

Remote Sensing Technology

RADARSAT is an advanced earth-observation satellite program developed by Canada to monitor environmental change and to support resource sustainability.

The launch of RADARSAT-1 in 1995 gave Canada and the world access to the first radar satellite system capable of large-scale production and timely delivery of data that meet the needs of commercial, government, and scientific programs. RADARSAT-1 provides a new source of reliable and cost-effective data for environmental and resource professionals worldwide. With a planned lifetime of five years, it is equipped with synthetic aperture radar that can transmit and receive signals to "see" through all weather at any time and obtain high-quality images of the earth. These images have proven to be effective tools in the management and monitoring of the global environment in areas of ice navigation, cartography, geological exploration, maritime surveillance, disaster-relief operations, agriculture, and forestry surveillance.

RADARSAT-2, due for launch in 2001, will build on the successes of RADARSAT-1 and offer improved quality of data images to meet the growing world demand for earth-observation information.

Canada has two state-of-the-art satellite-receiving stations, in Quebec and Saskatchewan, with a range that covers Canada and the continental United States. Both stations handle the reception, processing, and archiving of earth-observation data. A centralized facility coordinates the scheduling of the stations, reconciling client data requirements, and scheduling the various satellite sensors with the respective earth-observation satellite-operating agencies. Together, they handle more than 12 000 satellite passes per year with a success rate greater than 99.7 percent.

The Government of Canada provides information on the state of its domestic grain crops through the Crop Information System. For the grain-growing regions of western Canada, data are acquired daily throughout the April to October crop-growing season. This information is customized within a GIS interface, and weekly updates can be viewed by subscribers via an interactive Internet site in the form of image and map products and statistical data. Historical data are provided so that subscribers can evaluate current crop conditions with those from previous years.

Surficial geology mapping, soil geochemistry, and characterization of aquifers are examples of other earth science contributions to agriculture and related management. They provide information on the distribution of metals in soils, are critical to addressing water resource issues for agriculture, and help to assess the impact of climate change on agriculture and other human activities.

Precision farming

The availability of spatially georeferenced data enables a site-specific approach to farming. Such an approach can increase farming profit-

A geographic information system (GIS) can integrate and store accurate information on property size, shape, ownership, taxes, and usage. Learn more at <http://www.geocan.nrcan.gc.ca/geomatics>