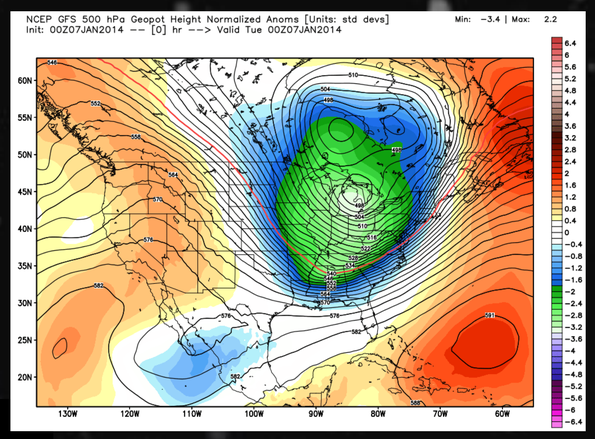
Snow Spotting in the Polar Vortex...and I Survived!

By: Justin Blicharski
Department of Geography and Planning
Mentor: Dr. Stephen Vermette

The "Winter Soldier" (aka. The Polar Vortex)

A polar vortex is a high altitude low pressure system of frigid air that forms over the Arctic regions of the Earth. It is usually confined to the Arctic by the Jetstream, and can be monitored by teleconnections, including the North Atlantic Oscillation. This season, the polar vortex extended down into our area due to the weakening of the Jetstream. It weaken because the temperature difference between the Arctic and the mid-latitude regions was less compared to normal conditions. This allowed the Arctic air to move down to the Buffalo region more easily. In Buffalo, temperatures reached a record low of -5 degrees Fahrenheit on January 7th while under the polar vortex.



Polar Vortex sitting over Buffalo, NY

Measuring Snow

My weapon of choice

I was the Campus snow spotter during the winter of 2013-14. In a world where technology reigns supreme, one would think measuring snow would use some of the most high tech gadgets for accuracy, but believe it or not, it's actually much simpler. All one needs is a yard stick, and snow. Location is also a factor. When measuring snowfall you want an area that is level, and not too cluttered with trees and buildings nor too open - causing snow drifts and wind scouring, resulting in inaccurate snow depths. The measurements for Buffalo State were taken at the north side of the Classroom Building and in the quad on the eastern side of the Student Union.

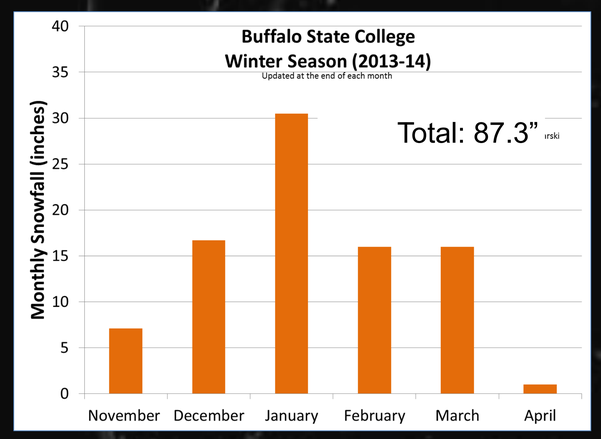
Classroom Building Location

Quad Location

When measuring snow that recently accumulated on top of previous snow, you first determine the depth of the packed snow, which usually can be seen as a layer in the snow, and add up the total amount of fresh snow on top of it. This allows for better accuracy of measuring fresh snow when it is snowing for multiple days, or when it snows one day and snows again a few days later.

Winter Season Results and Comparisons

This season, we had a grand total of 87.3" of snow here at Buffalo State College, which compared to the current 21st century average of 65.6" is higher than expected (in part thanks to the polar vortex). The most recent snowfall data from Buffalo State College is from 2011-2012, where only 27.5" of snow was recorded, so we received much more snow than that winter season. Compared to the Buffalo International Airport, which recorded an impressive 128.7" this season, we did not receive as much snow, or only 67% of what was recorded there. From the previous 13 years, we only receive between 48% and 88% of snow compared to the airport. Why the difference? Location, location, location. Here at Buffalo State, we are much closer to Lake Erie than the airport and located within the city of Buffalo, so temperatures are warmer. Also, the precipitation is only beginning to build up. When it moves further inland from the lake, it undergoes orographic uplift (as the airport is at a higher elevation) which further decreases the temperature and the amount of moisture the air can hold, producing larger amounts of snowfall at the airport.



Amount of snow for 2013-2014 winter season