

Exploring Weather Trends

Global temperatures are affected by the air and sea/lakes/ocean. In this project, data has already been given in a database and here are the steps I used to retrieve them and analyze them:

I use SQL to extract my local data which is Detroit, MI. The statement to extract them is: `Select * from city_data where city like 'Detroit'`

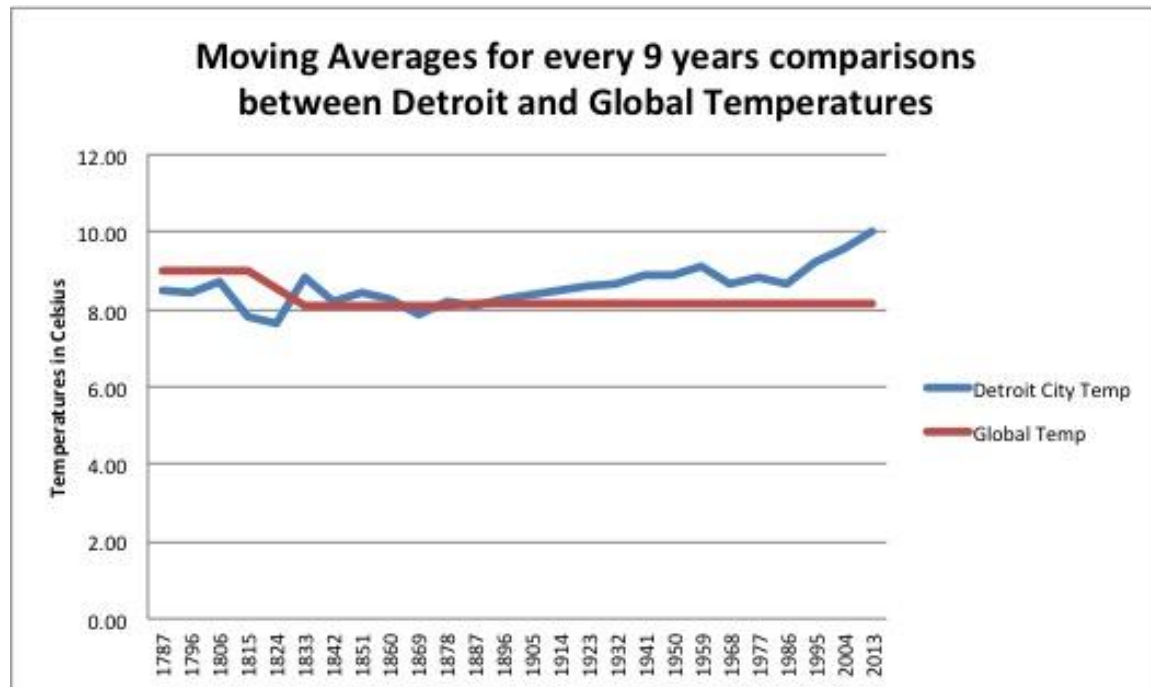
And I also used this SQL statement to extract the global temperature around the world.

`Select * from global_data`

There were no error messages. Then, I press 'evaluate' button. This would populate the selection and then I press 'Download CSV'. I then download both data files in CSV format. I renamed them as `globalResults.csv` and `DetroitResults.csv` accordingly.

Once I had both data sets on my PC, I proceeded to open them using Excel spreadsheet. My key considerations when deciding how to visualize the trends was to carefully decide how many year spread would make sense to have enough data to calculate the moving average for both sets of data. I observed that my local Detroit data temperature started from 1743 and ended in 2013. But the global temperatures started from 1779 and ended in 2013. Therefore, the years had to be a running match. So, I started using both data starting from 1779 through 2013 and divided them by 9 to give them equal parts of distribution to calculate the moving averages. It also solved the problem of missing data from my local temperatures which is eliminated from the earlier part of my data. The reason why I divided the years by 9 is because it would give me a nice data spread of 26 points. Too little points would be useless to see any variance in temperature and too many points would not result in a smooth line to see the difference.

The way I calculated the moving averages is to use the formula `=AVERAGE(number:number)` using the EXCEL spreadsheet. The 'number' being the cell number spread containing the temperatures in groups of 9s. So, I would have 2 sets of data (1 from Detroit's and the other, global temperatures) along with the years that it corresponds to. I then made the line chart using EXCEL spreadsheet and came up with this chart shown below:



Observations

1. In the beginning back from 1787 till about 1883, Detroit's temperature stayed cooler than the average global temperature.
2. Then, between 1842 till 1896, the temperatures are about the same in both.
3. Then, after 1905, Detroit's temperature started to increase more than the global temperatures.
4. At this rate, we can predict that in future years, the temperature in Detroit, would be climbing more.

Some may speculate that Detroit's temperature fluctuates from the global is because it is not situated at the equator where you can expect the currents that flow around the equator are consistently warm as opposed to Detroit having a temperate climate with 4 seasons.

This affects the current weather temperatures as seen in an extra chart below that I made showing the moving average temperature in Singapore. As can be seen from this chart, Singapore's temperature is much higher than both Detroit's and global temperatures because it is at the equator with little to no fluctuations. Having said that, it is also trending to increase its temperature in the future. But overall, it shows that Earth has been warming and continues to warm at a more regular and consistent rate.

Moving average temperature for every 9 years

