Project: Exploring Weather Trends – NYC vs. Global

Extract data from database using SQL

1. See if there is data for New York City.
   SELECT * FROM city_list where city LIKE '%New%';

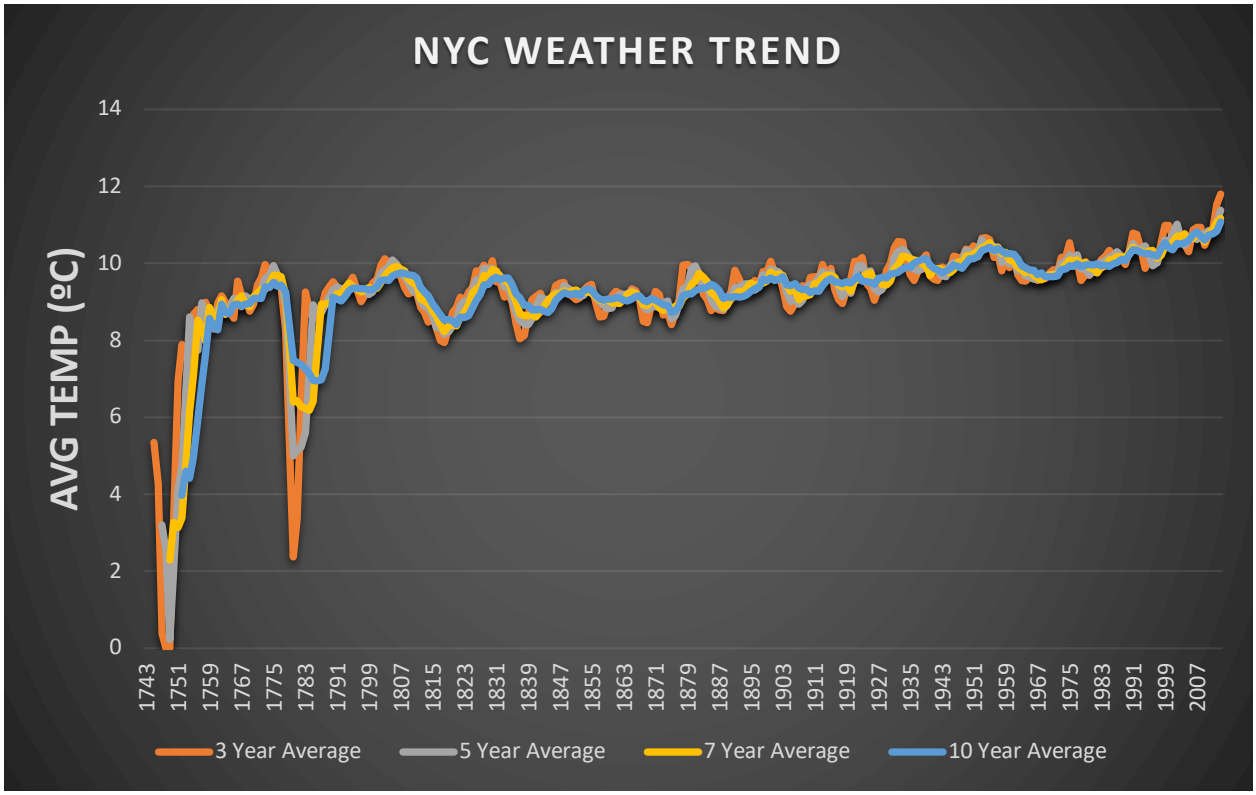
2. Extract data for New York City:
   SELECT * FROM city_data WHERE city = 'New York' ORDER BY year;

3. Extract global data:
   SELECT * FROM global_data ORDER BY year;

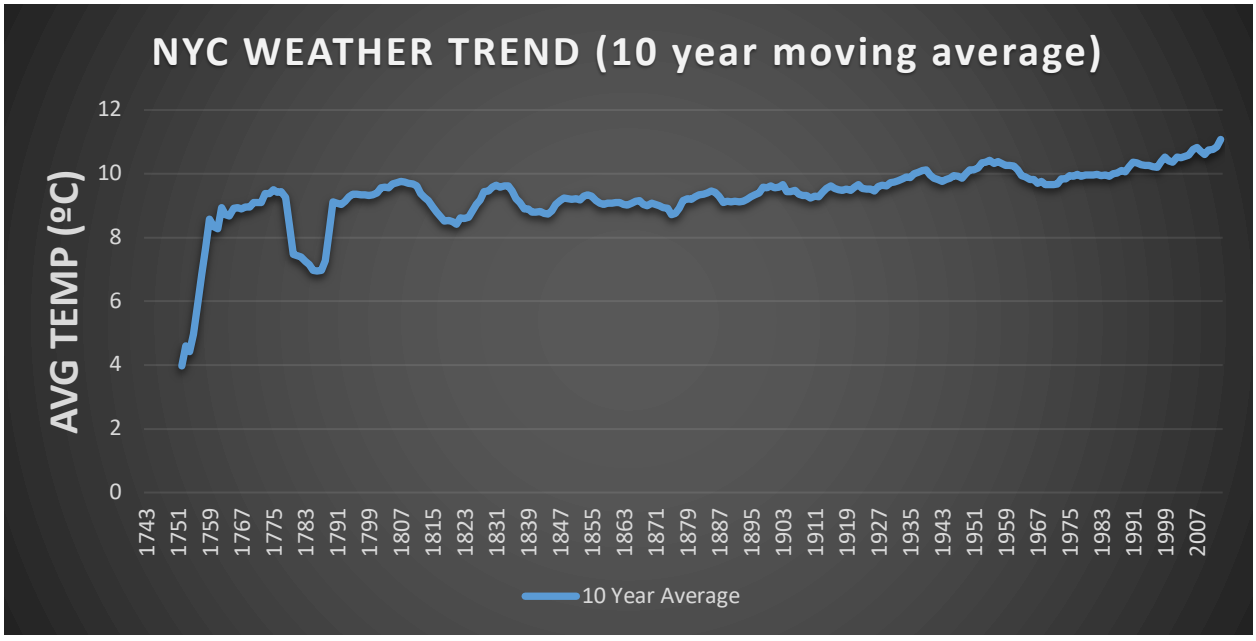
Line Chart

1. Test how much moving average to use to smooth out the line: 3 year moving average, 5 year moving average, 7 year moving average, 10 year moving average.

year	city	country	avg_temp	3 Year Average	5 Year Average	7 Year Average	10 Year Average
1743	New York	United State	3.26				
1744	New York	United State	11.66				
1745	New York	United State	1.13	5.35			
1746	New York	United States		4.263333333			
1747	New York	United States		0.376666667	3.21		
1748	New York	United States		0	2.558		
1749	New York	United States		0	0.226	2.292857143	
1750	New York	United State	10.07	3.356666667	2.014	3.265714286	
1751	New York	United State	10.79	6.953333333	4.172	3.141428571	
1752	New York	United State	2.81	7.89	4.734	3.381428571	3.972
1753	New York	United State	9.52	7.706666667	6.638	4.741428571	4.598
1754	New York	United State	9.88	7.403333333	8.614	6.152857143	4.42
1755	New York	United State	6.61	8.67	7.922	7.097142857	4.968
1756	New York	United State	9.94	8.81	7.752	8.517142857	5.962
1757	New York	United State	8.89	8.48	8.968	8.348571429	6.851
1758	New York	United State	8.15	8.993333333	8.694	7.971428571	7.666
1759	New York	United State	9.01	8.683333333	8.52	8.857142857	8.567
1760	New York	United State	7.73	8.296666667	8.744	8.601428571	8.333
1761	New York	United State	10.18	8.973333333	8.792	8.644285714	8.272

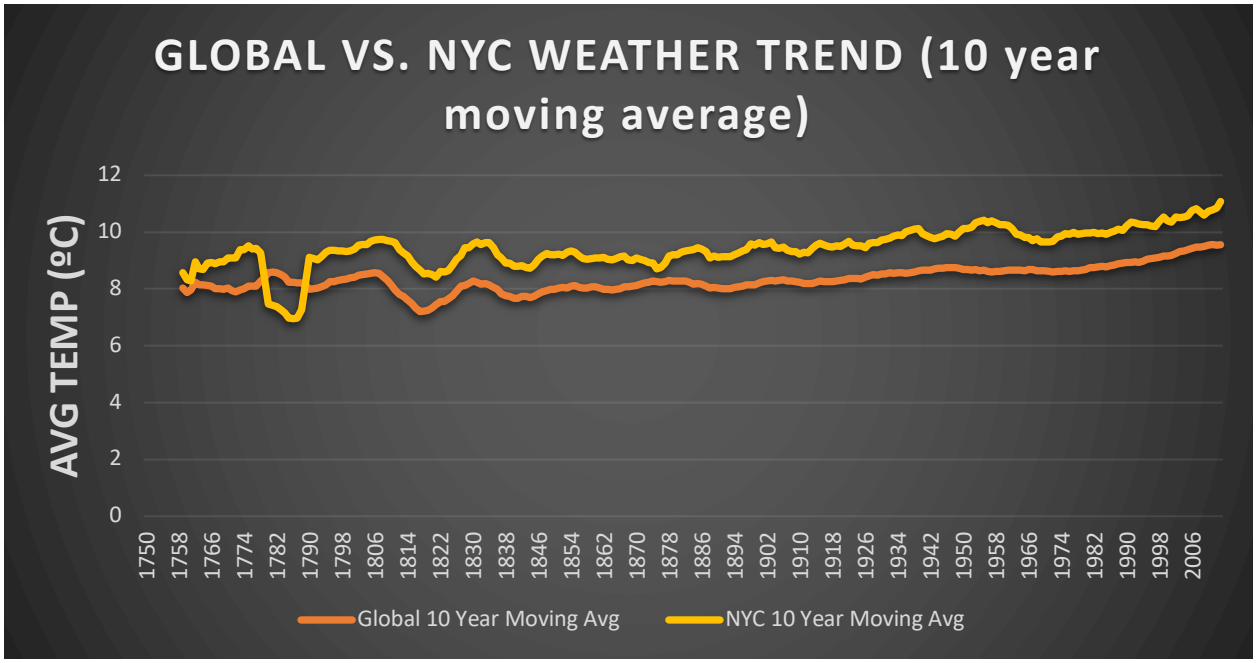


2. The “10 Year” moving average (blue line) smooths out the line better than the rest, so I will use this for comparing against the global moving average.



3. The global average temperature data starts at 1750 (NYC starts at 1743), so start the comparison at 1750 for both.

global_year	global_avg_temp	Global 10 Year Moving Avg	nyc_avg_temp	NYC 10 Year Moving Avg
1750	8.72		10.07	
1751	7.98		10.79	
1752	5.78		2.81	
1753	8.39		9.52	
1754	8.47		9.88	
1755	8.36		6.61	
1756	8.85		9.94	
1757	9.02		8.89	
1758	6.74		8.15	
1759	7.99	8.03	9.01	8.567
1760	7.19	7.877	7.73	8.333
1761	8.77	7.956	10.18	8.272
1762	8.61	8.239	9.55	8.946
1763	7.5	8.15	7.23	8.717
1764	8.4	8.143	9.55	8.684
1765	8.25	8.132	8.96	8.919
1766	8.41	8.088	10.09	8.934
1767	8.22	8.008	8.52	8.897
1768	6.78	8.012	8.67	8.949
1769	7.69	7.982	9.1	8.958



Observations

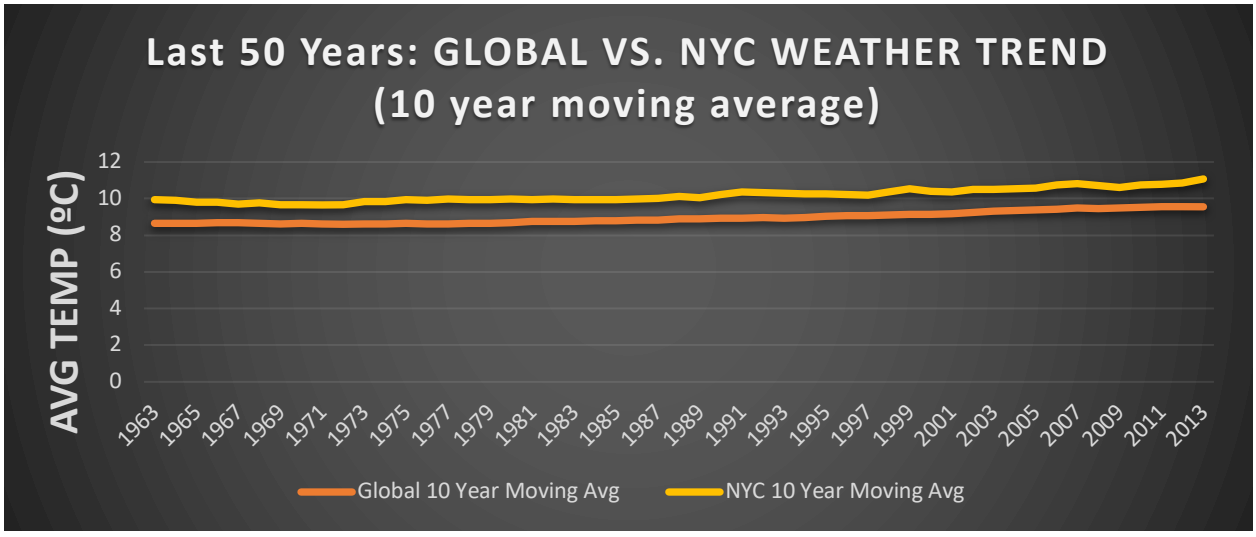
1. The global 10 year moving average line is "smoother" than the NYC moving average line. The most likely explanation is that the global average is made from more data points (345 cities are returned when using the query: SELECT COUNT(*) FROM city_list).

2. Besides colder temperatures in the late 1700s, on average the 10 Year Moving Average of New York City is 1 ºC GREATER than the Global Average (NYC is hotter than the global average).

    a. Besides the late 1700s, the 10 Year Moving Average for New York City roughly follows the same slope as the 10 Year Moving Average for the global temperature.

3. From 1750 to 2013, both the NYC moving average and Global moving average temperature have gone up nearly 2 ºC. The gains in the last 100 years (between 1900-2000) were greater than the previous 100 years (1800-1900).

4. The 10-year moving average temperature increase from the last 50 years (1963-2013) does **NOT** appear to be slowing down or leveling off. The consequences are unknown at this time, but could have grave impacts in the future.



global_year	global_avg_temp	Global 10 Year Moving Avg	nyc_avg_temp	NYC 10 Year Moving Avg
1963	8.86	8.669	9.32	9.931
1964	8.41	8.654	9.96	9.896
1965	8.53	8.644	9.63	9.82
1966	8.6	8.676	9.75	9.82
1967	8.7	8.673	9.3	9.7
1968	8.52	8.648	9.75	9.759
1969	8.6	8.635	9.76	9.658
1970	8.7	8.647	9.77	9.659
1971	8.6	8.627	10.01	9.657
1972	8.5	8.602	9.49	9.674
1973	8.95	8.611	10.96	9.838
1974	8.47	8.617	10.08	9.85
1975	8.74	8.638	10.56	9.943
1976	8.35	8.613	9.53	9.921
1977	8.85	8.628	9.96	9.987
1978	8.69	8.645	9.17	9.929
1979	8.73	8.658	10.02	9.955
1980	8.98	8.686	9.86	9.964
1981	9.17	8.743	9.95	9.958
1982	8.64	8.757	9.78	9.987
1983	9.03	8.765	10.51	9.942
1984	8.69	8.787	10.26	9.96
1985	8.66	8.779	10.26	9.93
1986	8.83	8.827	10.15	9.992
1987	8.99	8.841	10.32	10.028
1988	9.2	8.892	9.93	10.104
1989	8.92	8.911	9.66	10.068
1990	9.23	8.936	11.32	10.214
1991	9.18	8.937	11.36	10.355
1992	8.84	8.957	9.57	10.334
1993	8.87	8.941	10.04	10.287
1994	9.04	8.976	10	10.261
1995	9.35	9.045	10.24	10.259
1996	9.04	9.066	9.81	10.225
1997	9.2	9.087	10	10.193
1998	9.52	9.119	11.82	10.382
1999	9.29	9.156	11.16	10.532
2000	9.2	9.153	9.97	10.397
2001	9.41	9.176	10.93	10.354
2002	9.57	9.249	11.25	10.522
2003	9.53	9.315	9.84	10.502
2004	9.32	9.343	10.39	10.541
2005	9.7	9.378	10.68	10.585
2006	9.53	9.427	11.52	10.756
2007	9.73	9.48	10.63	10.819
2008	9.43	9.471	10.64	10.701
2009	9.51	9.493	10.14	10.599
2010	9.7	9.543	11.36	10.738
2011	9.52	9.554	11.27	10.772
2012	9.51	9.548	11.97	10.844
2013	9.61	9.556	12.16	11.076