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## *Explore Weather Trends*

### **Analysis Approach:**

I created SQL commands to retrieve data from three different tables in a database.

Query to extract city in country  
SELECT\*  
FROM city\_list  
WHERE country = 'United States';

Query to extract city level data (271 results)

SELECT \*  
FROM city\_data  
WHERE city LIKE 'New York' AND country LIKE 'United States';

Query to extract global data (266 results)

SELECT \*  
FROM global\_data;

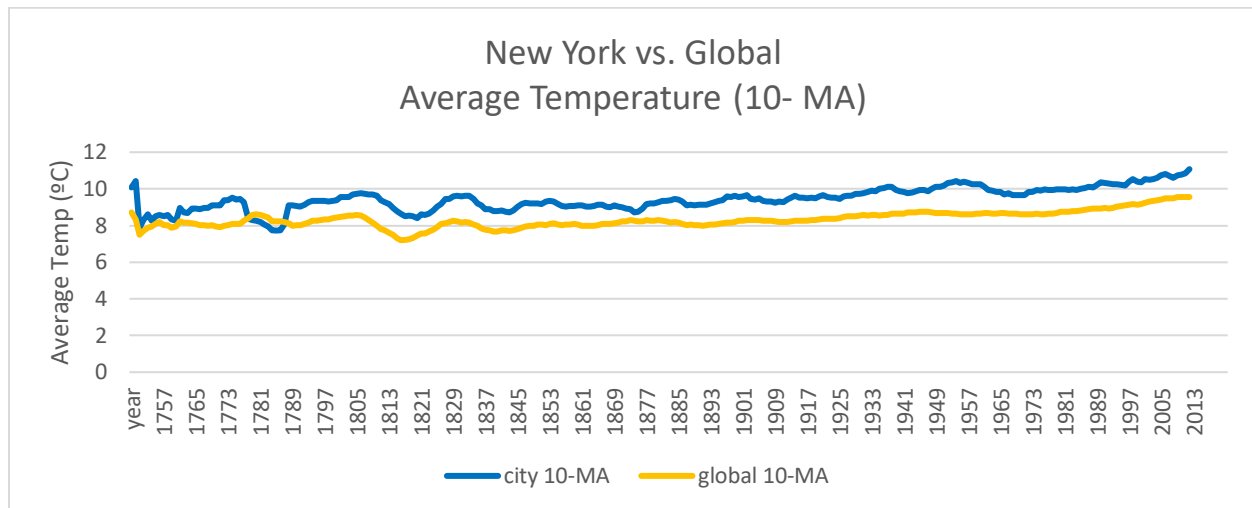
From my SQL queries, I was able to find the data I needed for further analysis and I exported this data to CSV and then saved it onto Excel. I combined the two worksheets and aligned the data together to match with their shared column of 'year.' I removed null values to clean up the data for when I create my visual.

With Excel, I used functions to calculate moving averages for the city and global average temperatures. Moving averages help with smoothing out data to see long term trends.

I calculated moving averages for a 10-year span (10-MA). With the use of Excel, I used the AVERAGE commands to obtain the 10-Moving Averages in terms of temperature and yearly changes. An example of my Excel command: **=AVERAGE(B2:B11)**

My line chart only includes data from years 1750 to 2013 because there were some null values, so I decided to exclude years 1743-1749 and 2014-2015 to get consistent results with city level and global average temperatures.

## Line Chart:



## Observations:

Based on my line chart, my observations are that New York average temperatures with consideration to a 10-year moving average tends to be slightly higher than global average temperatures. Only in the span of years 1773 to 1789, was New York average temperature 10-MA lower than global. My city, New York is hotter on average compared to global average and this difference has been consistent over time.

For my second observation, I was interested to find out the ranges of these average temperature differences, so I included this table I created. I used Excel functions Min and Max to find the range. My Excel commands were =MIN(C:C), =MAX(C:C) and then I manually calculated the range by subtracting the min from the max. From this table, I noticed that New York has a higher range with average temperatures than Global, the difference is 1 °C.

	city 10	global 10
MIN	7.726	7.203
MAX	11.076	9.556
RANGE	3.350	2.353

From years 1750 to 1789, there were some fluctuations with city and global average temperatures as the differences were either relatively close to each other or started to divert in different directions. Notably during 1773 to 1789, Global average temperatures were hotter than New York's. After 1789, New York and Global average temperatures began to have similar trends in which average temperatures were slowly increasing at a steady rate over time.

The overall trend seems to be that the world is getting hotter. This trend has been consistent over the last few hundred years as my line chart shows that temperature averages both increase over time for New York and Global.