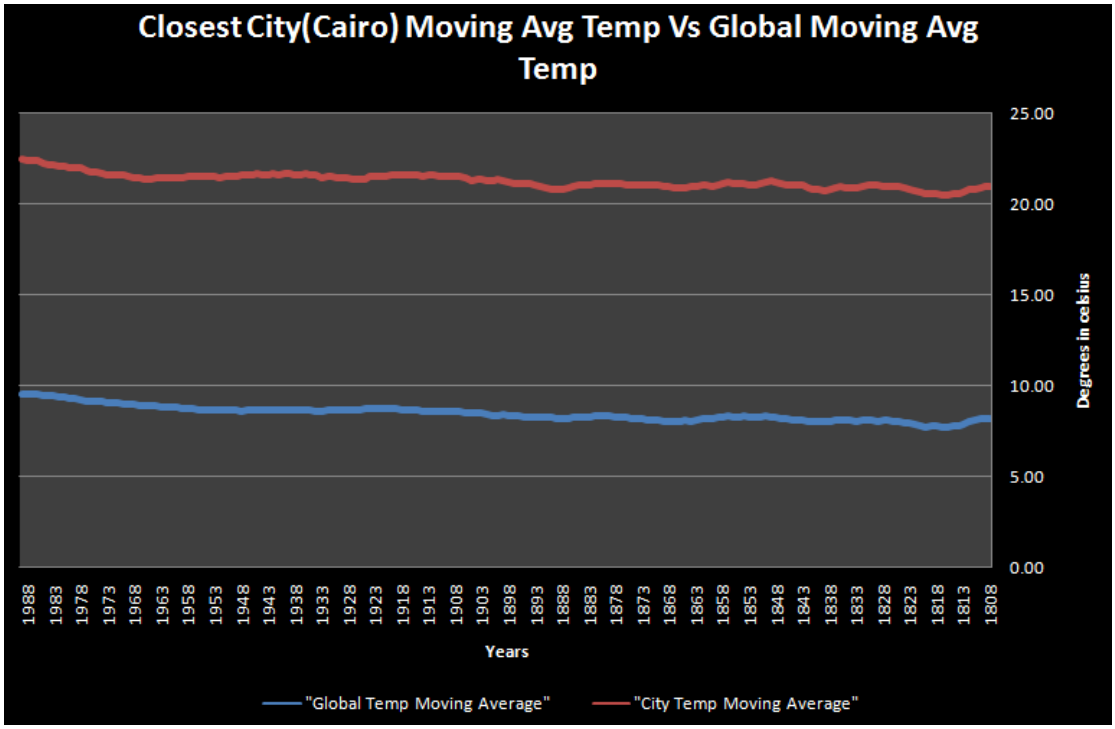
City Temp Moving Average Chart



Global Temp Moving Average Chart



- Gathering the two temperatures in one chart for comparison after removing all Global Temp before **1808** as there are no data for my nearest largest city (Cairo) and after **2013** for the same reason as mentioned above



Observations

- My city Cairo is a lot hotter than the global avg Temperature by more than the double over 200 years
- The change in temperature in Cairo is sharper than the global average as we will notice in the charts above.
- The world is getting hotter and Cairo even more.
- Over 200 years the temperature moving avg has raised about 2 full degrees for both my city (Cairo) and global avg.