The transition zone between the boreal forest and Arctic tundra, also known as the tundra-taiga interface (TTI) is a unique and sensitive ecosystem. Due to factors relating to global climate change it is expected that the boreal forest will begin to migrate into tundra regions, altering carbon storage, albedo and hydrology at a regional scale (Harding et al., 2002). A convenient way to monitor and understand TTI changes, as well as predict future changes, is through the interpretation and analysis of earth observation satellite images, or remote sensing.

This project proposes the use of images from the Canadian Space Agency’s RADARSAT-2 (R-2) satellite, launched in 2007, to derive an image product representing vegetation cover in the TTI region of Labrador. The methodological objective of this project is to extract texture and backscatter information from radar imagery in order to represent vegetation cover. The operational objective is to create a radar derived vegetation variable that correlates highly with current NDVI images.

The creation of a radar-derived vegetation variable will allow for more extensive and reliable spatiotemporal analysis of tree line dynamics in Labrador, and the Arctic region as a whole. The vegetation product will be useful for quantitative and qualitative studies relating to the taiga-tundra boundary including land cover change, tree stand type and structure identification, and forecast modeling. For Labrador, this will mean a greater understanding of the TTI ecosystem and the impacts of ecological changes on local hydrology, soil characteristics, climate, wildlife and people living in northern communities.

References: