

## Exploring Weather Trends

This project explores local and global temperature datasets and compares their trends. Local temperature data were selected from Atlanta, which is the closest big city to where I live. 7-year moving averages (MA) were calculated and visualized with a line chart.

Steps taken to prepare and visualize the data were: SQL was used to prepare the data. Data were then exported to CSV where I calculated MAs and then visualized the data. Note that a common time frame of 1750 to 2013 was selected where we had data available from both datasets.

A 7-year MA was used. As an example, an average of B2 to B8 cells for the temperature of Atlanta was calculated to serve as the MA of the city temperature for 1756.

SUM					
	A	B	C	D	E
1	year	city_temp	7-Year MA (city_temp)	global_temp	7-Year MA (global_temp)
2	1750	15.01		8.72	
3	1751	15.73		7.98	
4	1752	9.22		5.78	
5	1753	14.42		8.39	
6	1754	14.53		8.47	
7	1755	12.28		8.36	
8	1756	14.63	=average(B2:B8)	8.85	
9	1757	14.11		9.02	
10	1758	12.96		6.74	
11	1759	13.97		7.99	
12	1760	12.59		7.19	
13	1761	14.95		8.77	

By shifting one cell below, the average of cells B3 to B9 were considered as the MA for the year 1757.

	A	B	C	D	E
1	year	city_temp	7-Year MA (city_temp)	global_temp	7-Year MA (global_temp)
2	1750	15.01		8.72	
3	1751	15.73		7.98	
4	1752	9.22		5.78	
5	1753	14.42		8.39	
6	1754	14.53		8.47	
7	1755	12.28		8.36	
8	1756	14.63	13.68857143	8.85	
9	1757	14.11	=AVERAGE(B3:B9)	9.02	
10	1758	12.96	AVERAGE(number1, [number2], ...)	6.74	
11	1759	13.97		7.99	
12	1760	12.59		7.19	

The same procedure was repeated throughout the time series for calculation of MA for the whole period of data.

	A	B	C	D	E
1	year	city_temp	7-Year MA (city_temp)	global_temp	7-Year MA (global_temp)
2	1750	15.01		8.72	
3	1751	15.73		7.98	
4	1752	9.22		5.78	
5	1753	14.42		8.39	
6	1754	14.53		8.47	
7	1755	12.28		8.36	
8	1756	14.63	13.68857143	8.85	8.078571429
9	1757	14.11	13.56	9.02	8.121428571
10	1758	12.96	13.16428571	6.74	7.944285714
11	1759	13.97	13.84285714	7.99	8.26
12	1760	12.59	13.58142857	7.19	8.088571429
13	1761	14.95	13.64142857	8.77	8.131428571
14	1762	14.38	13.94142857	8.61	8.167142857
15	1763	12.49	13.63571429	7.5	7.974285714
16	1764	14.42	13.68	8.4	7.885714286
17	1765	14.09	13.84142857	8.25	8.101428571
18	1766	14.86	13.96857143	8.41	8.161428571
19	1767	13.72	14.13	8.22	8.308571429
20	1768	13.26	13.88857143	6.78	8.024285714
21	1769	14.15	13.8571429	7.69	7.892857143
22	1770	14	14.07142857	7.69	7.92

To acquire an understanding of the overall trend of the time series and to see the variations over time, a line chart was selected.

Observations:

1. The average temperature of Atlanta is higher compared to the globe's average temperature. The difference has been relatively constant throughout the time series.
2. Although the magnitude and timing of variations (decreasing or increasing temperatures) are not the same, the overall changes are roughly similar between time series of local and global temperatures.
3. No clear increasing or decreasing trend is seen until 1910 to 1920 on both local and global time series. From that time, increasing trends are observed on and confirms the fact that Atlanta and the globe (on average) are getting hotter.
4. The overall trend from 1920 is increasing on both local and global data. However, there is a period, around 1960 to 1980, when we see a decrease in Atlanta's temperature and relatively constant temperature from the global data.

In summary, both local and global temperature datasets represent a warming temperature over the last decade.

