Exploring Weather Trends

-The SQL query to extract the available mentioned cities in my country:

```sql
1    SELECT *
2    FROM city_list
3    WHERE country = 'Egypt';
```

- The result of the previous query:

- So I chose Cairo because I already live in it.

- The SQL query to extract all related data to my city Cairo:

```sql
1    SELECT *
2    FROM city_data
3    WHERE city = 'Cairo';
```

- The result of the previous query:

- I have noticed that the year column in the previous result include years from 1808 to 2013, so I filtered the global data to match the same years and used the following query:

```
1    SELECT *
2    FROM global_data
3    WHERE year BETWEEN 1808 AND 2013
```

- The result of the previous query:

Input

SCHEMA

city_data

city_list

global_data

year

avg_temp

```
1    SELECT *
2    FROM global_data
3    WHERE year BETWEEN 1808 AND 2013
```

Success!   EVALUATE

Output   206 results   ↓ Download CSV

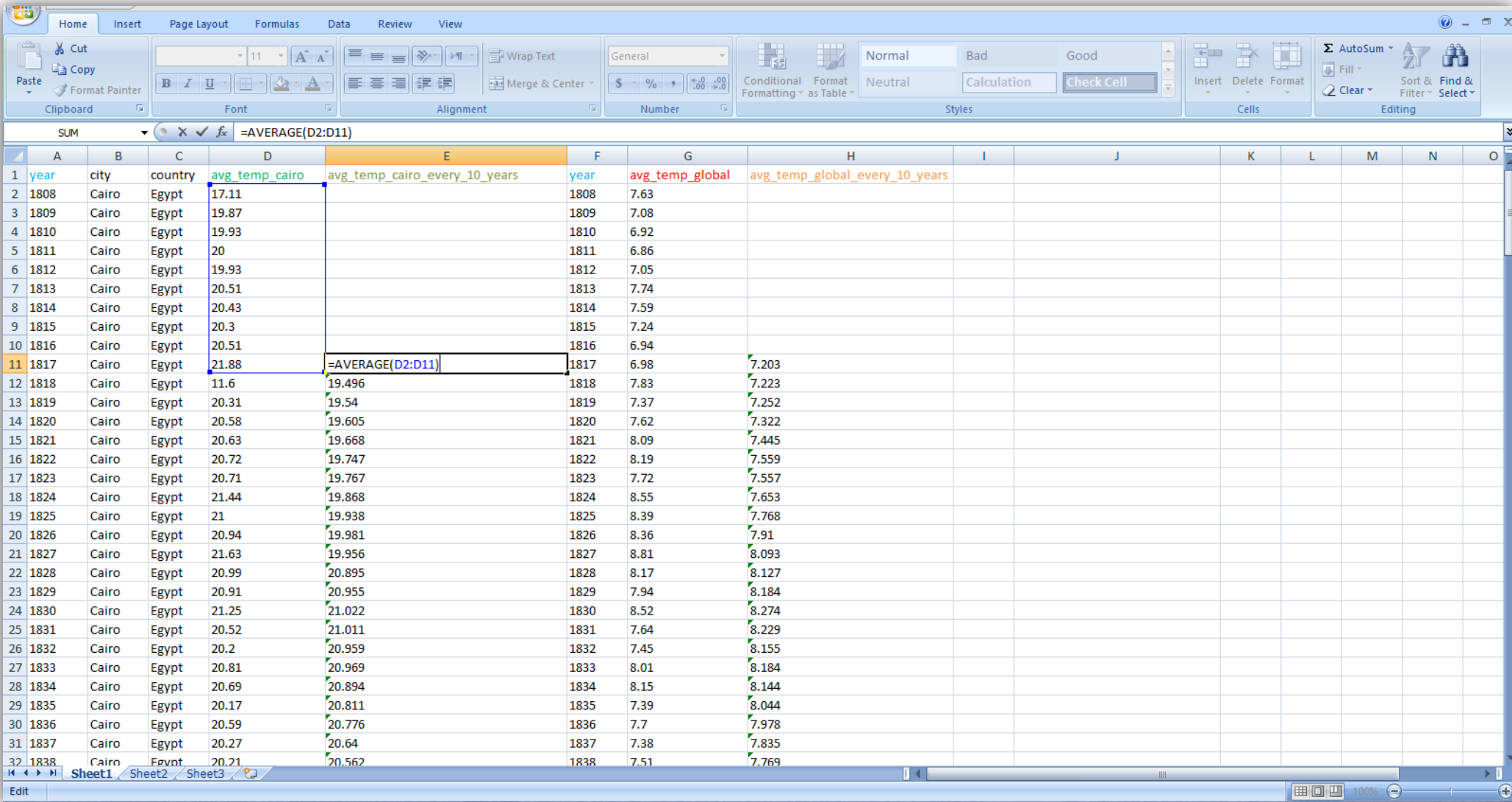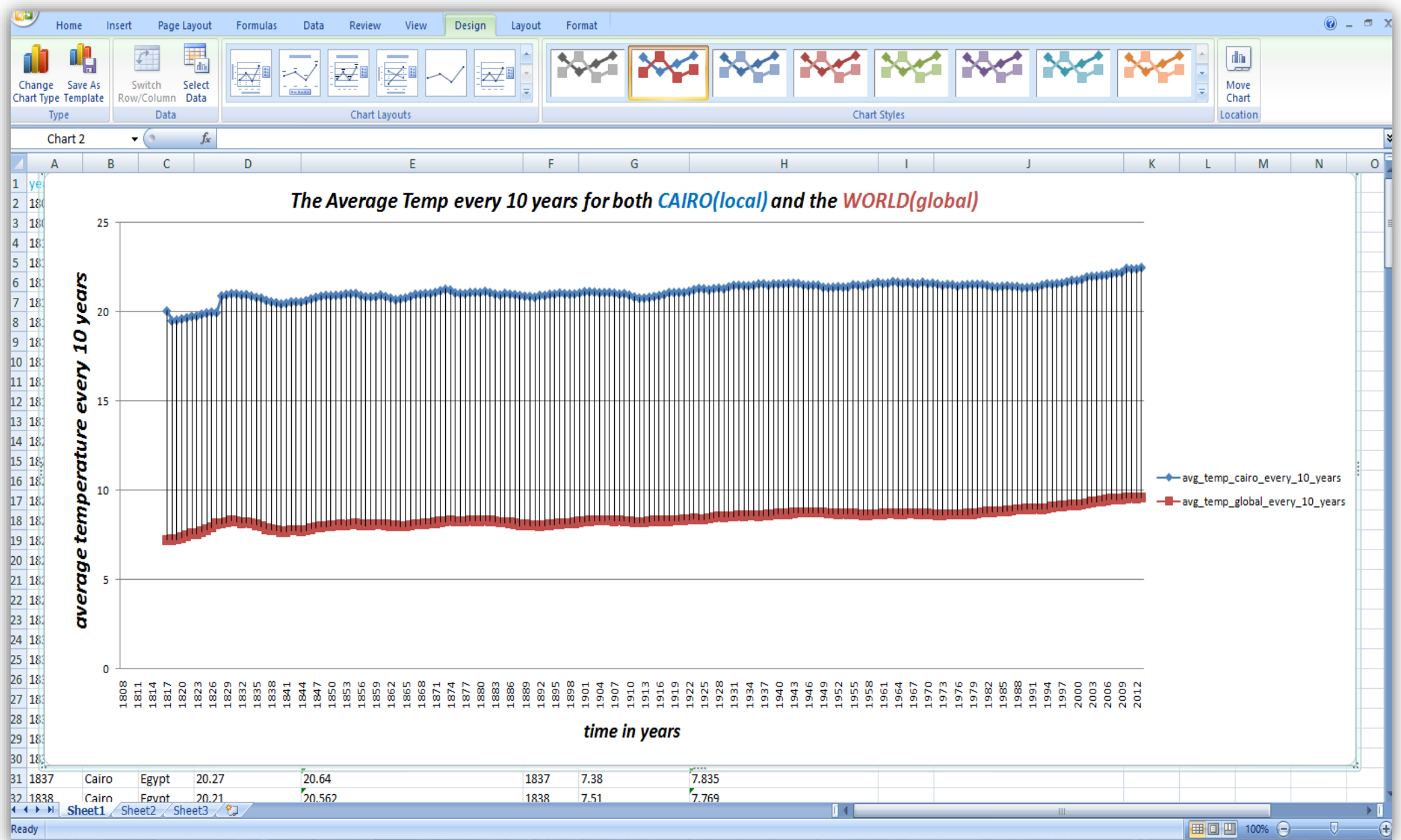| year	avg_temp
1808	7.63
1809	7.08
1810	6.92
1811	6.86
1812	7.05
1813	7.74
1814	7.59
1815	7.24

∧MENU []EXPAND

- I exported all the previous data to CSV and used EXCEL to view it then I combined the two data (local and global trends) in one excel sheet so I can draw a multi-line chart and compare between them.

- I used the moving average function in EXCEL, so the data can be easily observed when using the line chart.

- The used moving average function is (=AVERAGE(:)). I used the 10-year moving average in order to smooth out the lines and making trends more observable.

SUM   =AVERAGE(D2:D11)

	A	B	C	D	E	F	G	H
1	year	city	country	avg_temp_cairo	avg_temp_cairo_every_10_years	year	avg_temp_global	avg_temp_global_every_10_years
2	1808	Cairo	Egypt	17.11		1808	7.63	
3	1809	Cairo	Egypt	19.87		1809	7.08	
4	1810	Cairo	Egypt	19.93		1810	6.92	
5	1811	Cairo	Egypt	20		1811	6.86	
6	1812	Cairo	Egypt	19.93		1812	7.05	
7	1813	Cairo	Egypt	20.51		1813	7.74	
8	1814	Cairo	Egypt	20.43		1814	7.59	
9	1815	Cairo	Egypt	20.3		1815	7.24	
10	1816	Cairo	Egypt	20.51		1816	6.94	
11	1817	Cairo	Egypt	21.88	=AVERAGE(D2:D11)	1817	6.98	7.203
12	1818	Cairo	Egypt	11.6	19.496	1818	7.83	7.223
13	1819	Cairo	Egypt	20.31	19.54	1819	7.37	7.252
14	1820	Cairo	Egypt	20.58	19.605	1820	7.62	7.322
15	1821	Cairo	Egypt	20.63	19.668	1821	8.09	7.445
16	1822	Cairo	Egypt	20.72	19.747	1822	8.19	7.559
17	1823	Cairo	Egypt	20.71	19.767	1823	7.72	7.557
18	1824	Cairo	Egypt	21.44	19.868	1824	8.55	7.653
19	1825	Cairo	Egypt	21	19.938	1825	8.39	7.768
20	1826	Cairo	Egypt	20.94	19.981	1826	8.36	7.91
21	1827	Cairo	Egypt	21.63	19.956	1827	8.81	8.093
22	1828	Cairo	Egypt	20.99	20.895	1828	8.17	8.127
23	1829	Cairo	Egypt	20.91	20.955	1829	7.94	8.184
24	1830	Cairo	Egypt	21.25	21.022	1830	8.52	8.274
25	1831	Cairo	Egypt	20.52	21.011	1831	7.64	8.229
26	1832	Cairo	Egypt	20.2	20.959	1832	7.45	8.155
27	1833	Cairo	Egypt	20.81	20.969	1833	8.01	8.184
28	1834	Cairo	Egypt	20.69	20.894	1834	8.15	8.144
29	1835	Cairo	Egypt	20.17	20.811	1835	7.39	8.044
30	1836	Cairo	Egypt	20.59	20.776	1836	7.7	7.978
31	1837	Cairo	Egypt	20.27	20.64	1837	7.38	7.835
32	1838	Cairo	Egypt	20.21	20.562	1838	7.51	7.769

Sheet1 Sheet2 Sheet3

- The following is multi-line chart of the 10-year moving average for my city Cairo (local trend) and the world(global trend):

- The Observations about the similarities and differences in the two trends:

1- My city Cairo(local trend) is hotter on average compared to the global average,10 degrees at least .

2- By knowing the global average temp, I can measure(approximately) the average temp of my city by adding 10 degrees to the global average temp.

3- In general the temp average is increasing by time in both trends.

4- When comparing the yearly temp average not 10-year temp average, there is only one year(1818) where the difference in temp is less than 10 degrees, it's even less than 5 degrees.

5- In both trends the change in temp average change is usually by less than one degree, but there are a few years where the temp average change is by 1 degree or more and that is a quick change.

6- In both trends from the beginning(1808) until (1908) the temp average is increasing and decreasing by small values(there are ups and downs), but after (1908) the temp is only increasing(there are ups only).

7- In overall the world is getting hotter.

8- I explored some cities like Paris, Madrid, and Berlin and I found out that the average temp of any one of them are less that the average temp of the global trend. I also found out that any average temp of any city can be measured by knowing the average temp of the global trend.