Project 1 – Exploring Weather Trends

The following steps were taken to visualize the data describing the similarities and differences between global temperature and temperature trends in the New York.

1. The following SQL query was used to determine what cities were in the city_list table in the United States. New York was then picked for comparison to global temperatures.

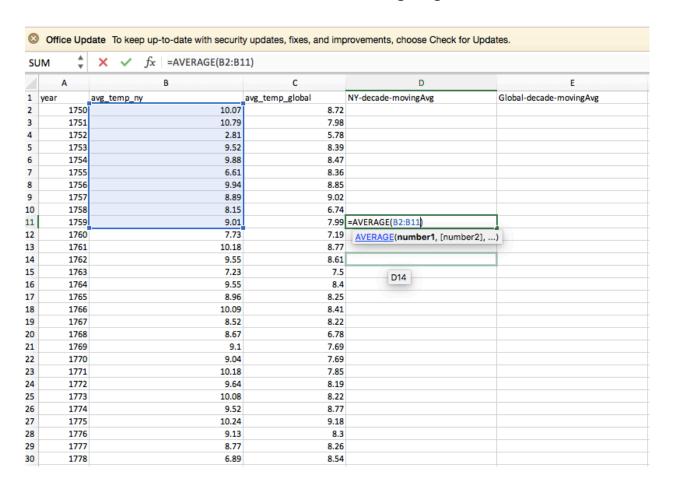'SELECT * FROM city_list WHERE country = 'United States' ;

2. The follow query will output the matching years, New York temperatures and global temperatures in both city_data and global_data tables.
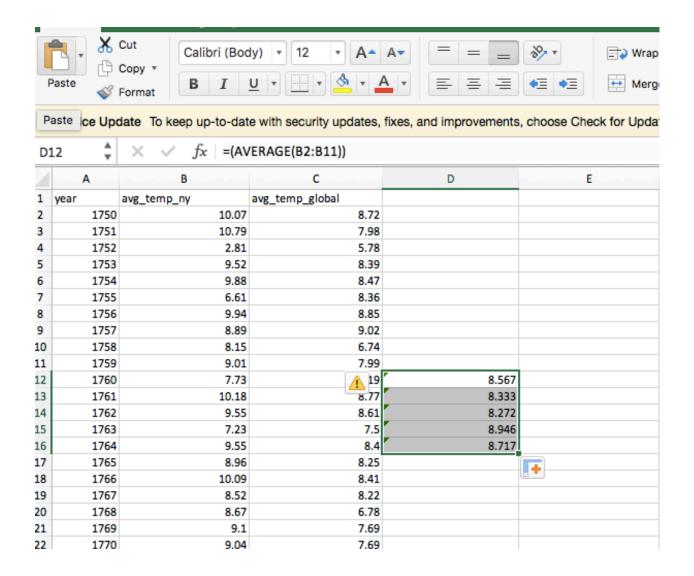
SELECT city_data.year, city_data.avg_temp AS avg_temp_NY, global_data.avg_temp AS avg_temp_global
FROM city_data
INNER JOIN global_data ON city_data.year = global_data.year
WHERE city_data.country = 'United States' and city_data.city = 'New York' ;

The excel spreadsheet below shows year, average temperature for NY and average global temperature.

	A	B	C	D
1	year	avg_temp_ny	avg_temp_global	
2	1750	10.07	8.72 ›
3	1751	10.79	7.98	
4	1752	2.81	5.78	
5	1753	9.52	8.39	
6	1754	9.88	8.47	
7	1755	6.61	8.36	
8	1756	9.94	8.85	
9	1757	8.89	9.02	
10	1758	8.15	6.74	
11	1759	9.01	7.99	
12	1760	7.73	7.19	
13	1761	10.18	8.77	
14	1762	9.55	8.61	
15	1763	7.23	7.5	
16	1764	9.55	8.4	
17	1765	8.96	8.25	
18	1766	10.09	8.41	
19	1767	8.52	8.22	
20	1768	8.67	6.78	
21	1769	9.1	7.69	
22	1770	9.04	7.69	
23	1771	10.18	7.85	
24	1772	9.64	8.19	
25	1773	10.08	8.22	
26	1774	9.52	8.77	
27	1775	10.24	9.18	
28	1776	9.13	8.3	

3. The moving averages for NY were calculated by entering the formula =AVERAGE(B2:B11) in the 11th row under the column 'NY-decade-movingAvg' . This cell was then clicked and dragged to the last row to calculate the moving average. The same was done for the column 'Global-decade-movingAvg'.

SUM ✕ ✓ *fx* =AVERAGE(B2:B11)

	A	B	C	D	E
1	year	avg_temp_ny	avg_temp_global	NY-decade-movingAvg	Global-decade-movingAvg
2	1750	10.07	8.72		
3	1751	10.79	7.98		
4	1752	2.81	5.78		
5	1753	9.52	8.39		
6	1754	9.88	8.47		
7	1755	6.61	8.36		
8	1756	9.94	8.85		
9	1757	8.89	9.02		
10	1758	8.15	6.74		
11	1759	9.01	7.99	=AVERAGE(B2:B11)	
12	1760	7.73	7.19	AVERAGE(**number1**, [number2], ...)	
13	1761	10.18	8.77		
14	1762	9.55	8.61		
15	1763	7.23	7.5	D14	
16	1764	9.55	8.4		
17	1765	8.96	8.25		
18	1766	10.09	8.41		
19	1767	8.52	8.22		
20	1768	8.67	6.78		
21	1769	9.1	7.69		
22	1770	9.04	7.69		
23	1771	10.18	7.85		
24	1772	9.64	8.19		
25	1773	10.08	8.22		
26	1774	9.52	8.77		
27	1775	10.24	9.18		
28	1776	9.13	8.3		
29	1777	8.77	8.26		
30	1778	6.89	8.54		

D12   ✕ ✓ fx =(AVERAGE(B2:B11))

	A	B	C	D	E
1	year	avg_temp_ny	avg_temp_global		
2	1750	10.07	8.72		
3	1751	10.79	7.98		
4	1752	2.81	5.78		
5	1753	9.52	8.39		
6	1754	9.88	8.47		
7	1755	6.61	8.36		
8	1756	9.94	8.85		
9	1757	8.89	9.02		
10	1758	8.15	6.74		
11	1759	9.01	7.99		
12	1760	7.73	⚠ 19	8.567	
13	1761	10.18	8.77	8.333	
14	1762	9.55	8.61	8.272	
15	1763	7.23	7.5	8.946	
16	1764	9.55	8.4	8.717	
17	1765	8.96	8.25		
18	1766	10.09	8.41		
19	1767	8.52	8.22		
20	1768	8.67	6.78		
21	1769	9.1	7.69		
22	1770	9.04	7.69		

	A	B	C	D	E
1	year	avg_temp_ny	avg_temp_global	NY-decade-movingAvg	Global-decade-movingAvg
2	1750	10.07	8.72		
3	1751	10.79	7.98		
4	1752	2.81	5.78		
5	1753	9.52	8.39		
6	1754	9.88	8.47		
7	1755	6.61	8.36		
8	1756	9.94	8.85		
9	1757	8.89	9.02		
10	1758	8.15	6.74		
11	1759	9.01	7.99	8.567	=AVERAGE(C2:C11)
12	1760	7.73	7.19	8.333	AVERAGE(number1, [number2], ...)
13	1761	10.18	8.77	8.272	
14	1762	9.55	8.61	8.946	
15	1763	7.23	7.5	8.717	
16	1764	9.55	8.4	8.684	
17	1765	8.96	8.25	8.919	
18	1766	10.09	8.41	8.934	
19	1767	8.52	22	8.897	
20	1768	8.67	6.78	8.949	
21	1769	9.1	7.69	8.958	
22	1770	9.04	7.69	9.089	
23	1771	10.18	7.85	9.089	
24	1772	9.64	8.19	9.098	
25	1773	10.08	8.22	9.383	

E11   ✕ ✓ fx =AVERAGE(C2:C11)

	A	B	C	D	E
1	year	avg_temp_ny	avg_temp_global	NY-decade-movingAvg	Global-decade-movingAvg
2	1750	10.07	8.72		
3	1751	10.79	7.98		
4	1752	2.81	5.78		
5	1753	9.52	8.39		
6	1754	9.88	8.47		
7	1755	6.61	8.36		
8	1756	9.94	8.85		
9	1757	8.89	9.02		
10	1758	8.15	6.74		
11	1759	9.01	7.99	57	8.03
12	1760	7.73	7.19	8.333	7.877
13	1761	10.18	8.77	8.272	7.956
14	1762	9.55	8.61	8.946	8.239
15	1763	7.23	7.5	8.717	8.15
16	1764	9.55	8.4	8.684	8.143
17	1765	8.96	8.25	8.919	8.132
18	1766	10.09	8.41	8.934	8.088
19	1767	8.52	8.22	8.897	8.008
20	1768	8.67	6.78	8.949	
21	1769	9.1	7.69	8.958	
22	1770	9.04	7.69	9.089	
23	1771	10.18	7.85	9.089	
24	1772	9.64	8.19	9.098	

4. The excel spreadsheet below shows the NY and global moving averages for a decade.

year	avg_temp_ny	avg_temp_global	decade-MA-ny	decade-MA-global
1750	10.07	8.72 ›		
1751	10.79	7.98		
1752	2.81	5.78		
1753	9.52	8.39		
1754	9.88	8.47		
1755	6.61	8.36		
1756	9.94	8.85		
1757	8.89	9.02		
1758	8.15	6.74		
1759	9.01	7.99	8.567	8.03
1760	7.73	7.19	8.333	7.877
1761	10.18	8.77	8.272	7.956
1762	9.55	8.61	8.946	8.239
1763	7.23	7.5	8.717	8.15
1764	9.55	8.4	8.684	8.143

5. The three columns , 'year', NY-moving-average, Global-moving -
average were then taken and used to plot the line chart below. The
line chart below shows NY and Global moving temperature
averages. The y-axis are the temperatures in Celsius and the x-axis
are the years.

6. The following observations are made from the chart :

   1. New York average temperatures from 1759 to 2011 are higher than the global average temperatures.
   2. Around 1786, there is deviation in the line pattern. At this year the Global temperatures are higher than the NY temperatures.
   3. Overall, the temperatures for both NY and global are steadily increasing.
   4. There is not a huge difference between NY and global temperatures. That is, NY temperatures are roughly 4 to 5 degrees more than global temperatures.