Is climate change the reason why we did not have any school snow days this year?

Main Street Intermediate School
Norwalk, Ohio USA
N41.24 latitude
W-082.61 longitude

This project was compiled by two classes of fifth grade students at Main Street Intermediate School in Norwalk, Ohio, USA.

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Abstract

The students at Main Street School in Norwalk, OH, USA, normally have two or three days off of school due to snow each winter. During the 2011-2012 school year, however, we had no snow days. We hypothesized that this unusual weather is a sign of climate change. After looking carefully at data on average temperature and average precipitation from 1951 to 2012, we concluded that climate change was probably not the reason for our lack of snow days and that something else must be affecting the weather in our area.

Purpose

This year our class has learned about the climate in our region and the climate in different places in North America. We have observed clouds, air temperature, surface temperature, and snow cover in our schoolyard using GLOBE protocols. When we compared this year's snow cover data with data collected in previous years, we began to wonder if climate change could be the reason that we did not have very much snow, and no school snow days this year.

Hypothesis

We think that we had very little snow and no school snow days this year because our climate is changing. In February we were able to wear shorts to school when the air temperatures were in the 70s (F). Some people in our town put up their swimming pools in March.

Materials & Procedures

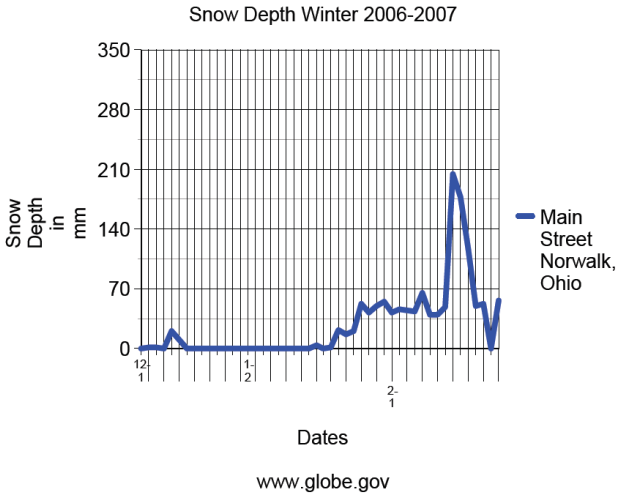
- The first thing we did was to learn that the climate in our region is Continental with cold, snowy winters and hot, humid summers.

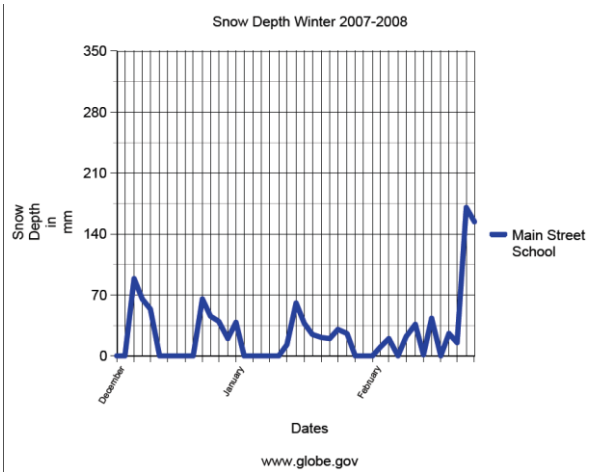
- We compared our school's GLOBE data for snow cover in December, January, and February during 2006-2012. We used this data to come up with our project question.

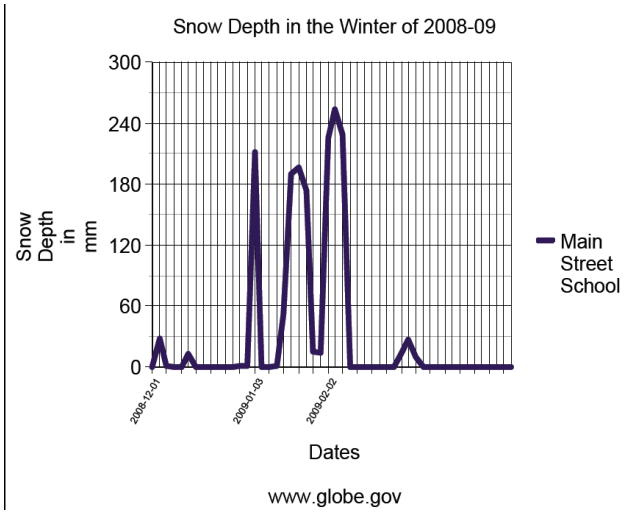
- The wastewater treatment plant in our city is a reporting station for the National Weather Service (Norwalk WWTP OH 336118). We found monthly mean air temperature, snowfall, and liquid precipitation for 50 years (January 1951- March 2012).

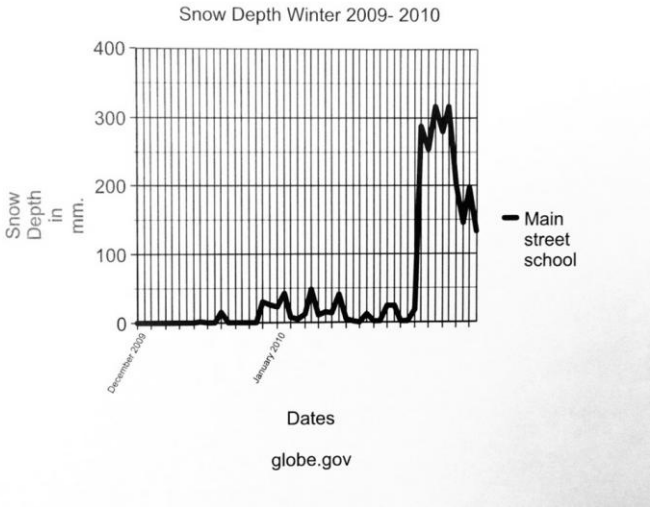
- The monthly mean temperatures and precipitation were put on line graphs so that we could look for patterns in the data.

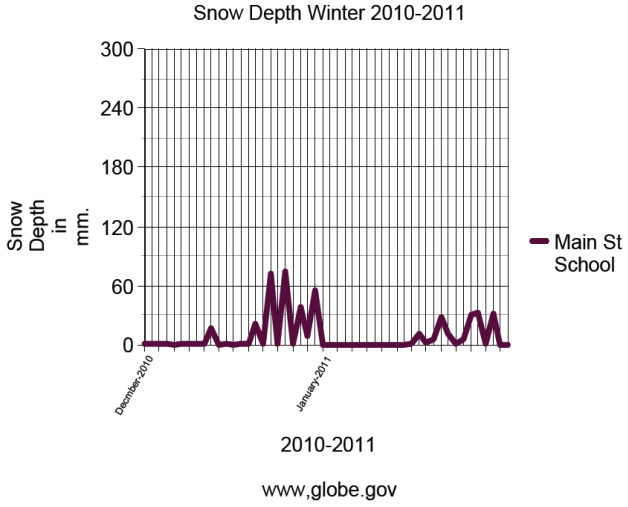
Snow cover data collected in our schoolyard 2006-2012

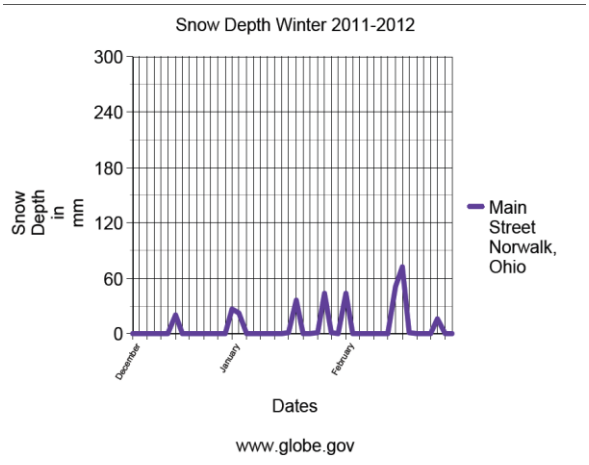




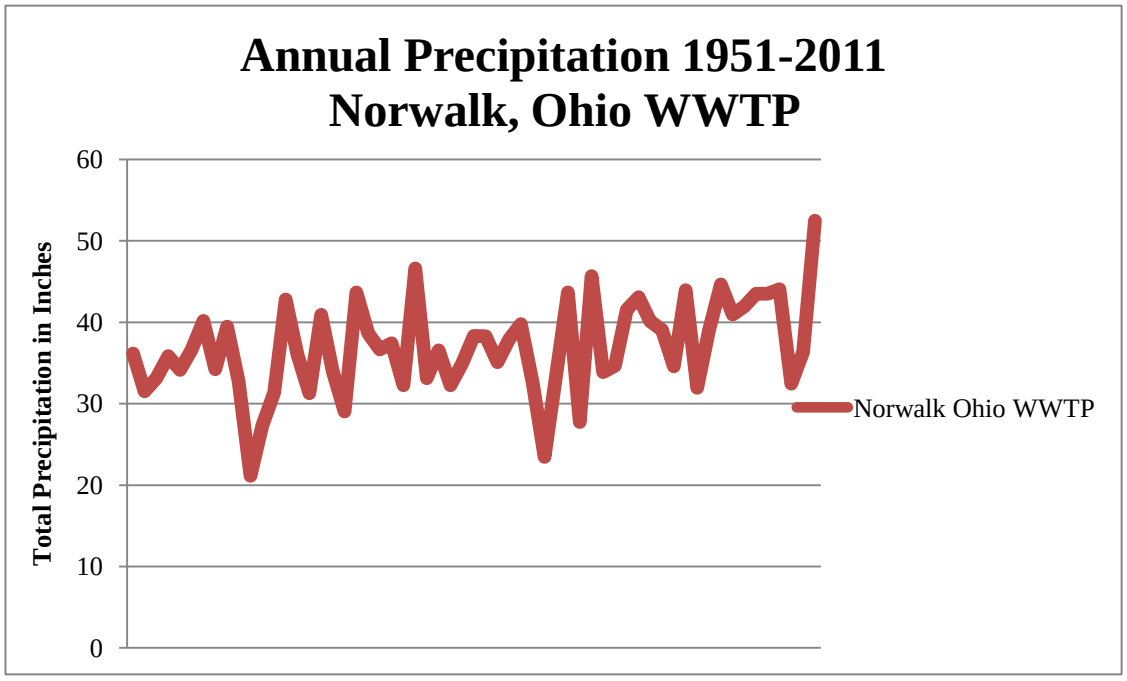




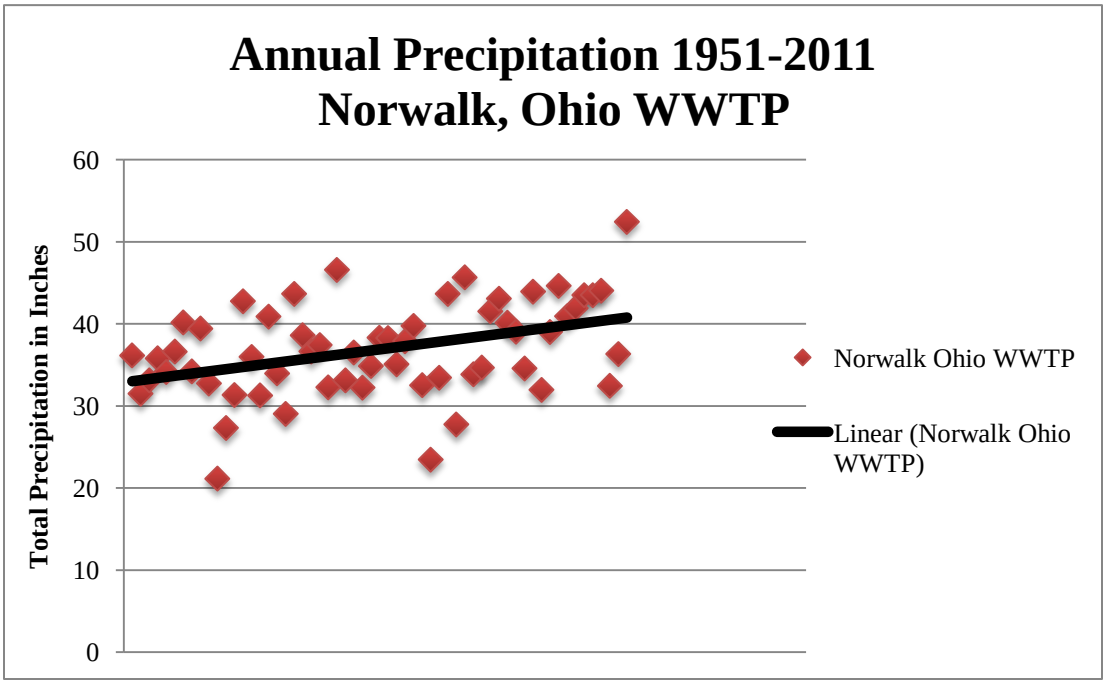




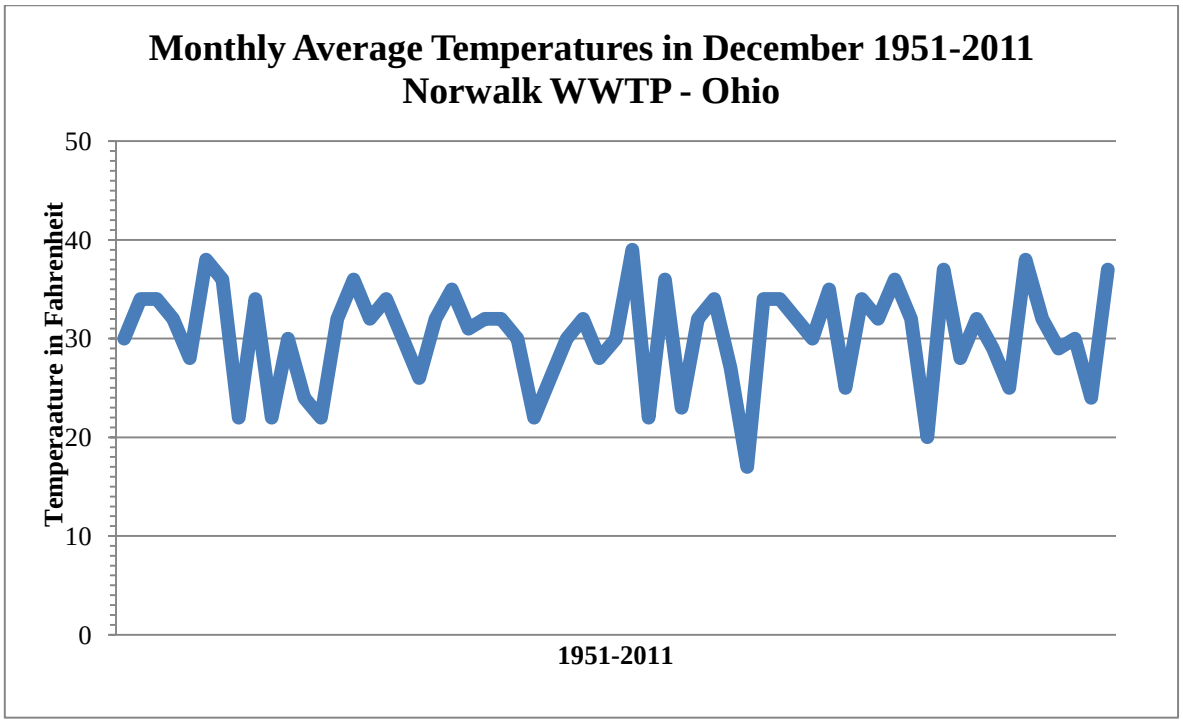
Annual Precipitation Line Graph

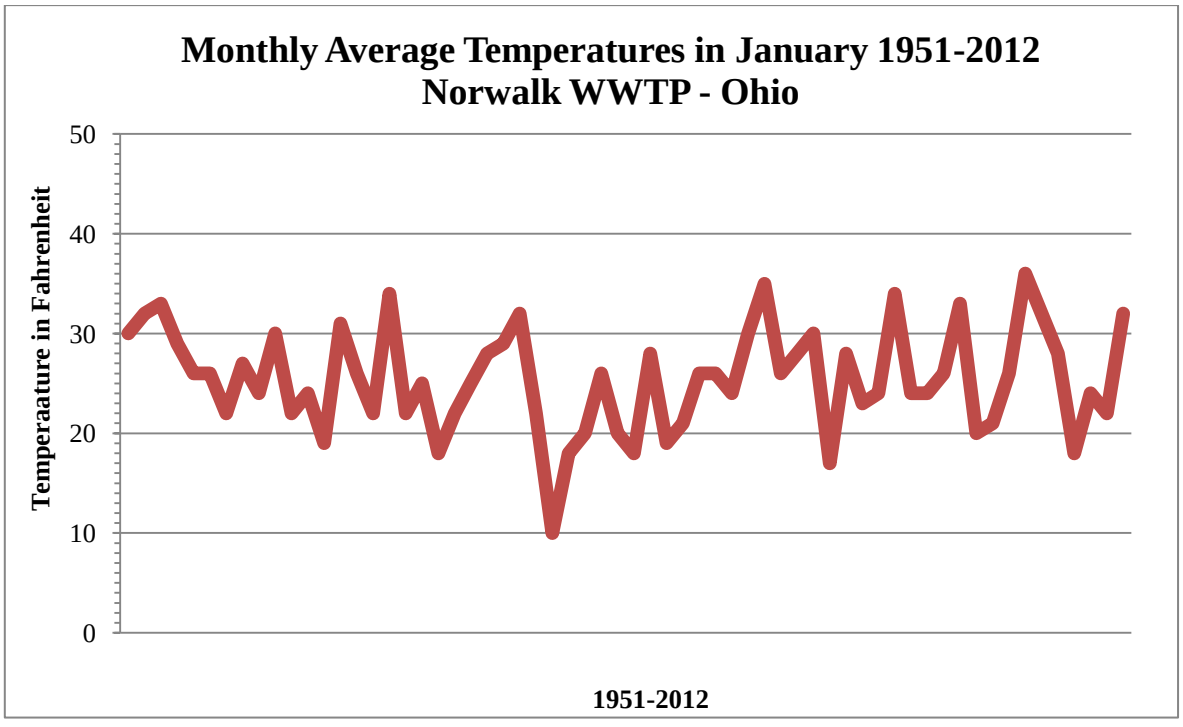


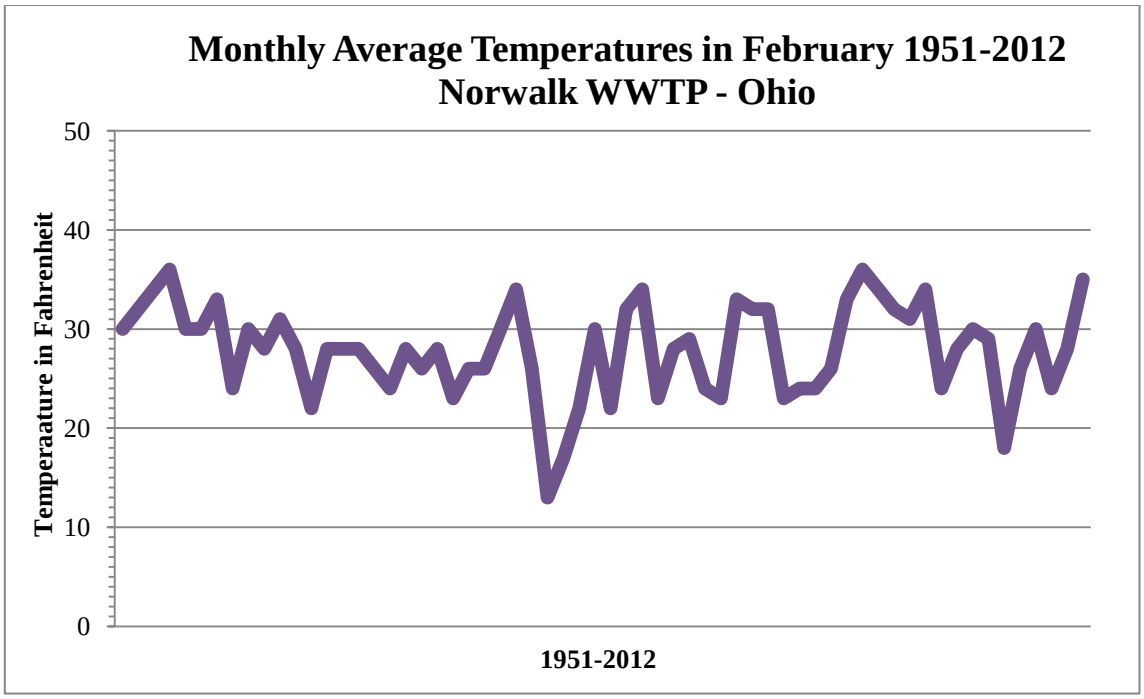
Annual Precipitation Scatter Plot with Trendline



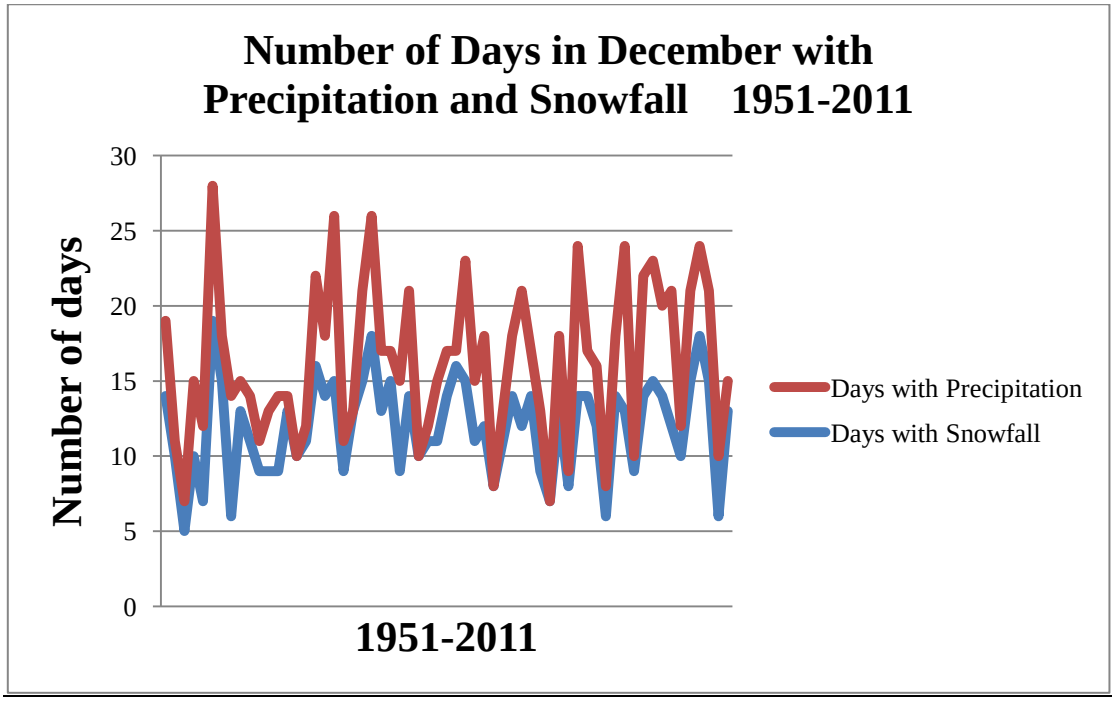
Monthly Mean Air Temperature Data

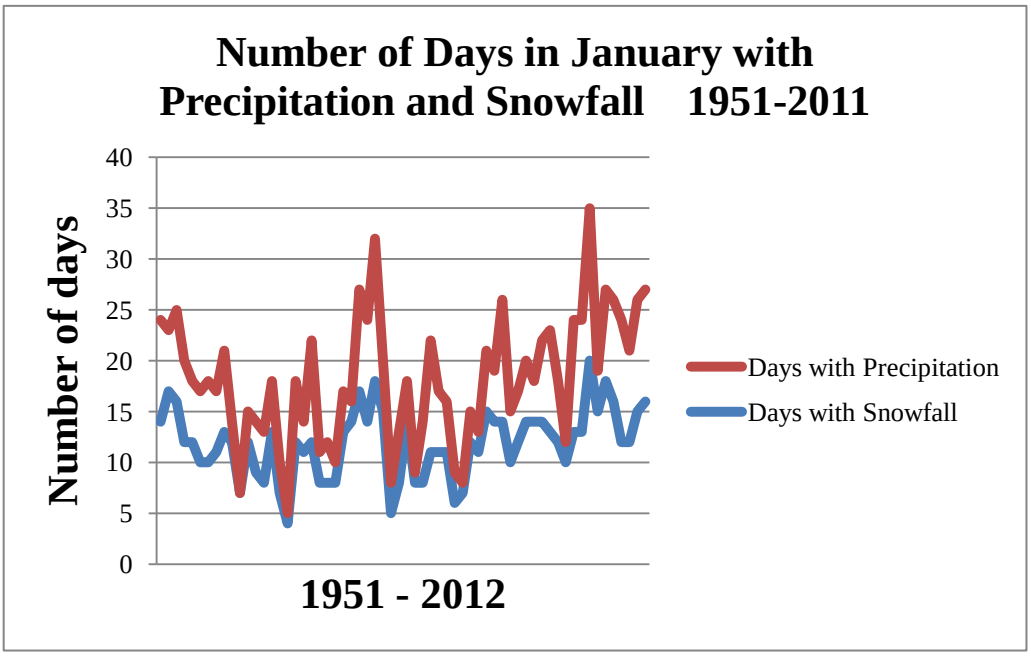


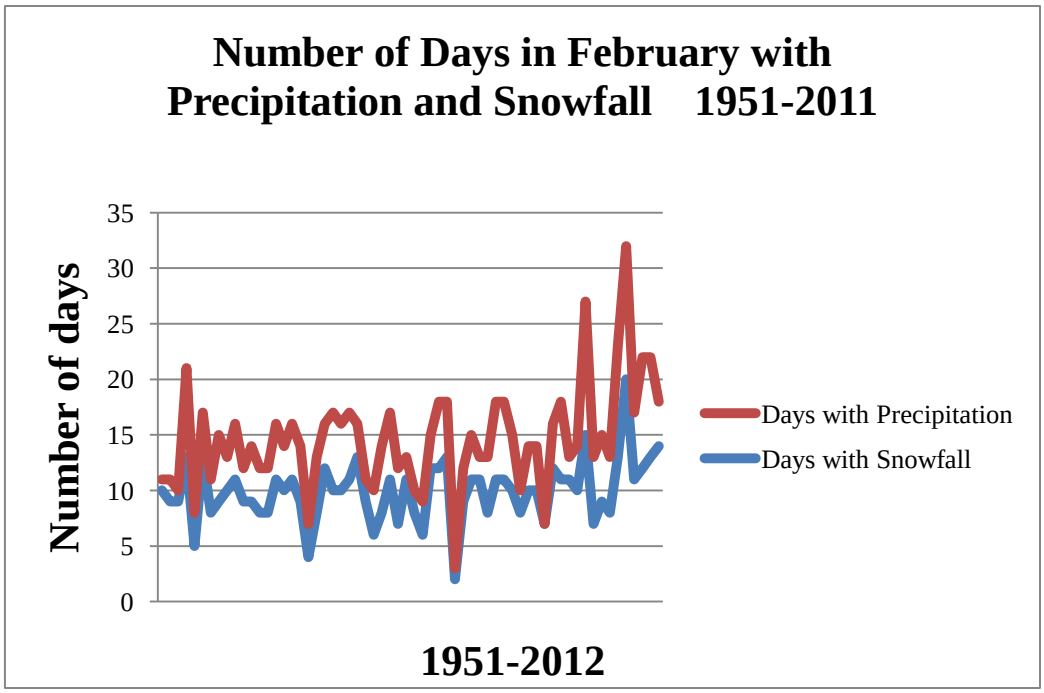




Data comparing the number of days with snowfall to the number of days with total precipitation




Number of Days in January with Precipitation and Snowfall 1951-2011
Number of days
40
35
30
25
20
15
10
5
0
1951 - 2012
Days with Precipitation
Days with Snowfall


Number of Days in February with Precipitation and Snowfall 1951-2011
Number of days
35
30
25
20
15
10
5
0
1951-2012
Days with Precipitation
Days with Snowfall

Conclusion

The purpose of our project investigation was to find out if the changing climate has affected how many snow days we had this year. We thought that having less snowfall and no snow days this winter could be evidence of climate change. Our data indicates that our hypothesis was not correct.

The fifty years of data that we used were reported to the National Weather Service by our local wastewater treatment plant in Norwalk, Ohio. The annual precipitation graph shows an increase over the time period. The air temperatures vary over the years, but do not show a pattern of increase. The amount of snowfall also fluctuates over the years, but does not show an increase in December or January. The February graph shows a spike in snowfall in the past few years.

Since our data shows that climate change does not affect the number of snow days we have at this time, we concluded that there must be some other factor that does. One other reason could be our location near Lake Erie. The physical properties of water allow this area to have cool summers and warm falls. Weather can be directly affected by whether or not Lake Erie freezes in the winter.

Questions for further study

- ❄ Do we have more snow days when Lake Erie freezes in the winter?
- ❄ Will the increase in annual precipitation lead to increased flooding in our town?
- ❄ How will increased flooding affect water quality in Norwalk Creek?

Resources

- www.globe.gov
- Norwalk WWTP, weather reporting station 336118
- The Globe Program, “What is your climate classification?”
- www.ncdc.noaa.gov for background information