Canada's National Land and Water Information Service: Providing Land Information for Canadians

Summary

Many of the goals associated with the intergovernmental *Group on Earth Observations* (GEO) are being met on behalf of Canada's agricultural land community through implementation of the National Land and Water Information Service (NLWIS), led by Agriculture and Agri-Food Canada (AAFC). NLWIS provides open and free access to data, information and tools over the Internet to support sound land use decision making by Canadians. The originators of these data and derived information products include all levels of government as well as non-government organizations. NLWIS is successfully bringing these communities together,developing partnerships with multiple agencies to permit sharing and access to data and products for the benefit of the broad Canadian user community. NLWIS is also generating new information to fill critical gaps identified by user requirements. NLWIS will conform to the Canadian Geospatial Data Infrastructure (CGDI) and international (Open Geospatial Consortium, OGC) standards. NLWIS and AAFC's research community are working together in developing the next generation of Earth observation products to meet ongoing and emerging user needs.

Relevance to GEO

As with GEO, NLWIS is heavily driven by user requirements. The data, information and tools being provided by NLWIS meet many of the user needs documented in the Socio-Economic Benefit Areas (SEBAs) identified by the GEO international community. Through the provision of land and water data and information, NLWIS land information supports the broad goals of the following SEBAs:

- Understanding, assessing, predicting, mitigating and adapting to climate variability and change;
- Improving the management and protection of terrestrial, coastal and marine ecosystems;
- Supporting sustainable agriculture and combating desertification;
- Understanding, monitoring and conserving biodiversity.

The new agricultural policy framework being developed for Canada – *Growing Forward* – sets out a vision, objectives and policy direction of an agriculture, agri-food and agri-products sector that is profitable, innovative, competitive, market-oriented and able to seize opportunities while meeting the needs of Canadians who are increasingly health conscious and environmentally aware. NLWIS is committed to being the authoritative source of geospatial data to support monitoring, forecasting and response programs. As part of this commitment, NLWIS is developing and making available land cover information to support agri-environmental land use decision making in Canada.

1.1 Land Cover Monitoring

Description

NLWIS is developing medium-resolution land cover monitoring information for agricultural regions of Canada (30m-resolution LandSat data). The work currently includes a circa 2000 baseline inventory (Figure 1).

Value Added

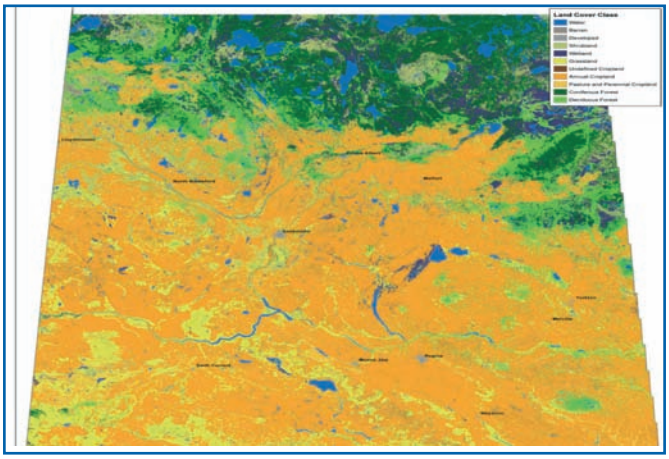
Land cover monitoring supports a range of agri-environmental information and application needs, including decision making and monitoring for land use and management; production insurance; development of agri-environmental performance indicators; climate change monitoring plus carbon and greenhouse gas accounting and verification; biodiversity monitoring; environmental farm planning and incentive programs for the adoption of beneficial management practices.

Participants

The production of a national land cover map is led by AAFC in collaboration with Natural Resources Canada (Canadian Forest Service), GeoBase, the Inter-Agency Committee on Geomatics, the Canadian Space Agency and Environment Canada (Canadian Wetland Inventory).

Current Status and Next Steps

Production of a baseline circa 2000 land cover map of western Canada is near completion and will be distributed through NLWIS. Future work will produce baseline information for other parts of Canada, as well as information on land cover changes.



Medium-resolution land cover map, Province of Saskatchewan, Canada, circa 2000

1.2 Land Use/Crop Type Inventory

Description

Earth observation technology provides an efficient approach to large area mapping of crop information. AAFC has developed a methodology that integrates data from radar and optical satellite sensors to classify crops across Canada's agricultural landscape (Figure 2). Integration of radar data in the methodology improves the reliability of delivering an annual crop inventory.

Value Added

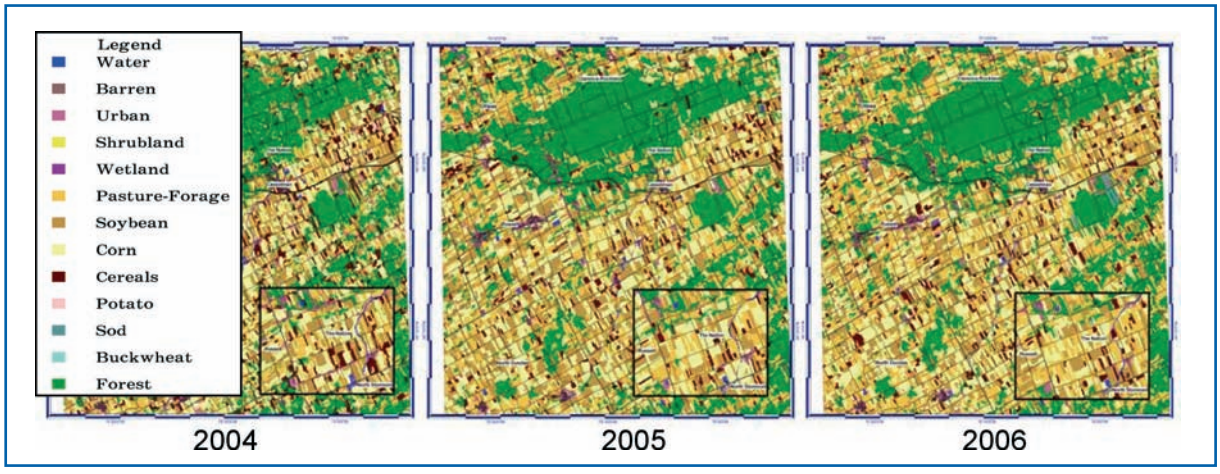
Annual crop inventories are of value to a diverse user community. Annual information on crops will support programs to understand, assess, predict, mitigate and adapt to climate variability and its associated risks, contribute to sustainable agriculture and improve land management decisions.

Participants

AAFC research scientists and NLWIS worked together to develop the crop inventory methodology with support from the Canadian Space Agency.

Current Status and Next Steps

The crop classification approach has been tested for multiple years over multiple sites across Canada. NLWIS will continue piloting the production of these products while automating the methods and assessing other operational requirements.



Cropping monitoring to obtain information on state and change in crop acreage and rotations