

Snow has been melting sooner across much of the Northern Hemisphere at least since the beginning of the modern satellite era in the late 1970's. This has been most evident in regions of high latitude and altitude where continuous snowcover is an annual occurrence, and melt occurs in a relatively well-defined melt season. The significance of this melt process and its timing lies not only in using it as a harbinger of warming in one of Earth's most climatologically sensitive regions, but the subsequent strong feedbacks within the climate-cryosphere system that are altered as a result of earlier melt.

My goal is to understand why this is occurring within the uncertainty range of inter-annual and -regional variability. I am addressing this problem from multiple scales, from hemispheric down to my current regional view in northern Canada, to the sub-kilometer scale through fieldwork completed in Winter 2013. I work primarily with atmospheric reanalysis products such as NASA's Modern-Era Retrospective Analysis for Research and Application (MERRA), field work, and datasets incorporating remote sensing and surface observations.



John Mioduszewski is on the left.