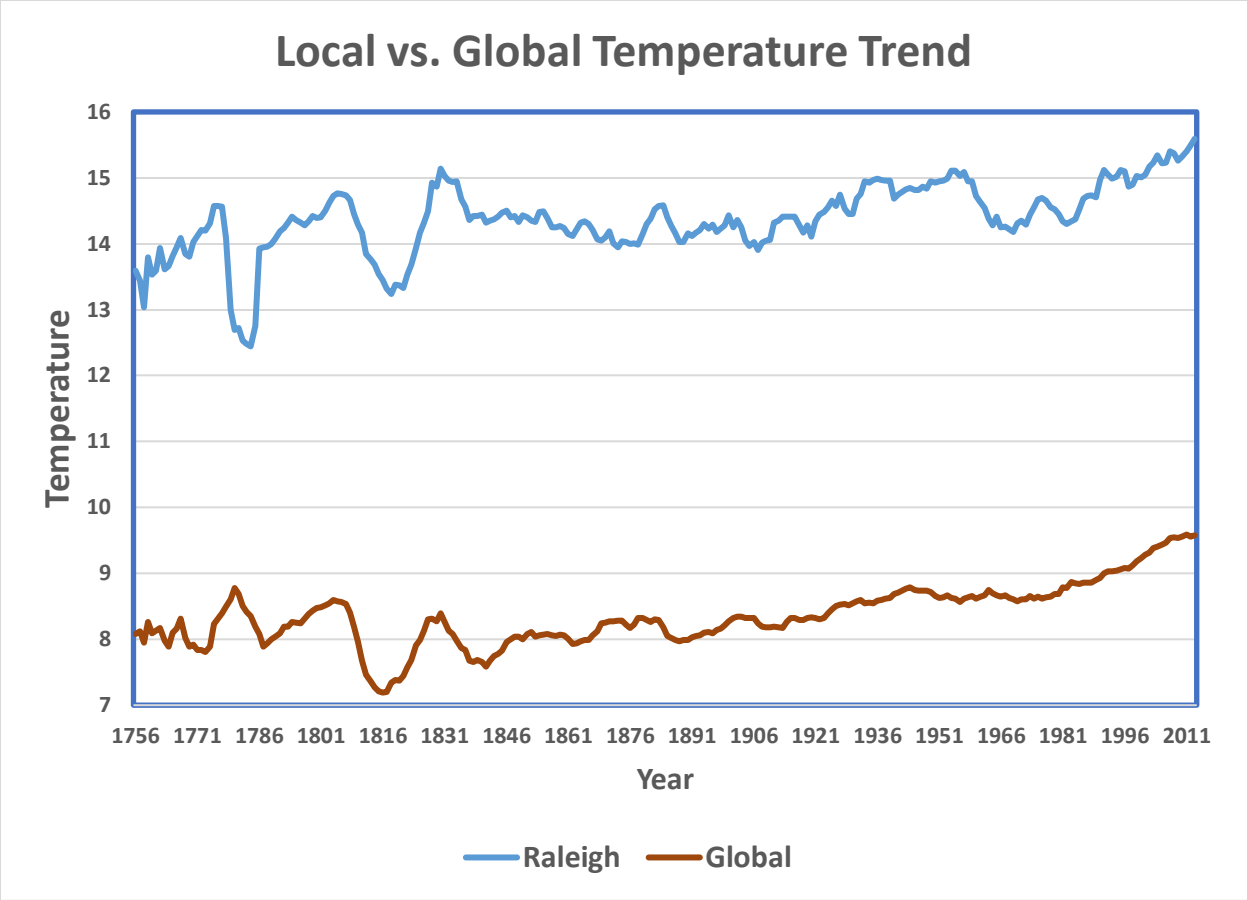
Weather Trends – Raleigh, USA vs. Global

Outline:

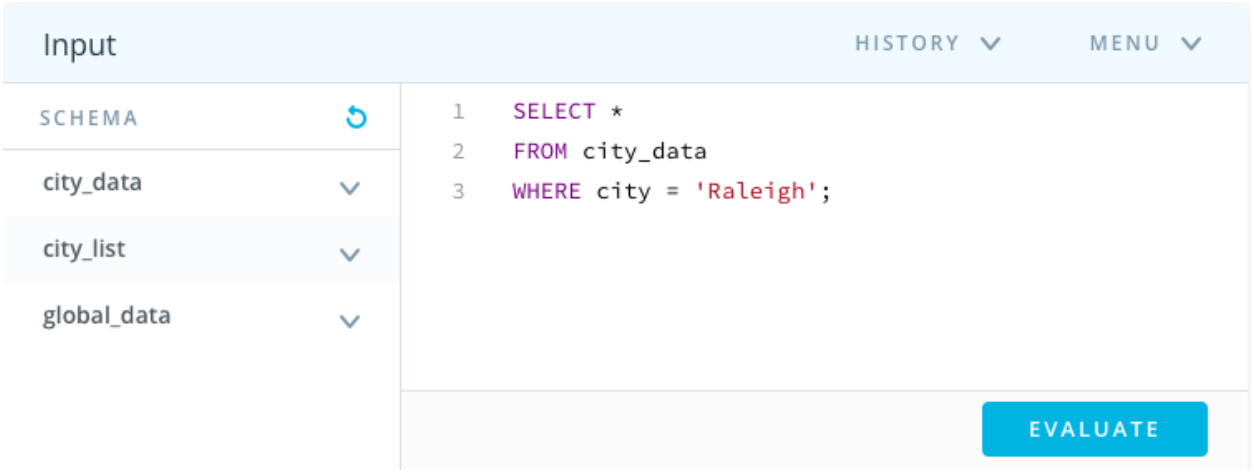
- In this project, we used SQL to extract data, and Excel to calculate the 7 years moving average and plot the trend in line chart.
- The 7 years moving average was calculated using the function AVERAGE in excel where the 7 years included the temperature of year we are calculating plus the previous six years' temperature record.
- Key consideration was given to:
    - Missing values in local temperature.
    - The first six years' record without calculated moving average.
    - Differences between the starting and ending points of the yearly record of local vs. global temperature records. The decision was to omit the missing value by starting the line chart at the year 1756.
    - Local temperature records ended in 2013 while global temperature records ended in 2015. Therefore, the decision was made to end the line chart at 2013.
    - The local temperature record at year 1780 is missing. However, the missing value did not affect the trend which we have tested by replacing the missing value by the previous year's "7 years moving average" and notice no change in the trend. Therefore, a decision was made to leave the missing value as is – missing.

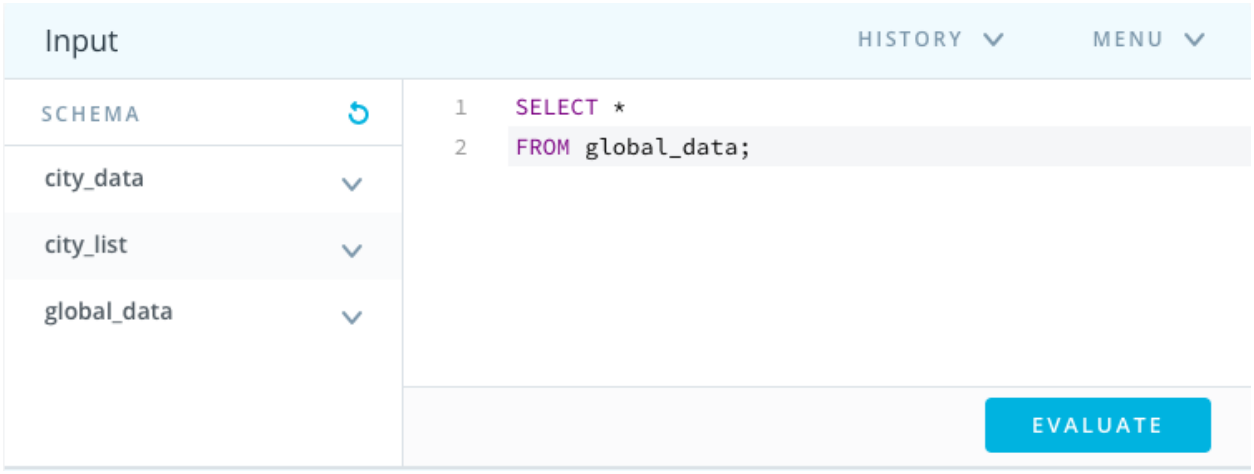


Observations:

1. Raleigh's weather is <u>hotter</u> than the global weather by around 6 degrees.
2. At the early years of the recorded temperature, the fluctuations were larger. One explanation of such fluctuation might be due to unreliable weather records or unreliable instruments that capture the real temperature.
3. Both line charts show an upward trend in temperature which we are currently refer to as global warming.
4. Since the 1950's both trends show less fluctuation and consistent accelerating raising temperature which explain the warning calls in the media about the global warming reaching dangerous level.

SQL query:


Input
HISTORY
MENU
SCHEMA
city_data
city_list
global_data
1 SELECT *
2 FROM city_data
3 WHERE city = 'Raleigh';
EVALUATE


Input
HISTORY
MENU
SCHEMA
city_data
city_list
global_data
1 SELECT *
2 FROM global_data;
EVALUATE