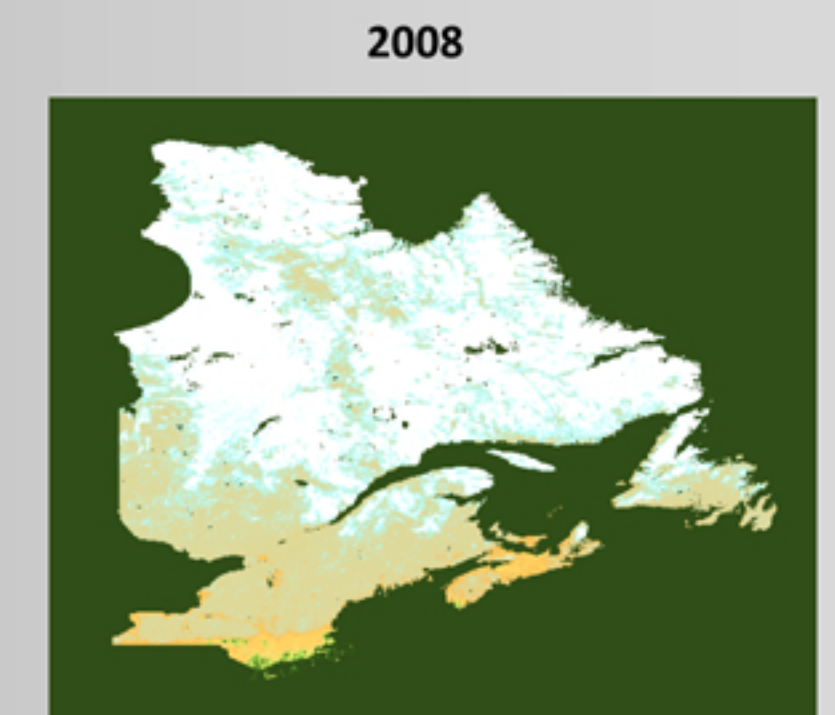
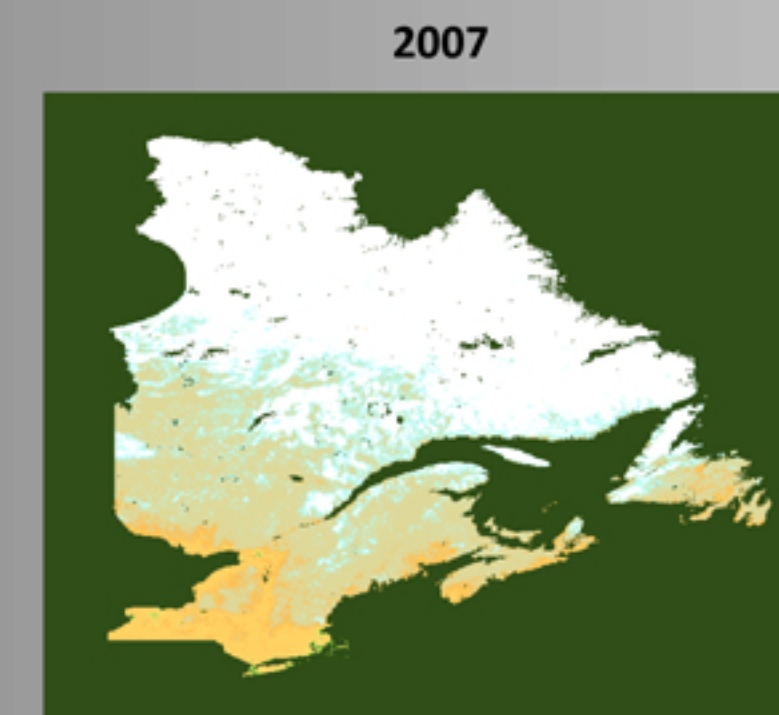
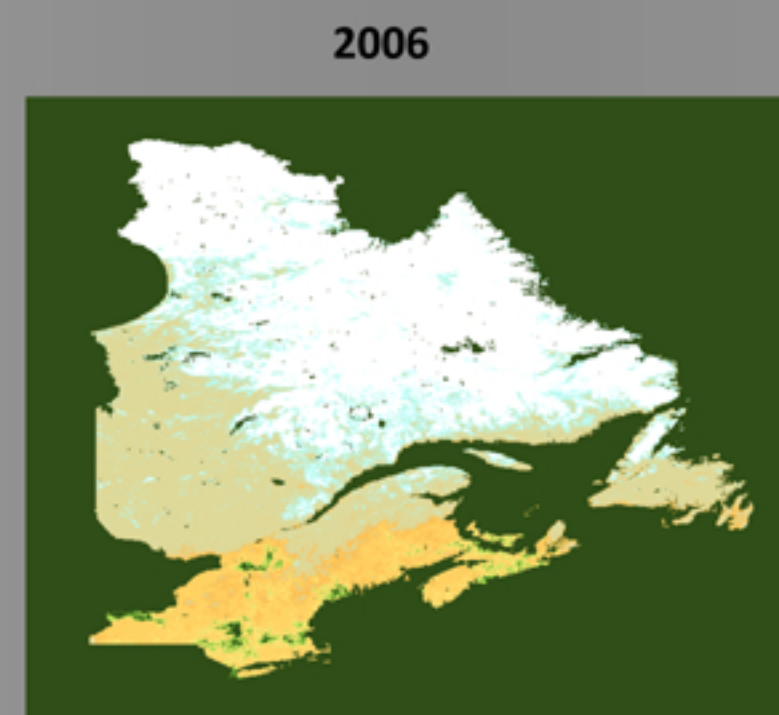
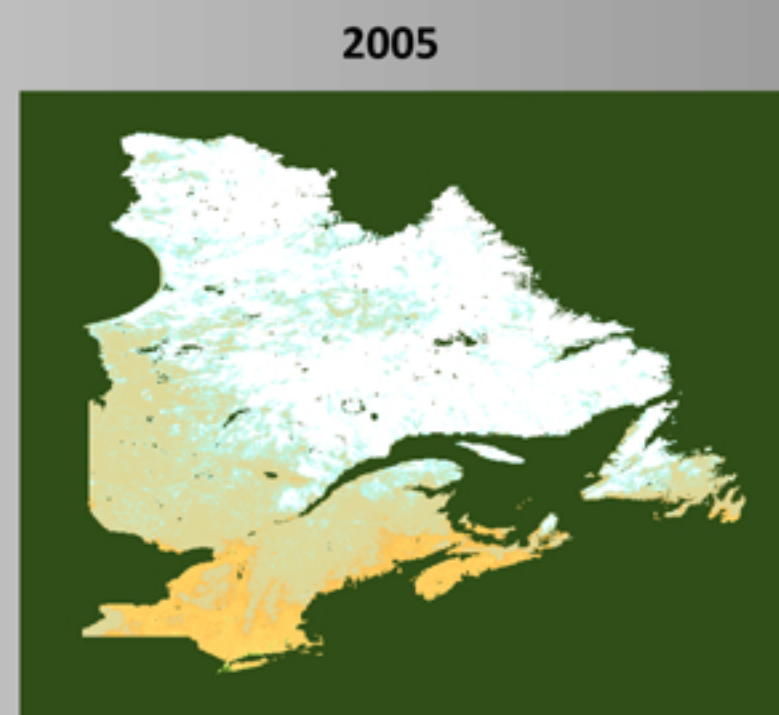
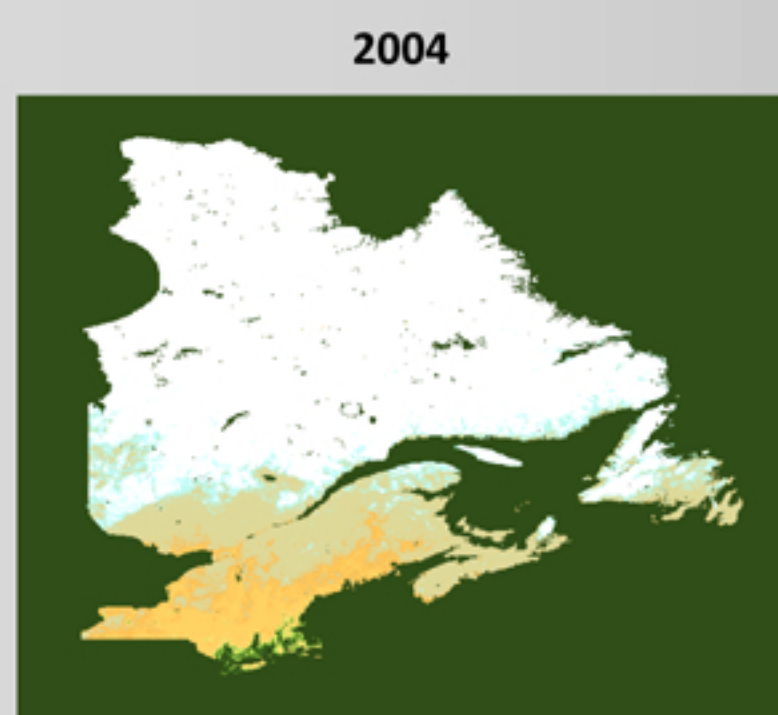
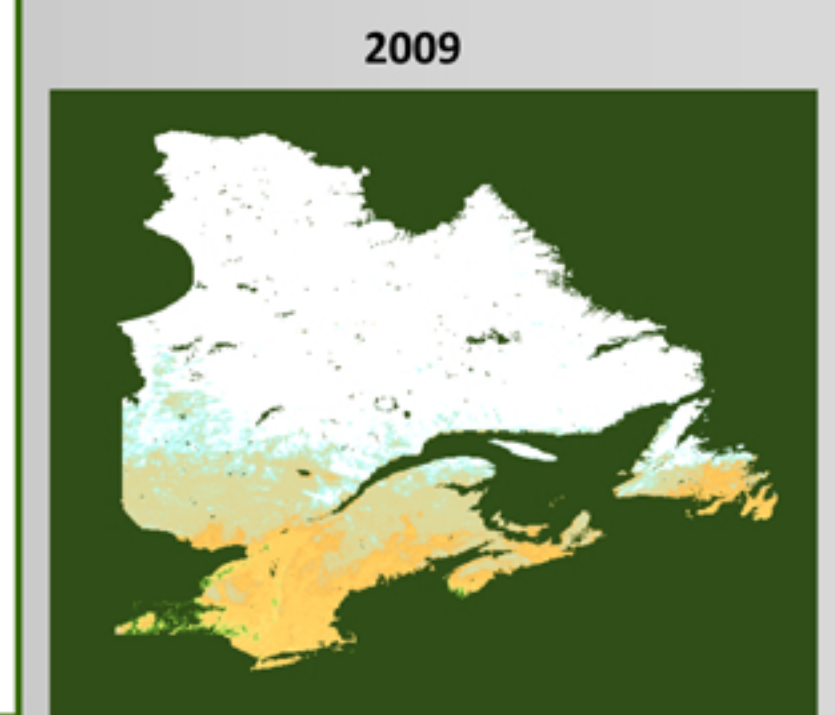
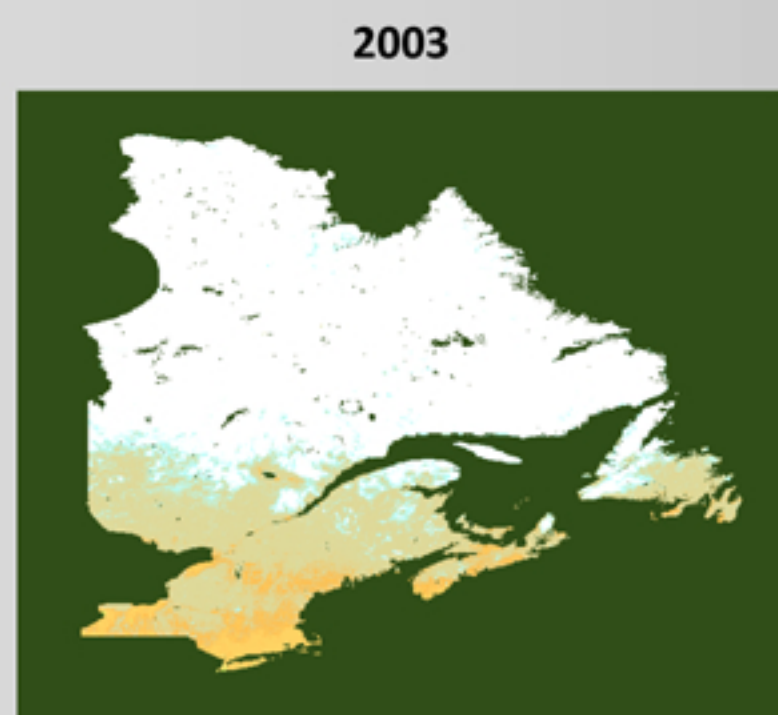
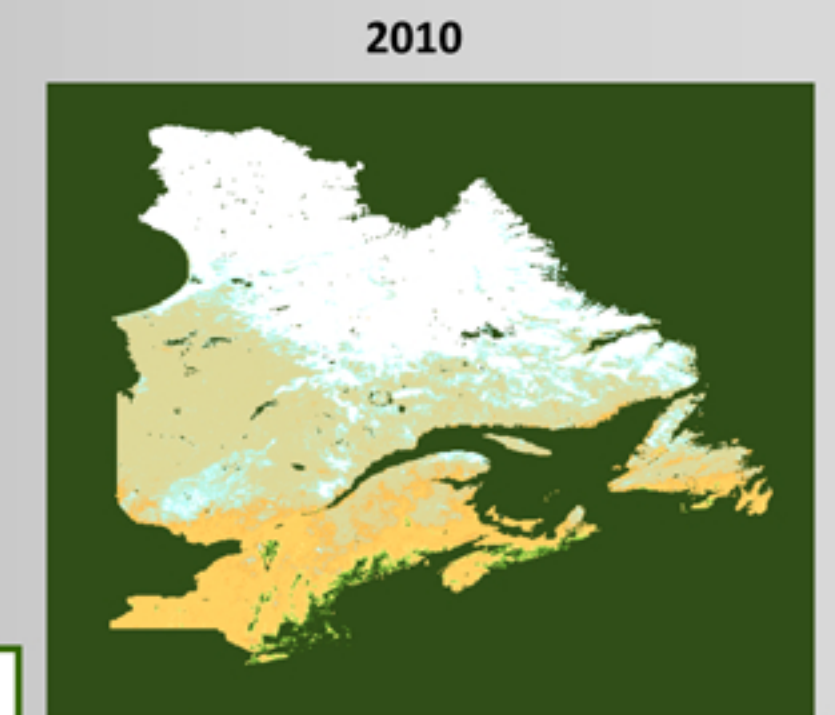
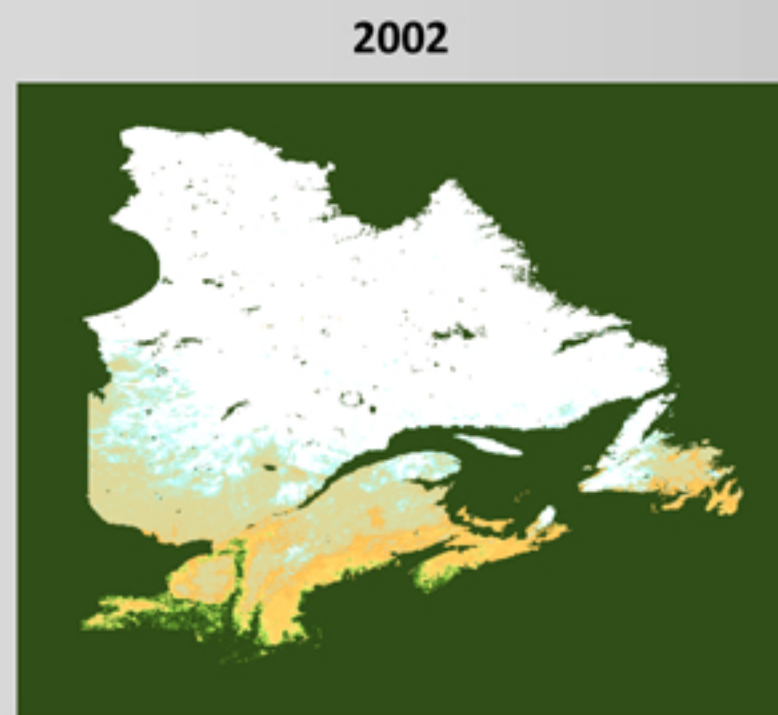
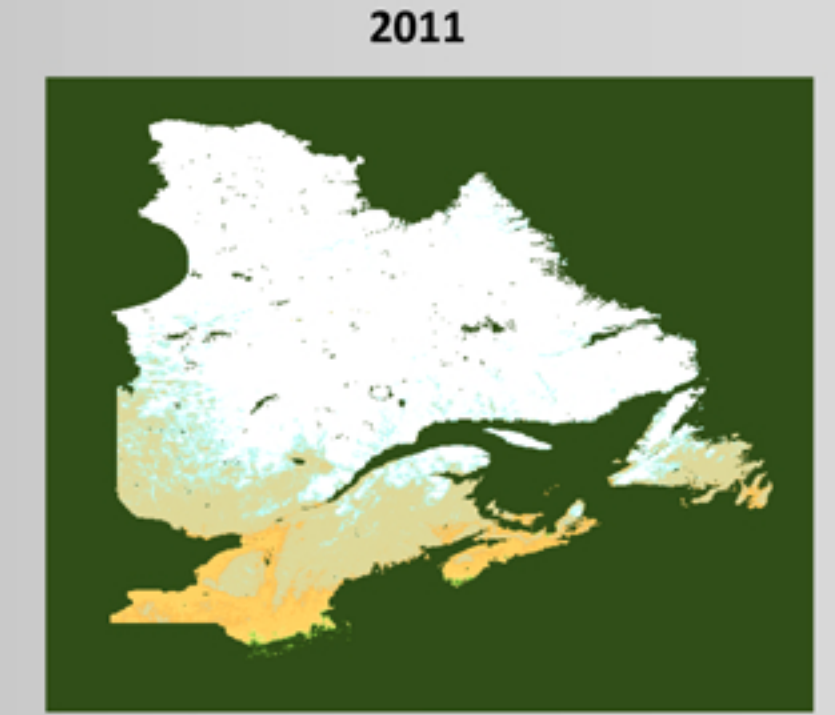
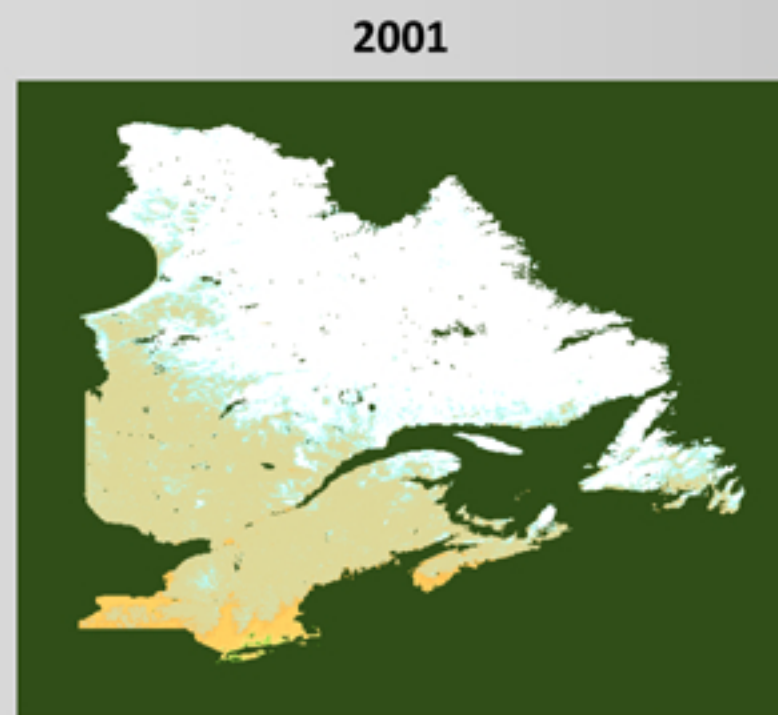
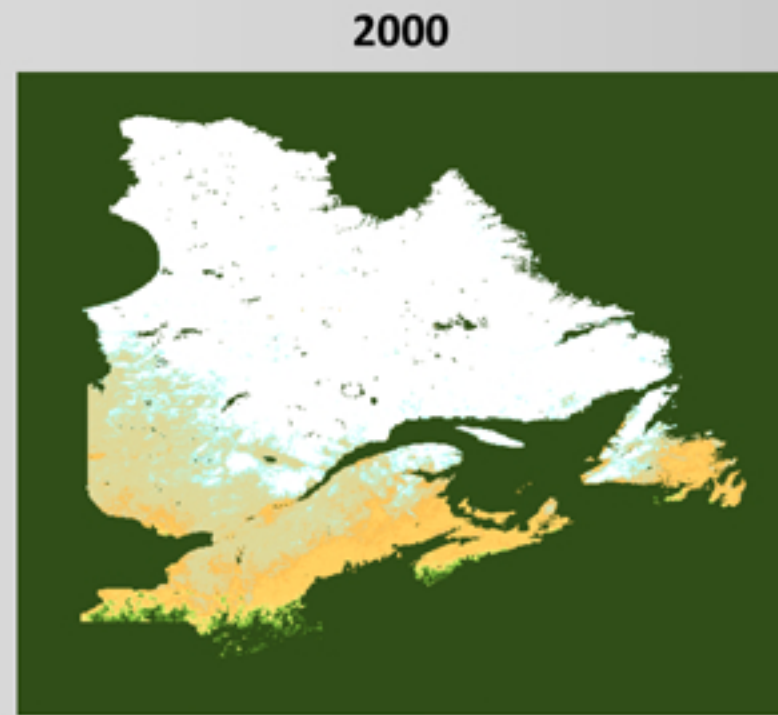
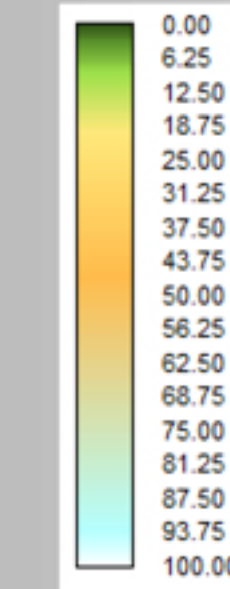


# Average Annual Spring Snow Cover of the Northeastern US and Southeastern Canada

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GPH 444: Professor Young



## Abstract

Our goal is to determine what, if any, changes have occurred in the annual snow cover for the areas of New York State, New England, and southeastern Canada during the months of March, April and May between the years of 2000 and 2012. We mapped the average snow cover for these areas using MODIS 8-day data, combining maximum values for snow cover and minimum values for cloud cover to reduce the impact of cloud obstruction. We also compared our results with temperature data for the same timeframe, finding that not only is snow cover trending in a downward direction, but also that it correlates with increases in average temperature during that timespan.

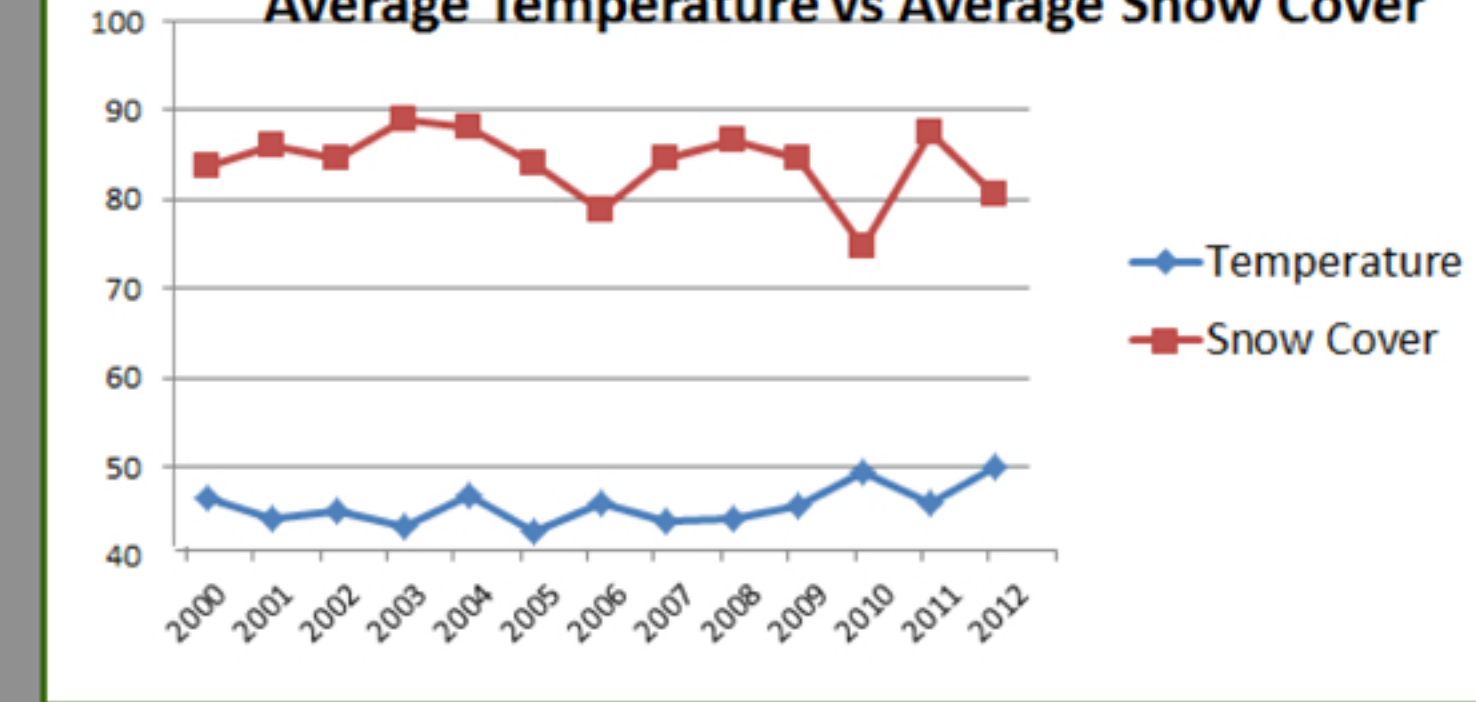
## Introduction

Through this research, we aim to map changes in snow cover over time to see whether they correlate to the gradual increase in global temperatures. Our hypothesis is that as global temperature increases, the average snow cover will decrease as a result. The thirteen maps showing the region analyzed will show whether a pattern is emerging.

## Average Snow Cover Percent with Trend Line



## Average Temperature vs Average Snow Cover



## Results and Discussion

Our results show that average snow cover for the months of March, April, and May for our specified region is becoming increasingly sporadic over time. However, it seems to be generally trending in a downward direction. This correlates with the temperature data acquired from NOAA, as the years with more snowfall correlate well with year of lower temperature, while years with less snowfall correlate with higher temperatures.

## Data and Methodology

Using Idrisi, we have compiled 13 maps of average snow cover between the months of March through May, for the aforementioned areas. In addition, we used temperature data for the same timespan, acquired from the NOAA website and correlated it with our own data by making graphs in Excel.

## Conclusion

Our findings show that the average snow cover for the Northeast US and Southeast Canada, though sporadic, is trending downwards during the months of March, April and May. It is also apparent that these trends correlate with change in temperature during that time. Years with above average temperatures yielded lower amounts of snow cover, while average or below average temperatures yielded more snow cover. We welcome more research on this topic to confirm our findings.

### Sources:

NASA Reverb Website for MODIS 8-day data:  
[http://reverb.echo.nasa.gov/reverb/#utf8=%E2%9C%93&spatial\\_map=satellite&spatial\\_type=rectangle](http://reverb.echo.nasa.gov/reverb/#utf8=%E2%9C%93&spatial_map=satellite&spatial_type=rectangle)  
NOAA Climatological Rankings for temperature data:  
<http://www.ncdc.noaa.gov/temp-and-precip/ranks.php?periods%5B%SD=3&parameter=tmp&state=101&div=0&year=2012&month=5&ranks-form>