

Federal Geomatics Bulletin

the official publication of the Inter-Agency Committee on Geomatics



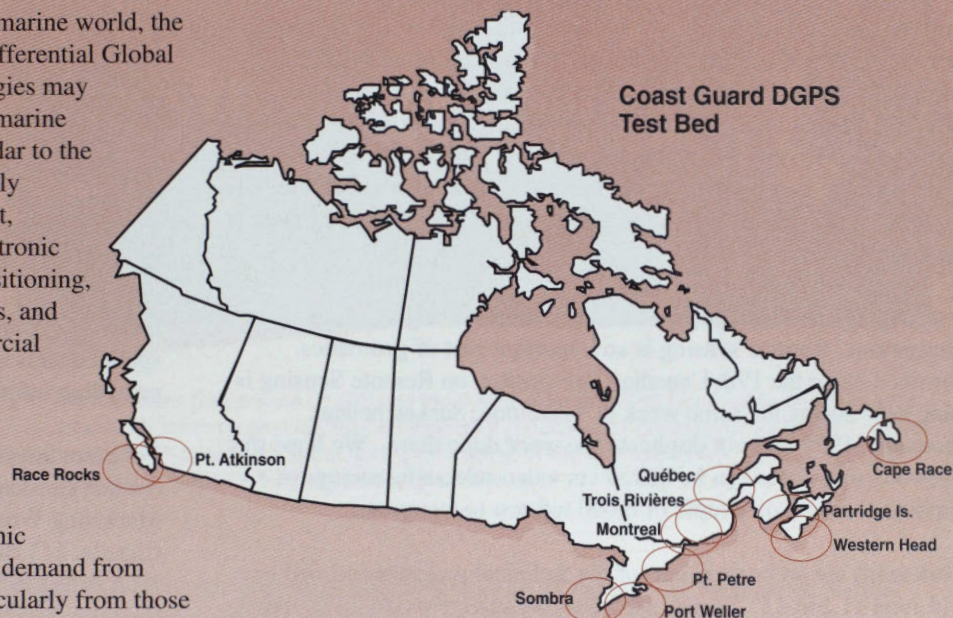
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Avoiding the Rocks - The Coast Guard Differential GPS Project

It is not an understatement that, in the marine world, the combination of electronic chart and Differential Global Positioning Systems (DGPS) technologies may represent the greatest advancement in marine navigation since the introduction of radar to the bridge. Ship navigation has traditionally been a process of plotting, after the fact, where the ship was. The dynamic electronic chart, an on-board GIS with DGPS positioning, continually displays where the vessel is, and with unprecedented accuracy. Commercial shipping concerns are recognizing the potential operational efficiencies of modern electronic navigation. Marine accidents, most notably the Exxon Valdez, have also focussed attention on the safety value of electronic navigation. There has been increasing demand from many quarters for DGPS service, particularly from those outfitting their ships or fleets with electronic charts. Worldwide, marine DGPS systems are being tested and used in more and more maritime countries.

The Canadian Coast Guard was a pioneer in the use of electronic charts, having, in the mid-1980s, installed systems on icebreakers for St. Lawrence River operations. Precise positioning was provided by a microwave ranging system. The combination has proved to be of immense value in keeping this critical waterway open during the winter. We have also demonstrated that electronic charts and DGPS can be used very effectively to position the many thousands of floating aids to navigation in Canadian waters. Thus the Coast Guard fleet is an enthusiastic proponent of electronic navigation. DGPS provides similar, or better accuracy than the microwave system, and expands the availability of precise positioning to an unlimited number of users within the coverage of the DGPS transmissions.



As the marine navigation service provider, the Coast Guard is responding to the reality of DGPS. In April 1992, with assistance from the Canadian Hydrographic Service (CHS), the first Canadian experimental DGPS transmissions were established from the marine radiobeacons at Race Rocks and Point Atkinson, British Columbia. Since that time, the Coast Guard has expanded its activities to a DGPS test bed project, national in scope, with DGPS corrections available from 11 sites on the West Coast, the Great Lakes and St. Lawrence River, and the East Coast. (continued on p. 8)



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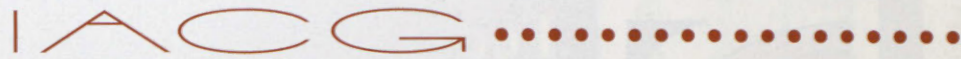
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Geomatics 1995

A New Concept for the Annual Conference

The annual GIS Conference is moving beyond the focus on geographic information systems to a broader range of issues, a new format, and a name change. Geomatics 1995 — the 7th International Conference on Geomatics, is the result of comments received from previous conferences, and is an attempt to meet the evolving needs of the geomatics community. The Conference will cover the full range of geomatics sciences and technologies with special emphasis on surveying, mapping, and geographic information and global positioning systems.

The 1995 dates are June 13, 14, and 15. The first day will feature an international perspective, focusing on technology transfer, projects, markets, and needs assessments. Day two will focus on applications, including statistics and geography, agriculture and soils, urban and municipal issues, transportation and utilities, forestry, defence, fishing, oceanography, geoscience, the environment, and government services. Day three will be devoted to discussions on the latest developments in geomatics technology.

You may have noticed the absence of remote sensing in the above information. Remote sensing is an important part of geomatics. However, since the 17th Canadian Symposium on Remote Sensing is being held during the same week in Saskatoon, Saskatchewan, Geomatics 1995 will not duplicate the work done there. We hope that the two Conferences can be linked via video-teleconferencing for a combined session on a topic of broad interest to everyone.

Workshops are an integral part of the technical program and will be held June 11 and 12. Several are being organized by IACG Working Group #4, "Technology and Information Transfer." Hands-on courses will include "Modelling with GIS," and "Integrating Remote Sensing and Geographic Information." Classroom presentations of half days and full days will include such topics as visualization, desktop publishing, and transportation issues. More subjects are being added as the planning process evolves.

The broader concepts supported through Geomatics 1995 will bring a change to the exhibit area, with a wider profile of geomatics firms and organizations. The exhibit area will be open for three days, and will be a focal point during the first day with the Exhibit Opening and the Icebreaker.

A number of associated meetings will be held in conjunction with Geomatics 1995, including the 88th Annual General Meeting of the Canadian Institute of Geomatics, and the Annual Meeting of the Geomatics Industry Association of Canada.

The Preliminary Program will be mailed in early March. For those who wish to have information sooner, please contact the Conference Office by telephone at (613) 996-2817, by fax at (613) 947-7059, or by writing to Geomatics 1995, 615 Booth Street, Room 700, Ottawa, Ontario, K1A 0E9, CANADA.

Update of Directory on Geographic Data in Canada

The Access and Marketing Working Group of the Inter-Agency Committee on Geomatics is updating the *Report on Current Status and Trends in Federal Digital Geographic Data in Canada*. The report, originally produced for the IACG by Tomlinson and Associates Limited in May 1991, will be updated using the newly adopted directory standard CAN/CGSB-171.3 from the Canadian General Standards Board. There are 314 data sets recorded in the original report. Criteria for inclusion in the directory are:

1. The data set must be held by a federal government department or agency.
2. The data set must describe an area in Canada or include Canadian territory.
3. The data set must be directly georeferenced to a coordinate framework.
4. The data set must be at a scale smaller than 1:500.
5. The data set must be in digital form.

Every government agency responsible for managing spatial data is invited to participate in this survey by providing information on their data sets.

For more information, or to be included in the survey, contact Gordon Plunkett, Chairman, IACG Access and Marketing Working Group, GIS Division, Geomatics Canada, 615 Booth Street, Room 753, Ottawa, Ontario, K1A 0E9, CANADA.

Fax: (613) 952-0916; e-mail: plunkett@emrl.emr.ca.

Federal Geomatics Bulletin

This newsletter is intended as a vehicle for the communication of information on geomatics activities within the Canadian federal government. It is published twice a year under the auspices of the Inter-Agency Committee on Geomatics. Articles pertain to the methods, procedures and technology associated with systems for the collection, manipulation, display and dissemination of geographically referenced digital data. The editorial board consists of Martine Couture (chair), David Ellwood, Jeffrey Murray, David Stafford and Nick Mosienko. Editorial and production support is provided by Alain Gagné, Barbara McAulay, Marion McEllistrum and Julie Allard. Submissions for Volume 7, #1, which should be submitted before January 31, 1995, are most welcome. Subscription requests, queries, comments or submissions should be sent to: *Federal Geomatics Bulletin*, IACG Technical Secretariat, GIS Division, Geomatics Canada, 615 Booth Street, Ottawa, Ontario, K1A 0E9, CANADA. Fax: (613) 952-0916; e-mail: IACG@gisd.emr.ca.

ACTIVITIES

The 6th Canadian Conference on GIS and the Symposium of ISPRS Commission II — Systems for Data Processing, Analysis and Representation

Geomatics Canada, in cooperation with the Canadian Institute of Geomatics, the Inter-Agency Committee on Geomatics, and the International Society for Photogrammetry and Remote Sensing, hosted the 6th Canadian Conference on GIS and the Symposium of ISPRS Commission II — Systems for Data Processing, Analysis, and Representation, in Ottawa from June 6-10, 1994.

Pre-Conference activities began with 10 practical, hands-on workshops, and 10 GIS training courses designed for everyone from the novice to the expert in the field of geomatics. Topics for the courses and workshops ranged from *Introduction to GIS* to *Mobile Data Collection for GIS*, and *Integrated Methodologies for Environmental Impact Assessment using GIS and Remote Sensing*. Attendance for the courses and workshops was 144.



The Canadian Conference on GIS and the Symposium of ISPRS Commission II provided an opportunity for three past ISPRS Commission II Presidents to get together with the current president. Pictured from left to right: Zarco Jaksic (1980-84), Larry Fritz (1984-88), Klauss Szangolies (1988-92), and Mosaad Allam (1992-96).

The 1994 GIS Conference and the ISPRS Commission II Symposium were officially opened by the Deputy Minister of Natural Resources Canada, Ms. Jean McCloskey. During her opening address, Ms. McCloskey announced that Geomatics Canada would be the new name for the Surveys, Mapping and Remote Sensing Sector. Welcoming remarks to all delegates and guests were delivered by Mr. J.H. O'Donnell, ADM, Geomatics Canada, and by Dr. Mosaad Allam, Director of both the GIS Conference and the ISPRS Commission II Symposium. The keynote address was delivered by Bernie Gorman, Secretariat, Treasury Board of Canada, who spoke on the renewal of government services with information technology.

Under the theme, *A Shared Vision*, many of the 1039 registrants benefited from the expanded program. A Shared Vision offered two technical programs that extended over a five-day period. GIS'94 comprised 38 concurrent, 7 shared plenary, and 4 poster sessions. The ISPRS Symposium consisted of 15 concurrent, 7 shared plenary, and 3 poster sessions. Technical sessions resulted in the presentation of over 290 papers.

A Shared Vision boasted an exhibit area covering over 2600 square metres, which housed 56 exhibitor booths. Most major GIS, photogrammetric, GPS, and remote sensing companies — as well as many new, innovative firms — were among the 47 organizations that displayed software, hardware and services.

Technical tours were also an important part of the program. Among the tours this year were a trip to the Pettawawa National Forest Institute and a visit to the Gatineau Satellite Receiving Station.

The close of the Conference brought invitations to attend Geomatics 1995 — the 7th International Conference on Geomatics, to be held in Ottawa from June 11 to 15, 1995, and the 1996 ISPRS Congress to be held in Vienna, Austria, from July 9 to 19, 1996.

Geomatics Standards

Significant progress has been reached toward the establishment of a set of formal standards for the exchange of digital geographic data, both in Canada and internationally. The Canadian General Standards Board's Committee on Geomatics has recently completed the first phase of its effort to establish a suite of Canadian standards for Geomatics by the adoption of four standards. The first of these adopted standards is the "Geomatics Data Set Cataloguing Rules" developed by CGSB-COG, in cooperation with the Canadian Library Association, as CGSB Standard CAN/CGSB-171.2-94. A second standard on meta data for Geomatics data sets has been adopted as CAN/CGSB-171.3-94. Two data interchange standards have also been completed and have been approved by ballot. They are currently being processed as National Standards of Canada through the Standards Council of Canada.

The two data interchange standards CGIS-DIGEST and CGIS-SAIF are part of a series of Canadian Geomatics Interchange Standards (CGIS). These two standards address different aspects of data interchange. CGIS-DIGEST is a "defined" or product-oriented standard that specifies an explicit format for the exchange of data products. It is equivalent to the international DIGEST standard developed by the Digital Geographic Information Working Group (DGIWG). DIGEST has a tightly defined data model, Feature and Attribute Coding Catalogue and content specification that ensure ease of direct use of the data. CGIS-SAIF is a modelling standard that allows any data set to be interchanged without altering the basic organization of the data. This is based on the Spatial Archive and Interchange Format (SAIF) developed by the Government of British Columbia for Crown Lands. The two approaches are complementary. A profile of DIGEST in terms of SAIF is under development by the committee. Future work by the committee will establish a Canadian feature classification catalogue as part of the series.

A common approach toward the development of a Canadian Feature Classification Catalogue was agreed to by the CGSB Feature Coding Committee (June 94) based on the DIGEST Feature and Attribute Coding Catalogue (FACC). Initial work on harmonizing FACC with the various catalogues used in different federal and provincial agencies was presented, and a feature catalogue data base is now available.

The CGSB-COG held a meeting in Victoria, B.C. on April 19, 1994. At that meeting, a new chairman, David McKellar of the Department of National Defence, was elected to a two-year term. With the adoption of the CGSB-COG cataloguing rules and CGIS data interchange standards, the committee is now concentrating on harmonization issues, particularly with respect to feature codes, including object structuring. In time, the work on meta data will be extended to include harmonization with the recently published U.S. Meta data specifications.

In the United States, a modelling standard called the Spatial Data Transfer Standard (SDTS) has been adopted as a Federal Information Processing Standard (FIPS) complementing the use of DIGEST and S-57. In addition, development has begun in the United States toward a more general modelling standard encompassing the capabilities of both SAIF and SDTS, called the Open GIS (OGIS) development.

Internationally, the DGIWG DIGEST and the International Hydrographic Organization (IHO) standards are being frozen for two years to provide a window of stability in order to encourage implementation. Both DGIWG and IHO have worked over the past year toward significant harmonization of the data models and feature catalogues underlying these two standards. In addition, NATO has also adopted DIGEST as Standardization Agreement (STANAG) 7470 for NATO military applications.

The most significant development of the last year has been the establishment of a new International Organization for Standardization (ISO) Technical Committee on Geographic Information/Geomatics TC 211. This committee will bring together the work of DGIWG, IHO, and the comité Européen de Normalisation (CEN) with the normal positions from several countries. The CGSB-COG will act as the Canadian Advisory Committee to ISO TC/211. The ISO held its first meeting of this new technical committee on November 10 and 11, 1994, in Norway.

For more information on standards activities, or to acquire a copy of the feature catalogue data base, contact David McKellar, Directorate of Geographic Operations, National Defence Headquarters, Surveys and Mapping Building, Ottawa, Ontario, K1A 0K2, CANADA. Tel: (613) 995-4239. fax: (613) 996-3328.

New Canadian Standard for Meta Data Directory

After widespread consultation with GIS users in the federal and provincial governments, universities and the private sector, the working group on *Meta Data Directories* from the Committee on Geomatics of the Canadian General Standards Board (COG-CGSB) submitted to the COG-CGSB a proposed national standard for directory information.

The Directory Information Describing Digital Geo-Referenced Data Sets (CAN-CGSB-171.3-94) is a form that can be used for the compilation of directory entries. It includes provision for:

- a) Identification of the data set, its owner, scientific contact, data manager and contact for access;
- b) Descriptive information about the contents of the data set, as well as details of areal coverage, vertical coverage and time coverage;
- c) Data updating details;
- d) Size of the data set;
- e) Details of data collection; e.g., base map used, sources of data, circumstances and details associated with the data collection, map projection, coordinate systems, geodetic datum, accuracy and comments on data quality;
- f) Availability of the data set including access policy, charges, and external communication;
- g) Information about the host computer, the operating system and the structure;
- h) Documentation and demonstrations to help the user.

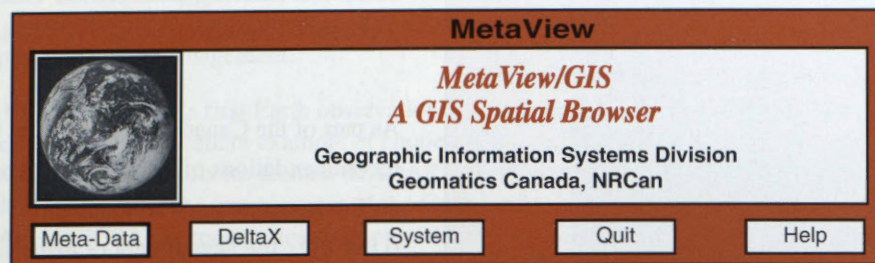
Appendix A defines and explains terms used on the form.

For more information on the content of the Standard, contact Anna Lehn, Canadian General Standards Board, 222 Queen Street, Ottawa, Ontario, K1A 1G6, CANADA. Tel: (613) 941-8636, fax: (613) 956-4716.

To purchase a copy of the Standard CAN-CGSB-171.3-94, contact the Canadian General Standards Board Sales Centre, 222 Queen Street, Ottawa, Ontario, K1A 1G6. Tel: (613) 941-8703; fax: (613) 941-8705.

DELTA-X and MetaView/GIS Project

A Federated Spatial Information Management System



Delta-X is a project undertaken by the Geographic Information Systems Division of Geomatics Canada to provide enabling technologies for the on-line exchange of digital data across Local Area Networks (LAN) and Wide Area Networks (WAN) through data federation. Delta-X is intended to be used in organizations that are distributed over a large geographical area, in which different departments share data, and which use a multitude of mutually incompatible software and hardware packages.

The project was initiated in 1988 by analysing the different computer platforms on which GISs are installed, the network architecture through which they could communicate and the models of data base management systems to provide the data base services. This research work resulted in the development of two products: Delta-X, the spatial information management system, and its companion GIS spatial browsing system, MetaView/GIS. They were demonstrated at the GIS/ISPRS Conference in Ottawa in June 1994, and received national and international attention.

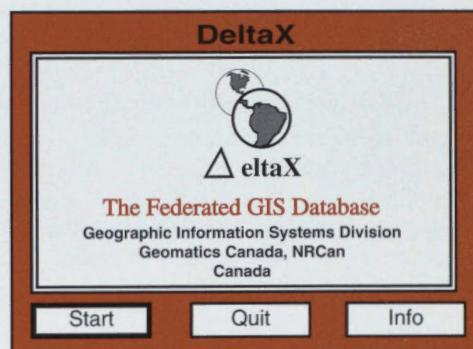
Delta-X allows the exchange of data between GISs and DBMSs over a WAN, the nodes of which are the servers of LANs consisting of heterogeneous GIS technologies and associated data bases. The replication of data in the client system is reduced to a minimum since data can be accessed from a server on-line. The design eliminates the need for a multiplicity of data translators. The search for data sources, meta data browsing and connection to other existing networks are provided by MetaView/GIS.

On-line search for data source information, remote graphic data visualization, on-line ordering, and feature-based selective retrieval of data are some of the key functions of these systems. An efficient spatial indexing system is included for referencing data of specific coverage. Connections to directories such as GCNet, MOSAIC, Gopher, Archie and World Wide Web are provided through a graphical user interface (GUI) and a gateway to Internet.

The design is based on a client/server architecture and makes use of technologies that have been widely accepted by the scientific community, thereby providing design sustainability. The design functions include seamless vertical navigation through data bases at different levels of coverage, and horizontal navigation through data bases at a given level of coverage. The data model includes various spatial objects and their relationships, related attribute information, and unstructured text such as historical documents, video images, facts and rules.

Briefly, the main achievements under this project include developing a network architecture; designing a spatial topological data model; and developing a unique spatial indexing system. Delta-X and the MetaView/GIS prototypes have been implemented by the National GIS Technology Centre of the Geographic Information Systems Division in Ottawa where further enhancements are under way.

For additional information, please contact: Cherian Chaly, GIS Division, Geomatics Canada, Room 753, 615 Booth Street, Ottawa, Ontario, K1A 0E9, CANADA.
Fax: (613) 952-0916.



Long-term Space Plan Approved

On June 3, 1994, Industry Minister John Manley unveiled Canada's new Long-term Space Plan. The plan outlines federal strategy over the next ten years to meet the ongoing needs of Canadians for new applications of space technologies and to provide the space industry with the means to remain competitive internationally.

The budget for the Space Program over the next 10 years is \$2.7 billion, including \$1.2 billion for new initiatives and \$0.5 billion for Canada's continued participation in the International Space Station.

Five initiatives provide the basis for the new space plan:

1. The **RADARSAT Program** and the **Earth Observation Program** will provide essential data for monitoring and managing natural resources. In turn, Canada's space industry will be in a better position to compete in the world commercial market for satellite data.
2. The **Advanced Satellite Communications Programs**, such as the anticipated 1995 launch of MSAT, will develop space and ground segment technologies for new satellite communications services such as future commercial delivery of multi-media services, high-definition TV, and high data rate information highways.
3. The **Space Technology Program** has been augmented to secure the continued growth of the Canadian space industry and its competitiveness, particularly through partnerships with other space agencies (e.g., the European Space Agency).
4. **Space Science** has been allotted additional funding to reinforce Canada's strong R&D base. Of particular focus are **atmospheric science research** and **microgravity research**. In addition, a **Scientific Smallsat Program** will see two small Canadian satellites launched over the next 10 years.
5. The **Canadian Astronaut Program** will allow annual flight opportunities for Canadian astronauts over the next six years to support Space Station development.

NASA Agreement

The revised role of Canada in the **International Space Station Program**, as negotiated with NASA, essentially preserves Canada's position as the world leader in space robotics.

As a result of the new plan, by the year 2005, Canada will have four new satellites in orbit; Canadian astronauts will have participated in at least five shuttle missions; Canadian robotics will have played a crucial role in the assembly of the Space Station; and the country will benefit from the economic growth that will accrue from the new Space Program.

For more information on the Long-term Space Plan, contact:
Louis Fortier, Director, Communications, Canadian Space Agency, 6767,
route de l'aéroport, St-Hubert, Québec, J3Y 8Y9, CANADA.
Tel.: (514) 926-4342; Fax: (514) 926-4352

Workshop on GIS Applications in the Coastal Zone Management of Small Island Developing States

As part of the Canadian commitment to the recommendations of the U.N. Conference on Environment and Development (UNCED), the Department of Fisheries and Oceans hosted a technical workshop on Coastal Zone Management in the Spring of 1994. Some 35 scientists and coastal zone managers representing 18 small island states and non-governmental organizations from around the World, met for the three-day workshop held in Barbados. The aim of the Workshop was to explore the potential applications of GIS in promoting the sustainable development of small island developing states. The workshop was co-sponsored by the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Government of Canada through the Canadian International Development Agency and Foreign Affairs and International Trade Canada.

The workshop culminated in the production of an Action Plan to promote the use of GIS for the integrated coastal zone management for small island developing states. Specific recommendations on the potential use and integration of the technology were submitted to the U.N. Global Conference on the Sustainable Development of Small Island Developing States.

For more information, please contact
Darren A. Williams, Intergovernmental
Affairs Division, Oceanography and
Contaminants Branch, Department of
Fisheries and Oceans,
200 Kent St., Ottawa, Ontario,
K1A 0E6, CANADA.
Tel: (613) 990-9298, fax: (613) 990-5510.

RADARSAT: Canada's First Earth Observation Satellite

In 1995, when RADARSAT is launched, Canada and the world will have access to a timely and cost-effective source of information to monitor environmental change and support resource management.

RADARSAT is Canada's first Earth observation satellite. It is also an excellent example of cooperation between the public and private sectors. RADARSAT is being developed under the management of the Canadian Space Agency (CSA) in cooperation with provincial governments and private industry. The National Aeronautics and Space Administration (NASA) will launch RADARSAT in exchange for access to data. In addition, a private company — RADARSAT International — was established in 1989 to process, market and distribute RADARSAT SAR data to Canadian and international commercial users.

Conventional optical remote sensing satellites depend on sunlight to obtain useful imagery of the Earth. RADARSAT, on the other hand, is equipped with an advanced radar sensor, called Synthetic Aperture Radar (SAR). This powerful microwave instrument, which provides the satellite with its own means of illuminating the Earth's surface, can transmit and receive signals through clouds, fog, haze, and even darkness.

RADARSAT will offer commercial, government and scientific users a wide variety of beam modes. The satellite's steerable beam will provide incidence angles of less than 20 degrees to more than 50 degrees, swath widths of 50 to 500 kilometres, and resolutions ranging from 10 to 100 metres.

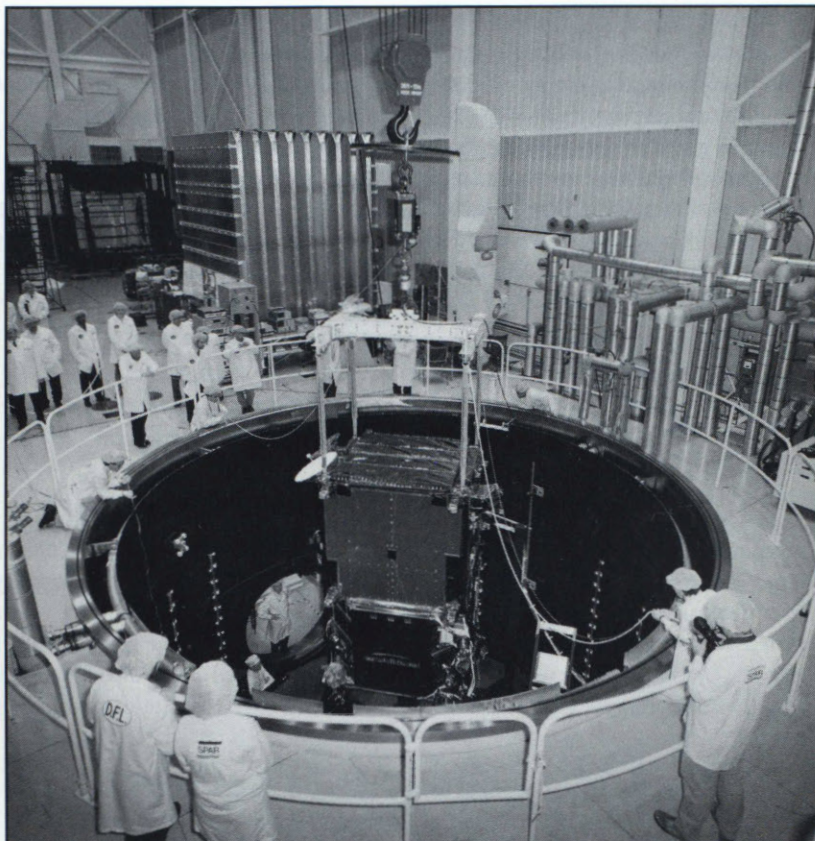
During its anticipated five-year lifetime, RADARSAT will cover the Arctic daily and most of Canada every three days, depending on the swath selected. The entire Earth will be covered every 24 days using the standard beam mode. Data will be downlinked in real time to a receiving station, or stored on the tape recorders onboard the spacecraft until it is within range of a receiving station, at which time it will downlink the data. Processed data is expected to be available to on-line users within a few hours after the satellite passes over an area.

RADARSAT will be managed and controlled from CSA's headquarters in Saint-Hubert, Quebec. It is also there that the RADARSAT Telemetry, Tracking and Command (TTC) Station is located. A second TTC Station has been established in Saskatoon, Saskatchewan. Reception of RADARSAT data for North America will be conducted at the Canada Centre for Remote Sensing (CCRS) satellite receiving stations at Prince Albert, Saskatchewan, and Gatineau, Quebec, and at NASA's satellite reception station at Fairbanks, Alaska. Additional data reception facilities, however, will be available as other countries join the international reception network.

Applications development initiatives are being coordinated through the RADARSAT Program partners in cooperation with Canadian and international organizations. Three major applications development initiatives are currently underway: the GlobeSAR Program and the Radar Data Development Program, which are managed by CCRS; and the RADARSAT Application Development and Research Opportunity (ADRO) Program, which is managed by CSA. RADARSAT will provide valuable information to users working in fields such as agriculture, cartography, forestry, geology, hydrology, ice studies, oceanography and coastal monitoring.

RADARSAT will help Canada maintain its leading edge in developing Earth observation satellite technology. It will also create significant social and economic benefits, contributing to Canada's prosperity. Spin-offs associated with the development and operation of RADARSAT are estimated at some 10,000 person-years of employment in Canada and up to \$800 million in new revenues to the Canadian private and public sectors.

For more information, please contact the RADARSAT Program Office, Canadian Space Agency, 6767 Route de l'Aéroport, Saint-Hubert, Quebec, J3Y 8Y9, CANADA. Tel.: (514) 926-4439; fax: (514) 926-4433.



The RADARSAT spacecraft is being lowered into the thermal vacuum chamber at the Canadian Space Agency's David Florida Laboratory in Ottawa, Ontario.

Excellence in Geomatics: Quality Management and Standards

A national Working Group for Excellence in Geomatics was established early in 1994 to find ways to increase the international competitiveness of the Canadian geomatics community. The Working Group, whose members represent all levels of government and the geomatics industry from across Canada, has sponsored awareness seminars on the topics of quality management (TQM) practices and quality management standards (ISO 9000). It is also developing a Charter of Quality and Award of Excellence in Geomatics. In addition, through Geomatics Canada, the Working Group endorses a cost-shared industry/government ISO 9000 Investigation Program for Canadian geomatics companies.

TQM and ISO - what are they and how do they relate to geomatics?

Total Quality Management (TQM) is a business philosophy that gained wide prominence and credibility after Japanese industry successfully cracked North American markets in the 1980s. It recognizes consumer preference for quality over disposability. As Western manufacturing sectors began to achieve increased bottom line results by introducing TQM practices, the service and government sectors began to realize that quality practices could also help them streamline operations while achieving greater customer satisfaction and higher employee morale.

In 1987, the international quality management standards known as ISO 9000, were introduced by the International Organization for Standardization in Geneva. To date, 90 countries have adopted the standards. They relate well to TQM principles and outline the key points of a measurable quality management system against which a company can be audited by an independent third-party assessor. These are not product standards. They refer to the process by which a company ensures it can produce a consistent level of quality of product or service.

Registration to an appropriate ISO 9000 standard is often a prerequisite for doing business among nations of the European Common Market, and registration is increasing in importance worldwide. International competitive pressures aside, implementing a rigorous quality management system can increase marketing credibility and often uncovers opportunities for cost-saving process improvement. To introduce Canada's geomatics industry to the benefits of TQM and the ISO 9000 standards, the Working Group, in cooperation with local geomatics associations, has sponsored one-day seminars in several cities in Canada.

A Request for Proposal for participants in an ISO 9000 Investigation Program was recently posted on the federal government Open Bidding System. In return for statistical information and certain findings from their ISO 9000 feasibility studies, Geomatics Canada will share feasibility costs and finance part of the participating companies' first-year ISO 9000 registration fee. Limited funds exist for this program, and they will be assigned on a first-come, first-served basis.

For further information on the TQM/ISO seminars and the ISO 9000 Investigation Program, contact the Geomatics Canada Excellence Coordination Office, 580 Booth Street, Ottawa, Ontario, K1A 0E4, CANADA. Tel.: (613) 943-0523; fax, (613) 995-0842.

(Continued from p. 1)

Avoiding the Rocks

The primary functions of the test bed are to familiarize the Coast Guard with the technology, evaluate DGPS performance, establish system design and configuration, and develop operational and maintenance concepts. The transmissions are being used by numerous agencies, including vessels carrying Electronic Chart Display Information Systems (ECDIS) as part of a CHS ECDIS Pilot Project. The Coast Guard encourages trial usage of the transmissions and feedback if available. The only caution is that the DGPS should not be used where there is danger of an accident as the system is not at present monitored for integrity.

Obviously, the test bed project is leading somewhere; namely, to a national marine DGPS service. The Coast Guard is presently seeking funding for establishing such a service. The plan is for a system comprising 25 dual-redundant DGPS reference stations with automatic integrity monitoring. Transmissions will be via marine radio beacons and will cover all the major southern Canada waterways and coastal areas. The service will be designed to meet international standards for radio beacon DGPS presently being finalized. The United States Coast Guard has a similar project and their service will cover the majority of the Great Lakes. The Canadian and American services will be uniform. Accuracy will be better than 10 metres, integrity monitoring will provide out of tolerance warnings within 10 seconds, and transmission reliability will be at least 99.7 per cent.

Implementation of the DGPS system is scheduled to begin in 1995 and should be complete by 1998. Although designed to meet the needs of the marine user, Coast Guard DGPS will be available over a large part of the most populated land areas of Canada. It is expected to attract users in many applications, including those of GIS.

For more information on Coast Guard DGPS activities, contact:

Electronics Engineering Branch-AMTJ, 344 Slater Street, Ottawa, Ontario, K1A 0N7, CANADA.

Tel.: (613) 998-1540; fax: (613) 998-9258.

Geomatics Canada



Geomatics Canada is the new name for the Surveys, Mapping and Remote Sensing Sector (SMRSS) of Natural Resources Canada.

Geomatics Canada still includes the Canada Centre for Surveying, the Canada Centre for Mapping, the Canada Centre for Remote Sensing, the Canada Centre for Geomatics, the Geographic Information Systems Division, and the Policy, Planning and Services Centre. Approximately 750 employees work for Geomatics Canada.

Geomatics Canada's objective is to provide up-to-date geographical information on Canada's landmass, more specifically, to:

- Develop and maintain national data bases on surveys, maps and remote sensing.
- Produce and sell digital and paper-based products such as maps, aeronautical charts, aerial photographs and satellite images, as well as sell services related to these products.
- Develop applications for geographic information systems.
- License technology and software.
- Provide consulting and training services.
- Work with industry, academia, and other governments to develop national and international geomatics standards.
- Provide support to Canadian geomatics companies, both at home and abroad.

For more information contact: Geomatics Information Centre, Geomatics Canada, 615 Booth Street, Room 121, Ottawa, Ontario, K1A 0E9, CANADA.
Tel: (613) 995-4321, or fax: (613) 943-1549.

Award of Excellence in Geomatics

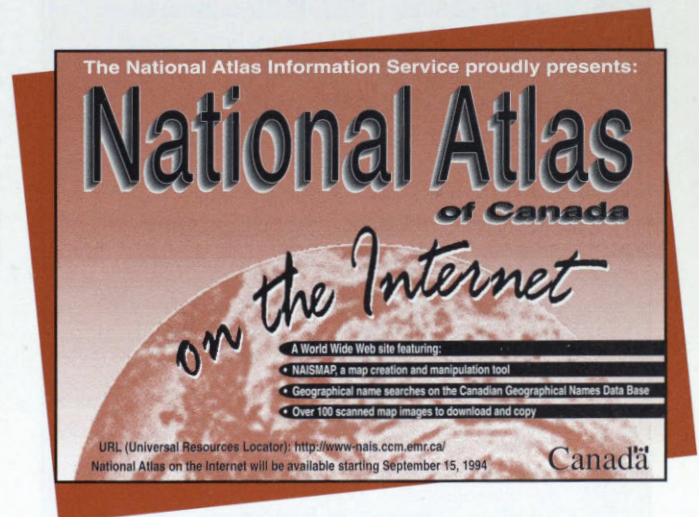
On behalf of Anne McLellan, federal Minister of Natural Resources Canada, the Canada Centre for Geomatics (CCG) presented the employees of Geoplan Consultants Inc. of Fredericton, New-Brunswick, with the 1993-94 CCG award of Excellence. The CCG award recognizes the achievements of Canadian geomatics firms in the field of data conversion. The criteria for winning are superior qualifications in administration, contract management and data acquisition.

For further information, contact Yves Belzile, Canada Centre for Geomatics, Natural Resources Canada, 2144 King Street West, Sherbrooke, Quebec, J1J 2E8, CANADA.
Tel: (819) 564-5600; fax: (819) 564-5698.

National Atlas Information Service Gets Internet Link

The National Atlas Information Service (NAIS), of Geomatics Canada, Natural Resources Canada, offers authoritative Canadian geographic information on a variety of themes such as land use, demographics, geology, and ecological issues. NAIS has recently set a new standard by providing global access to this information through the World Wide Web (WWW), an Internet-based global information system that permits the exchange of images and textual information. The new service includes:

- Electronic samples of *National Atlas* map products, descriptions of the information sources, an interactive geography quiz, and something quite unusual — a facility allowing users to create their own maps on-line.
- *The Canadian Geographical Names Data Base*, a collection of 500 000 geo-referenced official place and feature names. Users may explore attribute information or view a customized map that shows a selected feature's location.



- An electronic version of the most recent Environmental bulletin, available on-line in cooperation with State of the Environment Reporting (SOER), Environment Canada.

A simple bilingual graphics interface is provided via public domain "Mosaic" software, which utilizes the World Wide Web. Users navigate through documents using highlighted text and icons.

The URL (Universal Resource Locator) address is:
<http://www-nais.ccm.emr.ca/>

For further information, please contact: Dan Mackay, Products and Services Division, Geomatics Canada, 615 Booth Street, Ottawa, Ontario, K1A 0E9, CANADA.
Tel: (613) 992-4252, or fax: (613) 943-8282.

1995 Calendar of Events

February 15, 1995

HYDROCOMM 95, Where is Technology taking Hydrography? Contact: J. Richard MacDougall, Canadian Hydrographic Service, 615 Booth Street, Ottawa, Ontario, K1A 0E6, CANADA. Tel: (613) 995-4554; fax: (613) 996-9053.

March 27-30, 1995

GIS - 95

Vancouver, B.C.
Contact: GIS Symposium Office,
207-1102 Homer Street, Vancouver, B.C.
V6B 2X6, CANADA.
Tel: (604) 688-0188 fax: (604) 688-1573,
e-mail gis@unixg.ubc.ca

May 29-31, 1995

XVth North American Geomatics Teachers Conference, Teaching Geomatics: an Enlarged Educational Model, Université Laval in collaboration with Collège de Limoilou, Québec City, Québec. Contact: NAGTC'95, Centre de recherche en géomatique, 0613 Pavillon Casault, Université Laval, Québec, G1K 7P4, CANADA. Tel: (418) 656-5491; fax: (418) 656-7411; internet: nagtc95@vml.ulaval.ca

June 11-15, 1995

Geomatics 1995 — The 7th International Conference on Geomatics, Geomatics Canada, Ottawa Congress Centre, Ottawa, Ontario, Canada. Contact: Geomatics Canada, 615 Booth Street, Room 700, Ottawa, Ontario, K1A 0E9, CANADA. Tel: (613) 996-2817, fax: (613) 947-7059.

June 13-15, 1995

17th Canadian Symposium on Remote Sensing: Radar Remote Sensing: A Tool for Real-time Land Cover Monitoring and GIS Integration, Saskatoon, Saskatchewan. Contact: Jeff Whiting, Saskatchewan Research Council, 15 Innovation Blvd., Saskatoon, Saskatchewan, S7N 2X8, CANADA. Tel: (306) 933-5423; fax: (306) 933-7817; e-mail whij@src4330.src.sk.ca

June 15, 1995

88th Annual General Meeting of the Canadian Institute of Geomatics (to be held in conjunction with Geomatics 1995), Ottawa Congress Centre, Ottawa, Ontario, Canada. Contact: Susan Pugh, Canadian Institute of Geomatics, P.O. Box 5378, Station F, Ottawa, Ontario, K2C 3J1, CANADA. Tel: (613) 224-9851, fax: (613) 224-9577.

Release of Geological Data on CD-ROM

The Geological Survey of Canada has released an important new geological map (Open File 2559) on CD-ROM. The compilation geological map of the Slave Province, Northwest Territories, is designed to meet the high-technology needs of today's exploration industry and planning agencies. The CD-ROM contains a 1:1 000 000-scale geological compilation map of the area between Bathurst Inlet, Coronation Gulf, Great Bear Lake, Great Slave Lake, and the territorial border (60°N). The map was developed by Dr. Paul Hoffman, now with the University of Victoria in British Columbia.

This region includes the main diamond play and an important exploration area for other mineral commodities in the Northwest Territories. The CD-ROM provides data in several internationally accepted formats and is designed to be accessible to both large workstation computers and desktop systems.

Another CD-ROM containing a number of maps and data bases focusing on the Slave Province will be released by the Geological Survey before the end of the year.

The CD-ROM is available from: Geological Survey of Canada Bookstore, 601 Booth Street, Ottawa, Ontario, K1A 0E8, CANADA. Tel.: (613) 995-4342; fax: (613) 943-0646; Internet: gsc_bookstore@gsc.emr.ca



Mark your calendar!

Ottawa, Canada	The 7th International Conference on Geomatics Geomatics Applications, Technology and World Markets		
	Conference Director: Mark Corey		
	For more information, contact: Rose Barthe, Conference Manager 615 Booth St., Room 700 Ottawa, Ontario K1A 0E9 Canada Telephone (613) 996-2817 or 992-4902 Fax (613) 947-7059		
	Organized by: Geomatics Canada, a Sector of Natural Resources Canada <i>in conjunction with</i> the Canadian Institute of Geomatics, the Inter-Agency Committee on Geomatics and the Geomatics Industry Association of Canada		
June 13 - 15, 1995		Workshops: June 11 to 12	