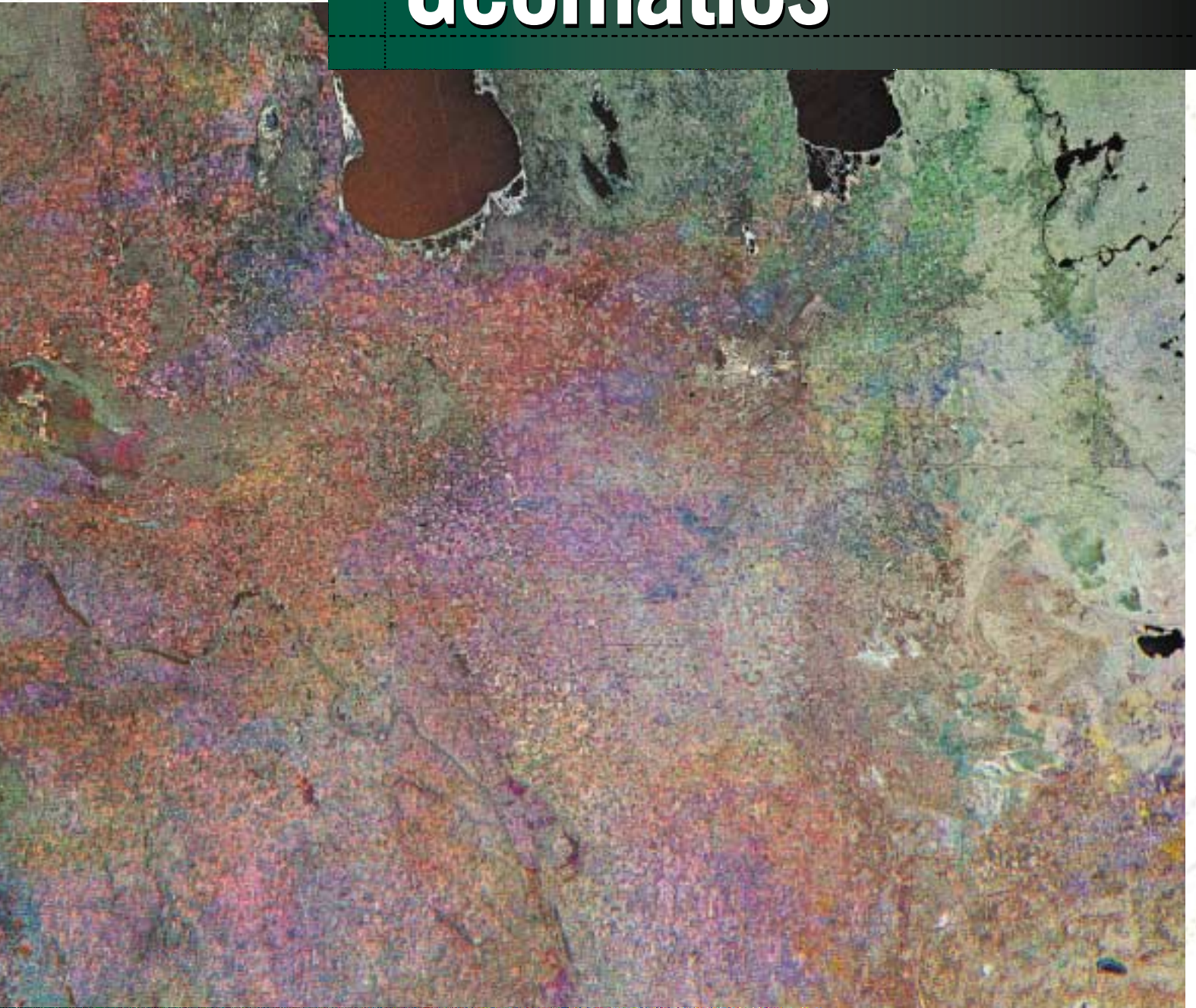


Remote Sensing Technology

# Geomatics



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada 

## What is Geomatics?

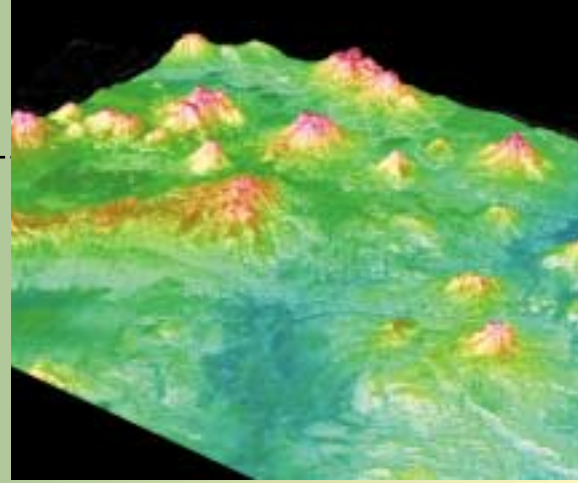
Geomatics is the science and technology of gathering, analyzing, interpreting, distributing and using geographical information. Geomatics encompasses a broad range of technologies that can be brought together on a common spatial reference system to create a detailed but understandable picture of the physical world and our place in it. These technologies include:

- GEOGRAPHIC INFORMATION SYSTEMS;
- GLOBAL POSITIONING;
- REMOTE SENSING;
- DIGITAL MAPPING; and
- CADASTRAL SURVEYING.

## A Vibrant Technology Sector

Canada has earned recognition as a world leader in the field of geomatics — one of the fastest growing technology sectors over the last decade. The Canadian geomatics community provides software, hardware and value-added services to help clients resolve problems and seize opportunities in areas such as:

- the earth sciences;
- infrastructure management;
- the environment;
- land management and reform;
- natural-resource monitoring and development;
- development planning; and
- coastal-zone management and mapping.



## The Canadian Advantage

Canada's knowledge and expertise in geomatics are the result of decades of research and development, and practical application. Through an understanding of our diverse geography, we are managing our resources and the environment for the benefit of present and future generations.

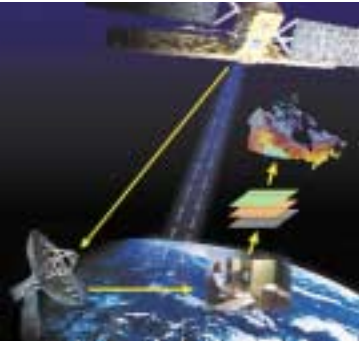
Canadian-developed geomatics products and services are now being used throughout the world. Our clients range from government agencies in industrialized and developing nations, to large and small businesses, and remote communities.

Partnering with the Canadian geomatics community, which welcomes international collaboration through joint ventures or strategic alliances, will give you full and favoured access not only to these products and services, but to some of the world's leading geomatics experts.

*Why not put the  
Canadian advantage to  
work for you?*



# Remote Sensing Technology

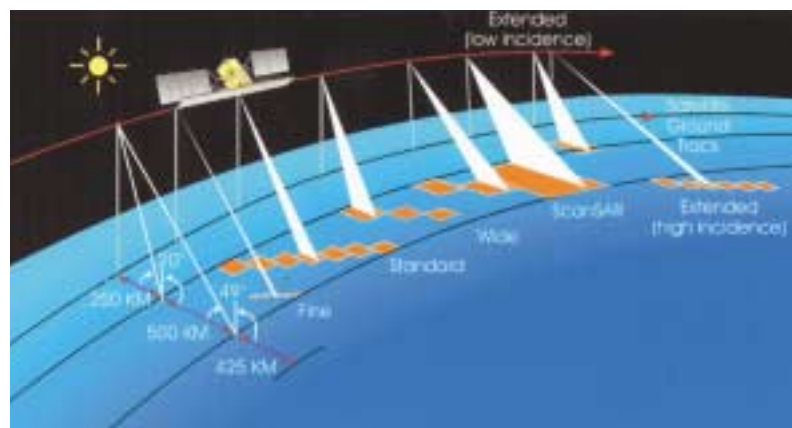


**R**ADARSAT is an advanced Earth-observation satellite program developed by Canada to monitor environmental change and to support resource sustainability.

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. These data are meeting the needs of commercial, government and scientific programs, and they provide a new source of reliable and cost-effective data for environmental and resource professionals worldwide. RADARSAT-1, with a planned lifetime of five years, 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%.





## Providing Remote Sensing Information

Canada is working hard to make integrated geospatial information available at the click of a mouse. As the geographic-information component of the Information Highway, the geospatial infrastructure will provide access to public information built upon a common national framework based on international standards. This geospatial information has been collected in cost-effective partnerships and made available through a supportive policy environment. The infrastructure is being developed by the federal, provincial and territorial governments, along with the private sector and academia. Improved access to government information will accelerate the development of knowledge-based economic activities.

The Government of Canada is also funding an initiative called the Canadian Earth Observation Network (CEONet) to create a national infrastructure for providing access to Earth-observation archives and other complementary spatial databases. CEONET



provides the discovery and access component of the integrated geospatial infrastructure described above. Its directory service has thousands of Canadian and international data holdings, a distributed search service, and interfaces to Canadian and international maps and gazetteers. CEONet makes it easy for data suppliers to provide data, and for system integrators to build value-added services for the infrastructure. It gives users better access to Earth-observation data, and creates opportunities for industry to promote their expertise in these data, services and network systems.





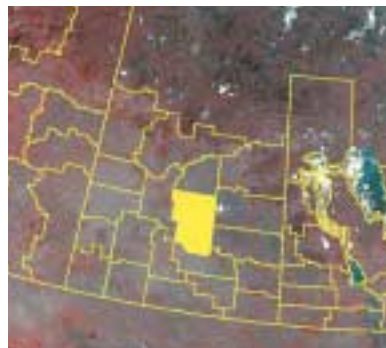
## International Remote Sensing Activities

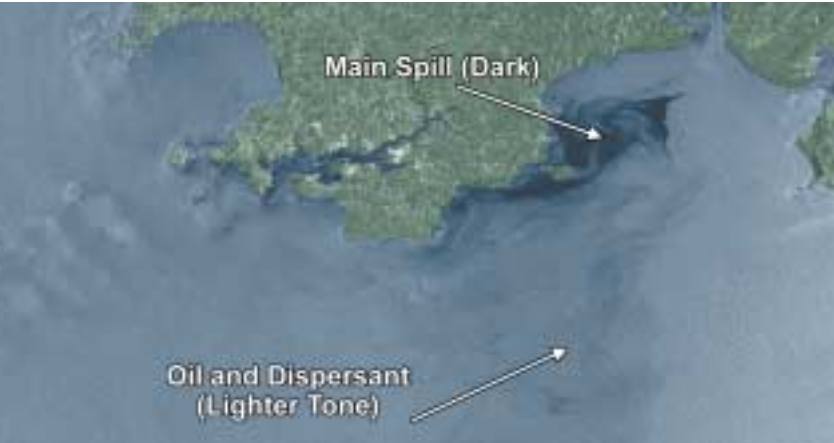
With a focus on training and technology transfer, Canada has a program that builds radar remote sensing capacity in participating countries. This program provides the opportunity for participants to develop an understanding of and use RADARSAT data in areas such as planning and resource management. It also supports the establishment of linkages between Canadian public and private-sector organizations and their counterparts in the host countries. Several countries in Latin America and South America have already profited from the program.



Canadian satellite technology is helping Polish farmers accurately forecast their crop yield. Under the Poland–Canada Agricultural Remote Sensing Project, Polish agricultural specialists are using a customized version of the Canadian Crop Information System to produce crop-condition reports and experimental-yield forecasts. Now they can predict a good season from a bad one well before harvest time. As a result, the Polish government is better able to participate in the futures market for small grains and to react to serious problems, such as the impact of drought conditions.

Since 1972, Canada has participated in almost all major international remote sensing satellite programs through the reception, processing and archiving of North American data at the Canadian ground stations. In some cases, Canada has developed the technology to support these programs internationally. As well, in cooperation with international agencies, Canada continues to develop exciting and important new applications with global impact using remote sensing data and technology.





## Sustainable Development

The world has begun to feel the effects of changes in our atmosphere, oceans, lands and forests. Canada is among the countries that are vulnerable to global change, as its economic and social well-being are based on the sustainable development of natural resources. In fact, Canada's natural resources account for 11.9% of the country's Gross Domestic Product, 35.7% of its exports and 5.5% of its employment.

Remote sensing technology is helping Canadians understand forest ecosystems. Satellite images provide remote sensing data on Canada's natural resources and help monitor changes in the environment. Interpretation of these data provides us with insight into forest ecosystems so that we can develop strategies for advancing sustainable forest management.

For example, the goal of the Boreal Ecosystem-Atmosphere Study (BOREAS) is to understand the role of the atmosphere and the northern forest in global climate change. BOREAS is a large-scale remote sensing and ground-based investigation of how the forest and the atmosphere interact as they exchange carbon dioxide, trace gases, heat and water. It involves a team of 200 scientists from Canada and several other countries.

Canada is leading an international pilot project related to the global observations of forest cover. Canada is the lead due to the important role RADARSAT is playing in monitoring forests worldwide, the country's excellent track record in the application of remote sensing to forest land management, and the importance of forests to Canada and Canadians. Canada is also carrying out research in forest-health monitoring and forest biodiversity.



## Why a Canadian Geomatics Solution?

The Canadian geomatics community is a respected and competitive player in international geomatics markets. The more than 1500 Canadian geomatics firms provide nearly \$2 billion worth of geomatics products and services annually, and many firms maintain offices and support capabilities abroad to meet the needs of clients.

As an internationally recognized centre of excellence the Canada Centre for Remote Sensing (CCRS), Natural Resources Canada, provides leadership at the federal level in remote sensing, including the development of related technology and the creation of partnerships both at home and abroad. In addition, the Geomatics Industry Association of Canada (GIAC) assists its members in developing new business in Canada and around the world through promotional, educational and advocacy activities. The Canadian geomatics community can provide the expertise to respond to international geomatics project opportunities.



### *Canada offers you:*

- ***A PARTNERSHIP APPROACH TO GEOMATICS APPLICATIONS***

The geomatics industry, along with federal and provincial governments and the academic sector, often work in teams to develop technology and expertise and to deliver services.

- ***FLEXIBILITY, RESPONSIVENESS AND CREATIVITY***

The industry can provide value-added products and services that are tailored to the unique requirements of individual clients. Technology transfer and skill-sharing are important elements of many export arrangements.

- ***A COMMITMENT TO TECHNOLOGICAL INNOVATION***

Working together, government, industry and universities continue to explore and develop new geomatics applications and technologies through cooperative research and development.

- ***A FOCUS ON SOLUTIONS***

Canada can provide multi-disciplinary, integrated solutions to problems related to the natural and the developed environment. Canadian geomatics expertise has already helped many government and industry clients around the world.





**For additional information:**

Business Development  
Earth Sciences Sector  
Natural Resources Canada  
615 Booth Street  
Ottawa, Ontario K1A 0E9  
CANADA  
Telephone: (613) 996-7643  
Facsimile: (613) 995-8737  
Internet: <http://www.nrcan.gc.ca/ess>  
E-mail: [geomatics.info@geocan.nrcan.gc.ca](mailto:geomatics.info@geocan.nrcan.gc.ca)

Geomatics Industry Association of Canada  
Suite 1204–170 Laurier Avenue West  
Ottawa, Ontario K1P 5V5  
CANADA  
Telephone: (613) 232-8770  
Facsimile: (613) 232-4908  
Internet: <http://www.giac.ca>  
E-mail: [giac@giac.ca](mailto:giac@giac.ca)

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