

## **GEOSS Energy Community of Practice on-line survey on users' requirements of wind energy information**

### **Description**

Canada is a large country, approaching a billion hectares in size. With over 400 million hectares of forested land that contributes \$37 billion dollars to the balance of trade, Canada is determined to be a good steward of this renewable resource. Ensuring effective resource management requires current and reliable forest information. In support of national and international reporting requirements, Natural Resources Canada-Canadian Forest Service (NRCan-CFS), in partnership with the Canadian Space Agency, is using space-based, earth observation (EO) technologies to monitor the sustainable development of Canada's forests through an initiative called the Earth Observation for Sustainable Development of forests (EOSD). The initiative has produced a land cover map of the forested ecozones of Canada using circa year 2000 Landsat satellite data. Inputs from EOSD are an important data source in the National Forest Carbon Accounting Framework and Canada's new plot-based National Forest Inventory. The National Forest Information System is used to integrate and synthesize applicable data and products.

### **Added Value**

The EOSD team has worked with the international land cover community and GEO since 2005 to build the foundations for land cover observations as an integral part of a Global Earth Observation System of Systems (GEOSS). GEO offers opportunities for improvement and has been driving observation progress through: highlighting the societal needs and relevance of land cover observations; providing a forum for advocating land cover and change observations as a key issue; fostering integrated perspectives for continuity and consistency of land observations, in particular for joint international efforts; and finally by helping to develop international partnerships involving producers, users and the scientific community to make better use of existing datasets.

### **Relevance to GEO**

The GEO, in its 10 year reference document, emphasizes the importance of land cover for all societal benefit areas. In Canada and around the world, reliable land cover observations are of crucial importance to understanding climate change and mitigating its impacts. Land cover information is therefore relevant to natural resources management, conservation of biodiversity, and understanding of ecosystems and biogeochemical cycling.

A specific task in the GEO 2007-2009 work plan (DA-07-02) addresses land cover issues, with the overall goal to provide a suite of global land cover datasets, initially based on improved and validated moderate resolution land cover maps and eventually including land-cover change at high resolution. Canada's EOSD land cover team is contributing to this task.

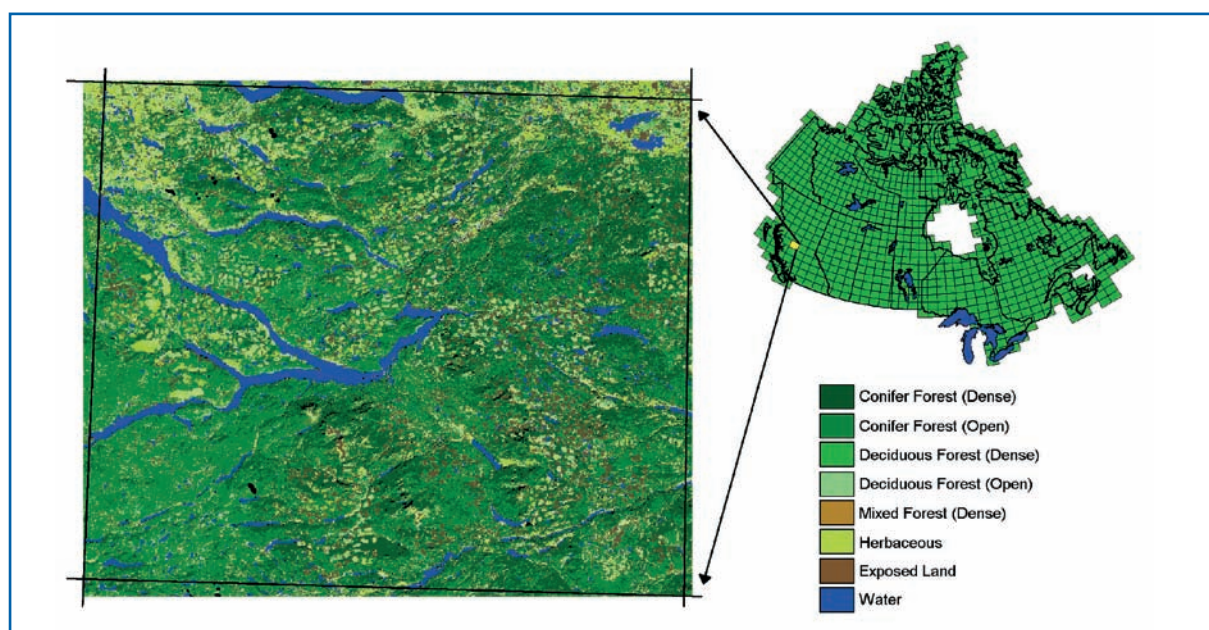
Using single scenes of Landsat data to produce land cover information is not uncommon. However, combining several, or even hundreds of Landsat scenes for the development of a large area land cover map, remains a challenging task. To cover the forested areas of Canada EOSD mapped approximately 800 Million ha, requiring over 475 images. The classification approach for EOSD is based upon a hyperclustering, cluster merging, and labeling approach. The new approaches to land cover mapping used in EOSD contribute to improvements in global mapping. Conversely, international approaches benefit national land cover mapping. For example, the legend used for EOSD complies with the international Land Cover Classification System (LCCS).

## Participants

Natural Resources Canada, Canadian Forest Service; Canadian Provinces and Territories; Canadian Space Agency; universities; crown corporations; industry; Global Observation of Land and Forest Cover Dynamics (GOFC-GOLD)

## Current Status and Next Steps

Over 610 1:250,000 scale map sheets are required to cover the forested ecozones of Canada; all are complete and available for download via the EOSD Land Cover portal termed SAFORAH [http://eosd.cfs.nrcan.gc.ca/cover/implementation/index\\_e.html](http://eosd.cfs.nrcan.gc.ca/cover/implementation/index_e.html). A protocol for addressing the accuracy of the national EOSD product based upon a stratified random sample is being tested.



*Sample EOSD land cover classification product, representing same area as NTS 1:250,000 map sheet 93F (Nechako River, B.C., Canada).*

EOSD will contribute to meeting Canada's national and international reporting requirements related to climate change and sustainable forest management by mapping the forested areas of Canada. This task required the support and concerted efforts of many partners to complete. Cooperation and communication among various levels of governments within Canada and with international organizations such as GEO, provide an opportunity to share resources and work towards common objectives.