LCLUC Abstract

Fires and Emissions from Temperate and Boreal Ecosystems in North America: Past, Present, and Future

PIs: Peng Gong, Wei Min Hao, Zhanqing Li, Ivan Csiszar

In this research, we propose to develop fire detection algorithms that can be applied to a variety of large scale satellite remote sensing data to produce an inventory of the spatio-temporal fire burned areas of North America's boreal and temperate forests over a period of at least one decade. We further propose to develop fire emission models to estimate the emissions of fire burned boreal and temperate forestlands by integrating the fire inventory data, fuel type models developed from remote sensing based vegetation maps, weather data and emission factors data in our models. Fire burned area reports from selected regions over certain period of time will be used to validate our fire detection results. Each of the PIs' lab has all the necessary computer software and hardware to fully process the high volume of data. The proposed study addresses the two elements of the LCLUC Program, namely, *1) human and natural disturbance and the implications for carbon dynamics, and 2) development of remote sensing techniques and data sets that could lead to operational forest monitoring systems*. It also has a close tie with the Global Observation of Forest Cover (GOFC) Program. In fact, the fire monitoring and mapping system developed by the investigators is a constituent of the GOFC operational systems for forest cover monitoring. It would provide valuable data sets that may satisfy the needs of the global change science community, the forest management community, and policy makers.