

Project Submission - Exploring Weather Trends

Summary

In this project, you will analyze local and global temperature data and compare the temperature trends where you live to overall global temperature trends.

Outline:

1. Gather data from the temperature database

A. Need to get data of the city closest to me

i. Used the following SQL query:

```
SELECT *  
FROM city_list
```

ii. Picked 'New York' since I live there. Then used the following SQL query to gather data:

```
SELECT *  
FROM city_data  
WHERE city LIKE '%New York%';
```

iii. Downloaded CSV results and opened them in Excel

B. Need to get the global data.

i. Used the following SQL query:

```
SELECT *  
FROM global_data;
```

ii. Downloaded CSV results and opened them in Excel

2. Use Excel to manipulate the data and create line graphs

A. New York temperature data

i. Calculate 7-year moving average from 1700s – recent times

- Used the AVERAGE() function to get the average of the past 7 years temp; put cell ids inputs into the =AVERAGE(from cell_id1: to cell_id2) function
- i.e. the 7-year average in 1950 is comprised from the temps in 1944 – 1950
- dragged the formula downward to copy the function into the cells

ii. Create line chart based on the moving average

- Used year, 7-year moving average as data sets

- X-axis labeled year, Y-axis labeled temp
- Titled graph to reflect 7-year moving average for the time period
- All of the above is done by formatting chart, axis, etc.

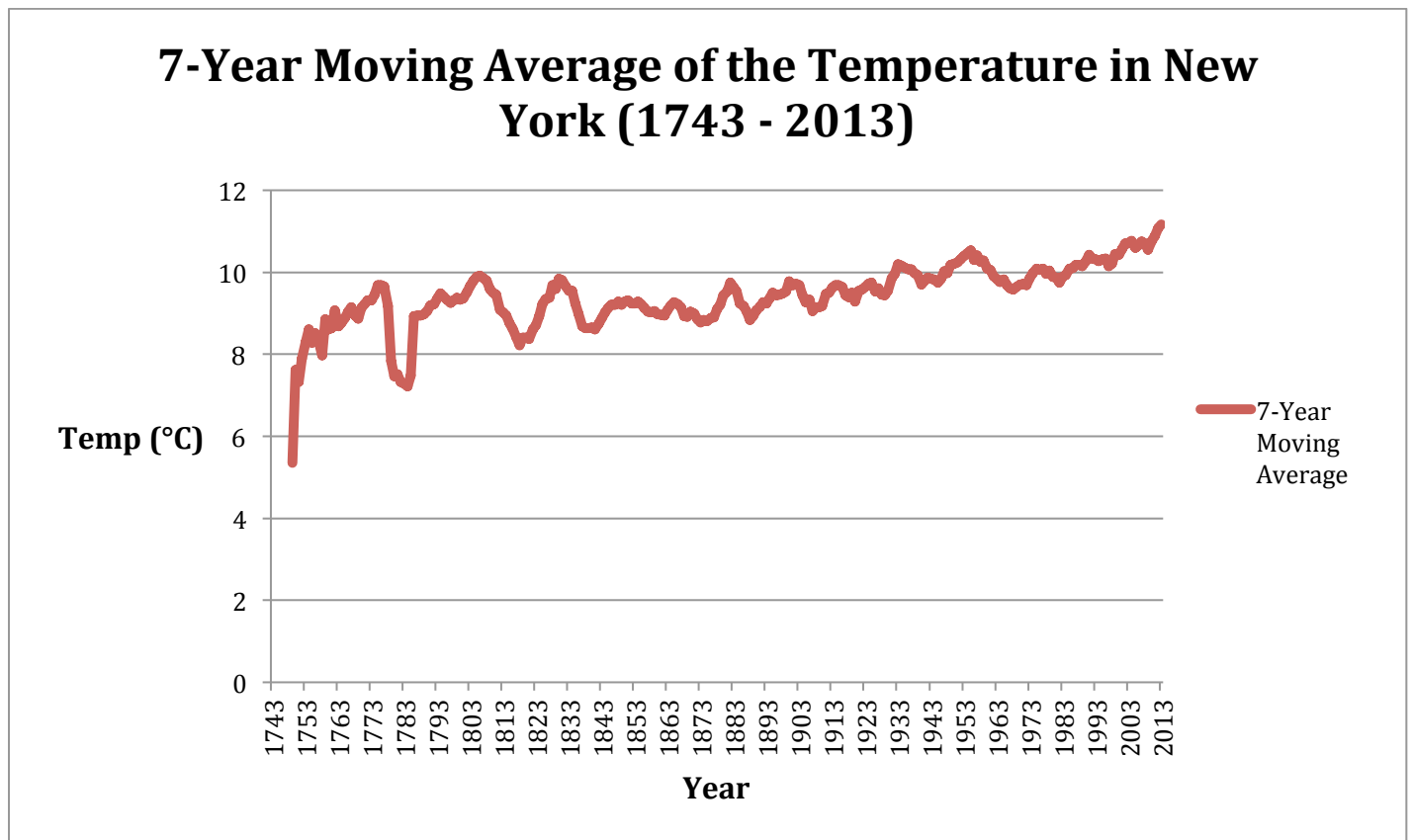
B. Global temperature data

- Calculate 7-year moving average from 1700s – recent times
 - Used the AVERAGE() function to get the average of the past 7 years temp
 - i.e. the 7-year average in 1950 is comprised from the temps in 1944 – 1950
 - dragged the formula downward to copy the function into the cells
- Create line chart based on the moving average
 - Used year, 7-year moving average as data sets
 - X-axis labeled year, Y-axis labeled temp
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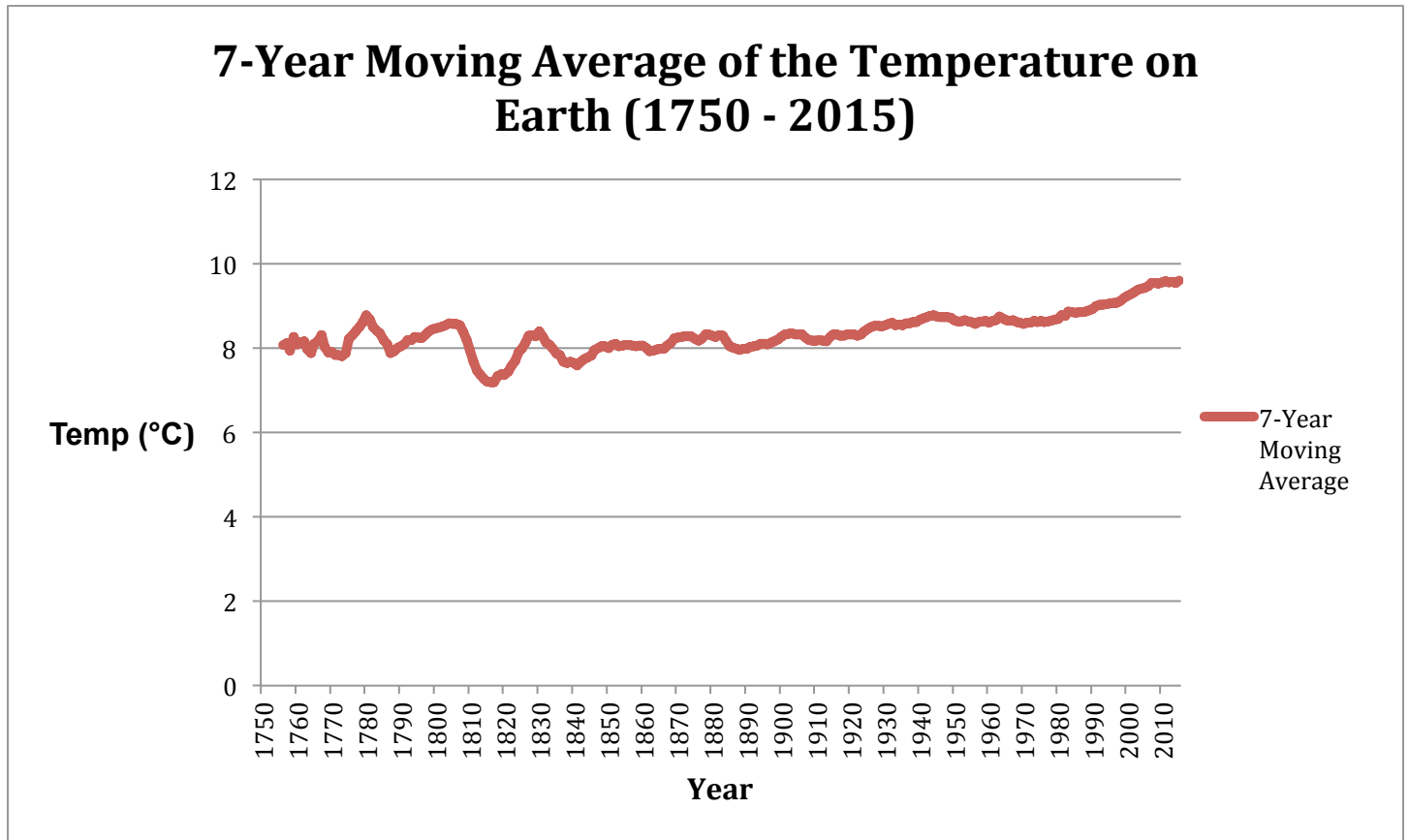
3. Compare temperature charts of New York to the global data

A. Compiled charts from the data from Excel.

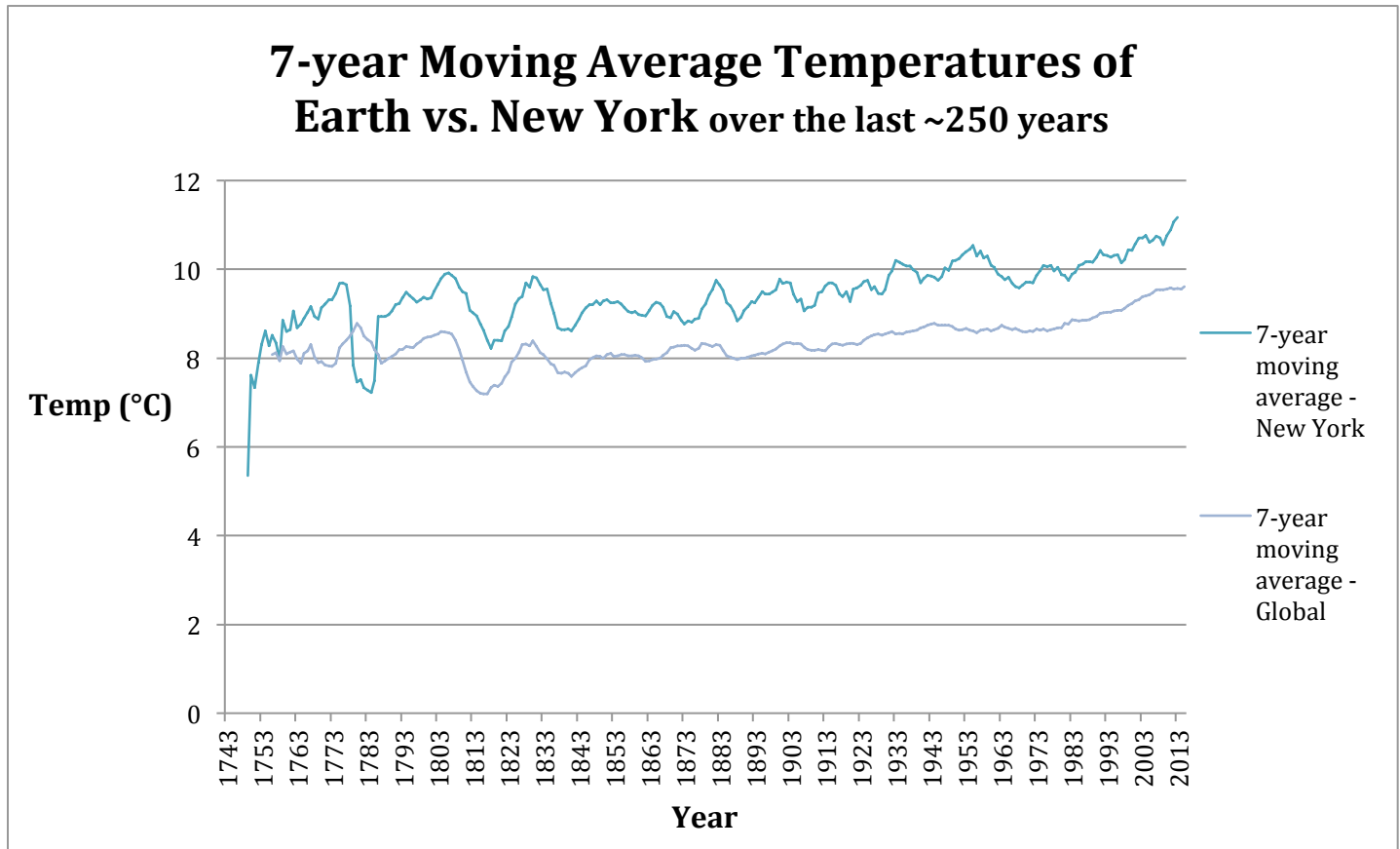
- Temperature history chart of New York



ii. Temperature history chart of Earth



iii. Comparing the temperature of Earth vs. New York over the last ~260 years



4. Observations/Conclusions from the chart/data

Key considerations on how to visualize the trends:

- Usually people view time periods in decade increments on a chart (over centuries)
- Superimposing the temperatures of New York and Earth together to make it easier to determine/predict trends
- Two different colored lines on the chart to differentiate data for the human eye
- Communicate information in concise, clear terms (i.e. title, legend)
- If data is simple, use a simple chart

Observations:

- For the majority of the time period, the 7-year moving average temperature of New York is higher than that of the rest of the Earth
- Temperatures of New York and the Earth are positively correlated
- There is a gradual progressive increase of the temperatures of both New York and the Earth starting from the 1880s (is this the start of the Industrial Revolution?)
- For New York, from 1774 – 1780 there is a drop in temperature (American Revolution?); no such drop from the global side
- Data is more volatile on New York than on the global side (fluctuates more)
- Data is incomplete on New York (from 1746 – 1749)
- Increase in temperature for the globe backs the notion that global warming is real