LCLUC Abstract

Monitoring Boreal Landcover and Ecosystem Dynamics at Regional Scales using Integrated Spaceborne Radar Remote Sensing and Ecological Modeling

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This investigation combines mapping and monitoring of boreal landcover with ecological modeling for assessment of regional and continental scale carbon flux dynamics. We will utilize imagery from the JERS Synthetic Aperture Radar (SAR) to develop a landscape segmentation map for use in an ecosystem process model. The segmentation map is coupled with landscape freeze/thaw dynamics derived using temporally dense spaceborne scatterometer data. These combined features allow determination of the timing of seasonal transitions for all regions of the land cover classification. Integration of an ecosystem model with the remote sensing-derived products will allow improved quantification of carbon flux dynamics on regional and continental scales. Each element in this suite of products will be assessed using existing data sets and *in situ* biophysical data collected under other activities. Integrating the suite of monitoring tools within a common framework will allow assessment of landcover change, making possible evaluation of landcover changes on carbon flux dynamics and regional and local scale ecological processes in general. Our development and validation efforts are first focused on intensive study regions in Alaska and Canada covered by the Alaska SAR Facility receiving mask. Then, these techniques will be applied to the rest of the North American boreal region. The methods developed in this study will also be applicable to Eurasian boreal regions, with our intent being to apply these techniques to derive contiguous products for the circumpolar boreal and arctic regions.