

# **R E P O R T**

## **COASTAL MAPPING WORKSHOP**

**Date: Wednesday, 29 May 1996**

**Location: Environment Canada  
Queens Square, Dartmouth, NS**

*Organized by the*  
**ACZISC Coastal Mapping Working Group**

### **1. INTRODUCTION**

Mike Butler, Chair of the ACZISC, welcomed participants. He reviewed events that led to this Workshop including two Coastal Mapping meetings organized by the ACZISC in 1995, which focused primarily on coastal base mapping. Summary meeting reports are available from the ACZISC Secretariat. Participants at the 1995 meetings recommended the establishment of an ACZISC Working Group to address issues relating to both base and thematic coastal mapping.

The ACZISC Coastal Mapping Working Group, subsequently established, is co-chaired by Eric Theriault, Environment Canada, and Curt Speight, NS Geomatics Centre. This Workshop was organized by the Working Group in collaboration with the ACZISC Secretariat. Mike introduced Eric and Curt.

Eric Theriault expressed appreciation for the interest which the Workshop had generated and for the large number of participants. He reviewed the Workshop objectives:

- To identify the major parameters required for coastal zone mapping.
- To identify the agencies responsible for, and committed to, the collection, maintenance and update of the respective parameters/databases.
- To identify the protocols/procedures required to ensure expeditious third party access to the data and information.

Changes to the agenda were discussed; a revised agenda is attached as Appendix A.

A roundtable introduction of participants followed. The list of participants is attached as Appendix B.

## 2. STATUS OF SELECTED COASTAL PARAMETERS

### • DIGITAL CHS DATA

Paul Bellemare, Canadian Hydrographic Service (CHS) Atlantic, DFO, reported on CHS activities in the Atlantic region. He stated that CHS maintains three levels of data: source datasets (detailed); charts; and electronic navigational charts (subset of charts). He added that the contents and standards for each level of data were different. CHS will begin to standardize their data to the S57 international standard for hydrographic data this year. Oracle is the DBMS in use by CHS.

CHS is interested in partnership agreements. An agreement is in place with Nautical Data International (NDI) regarding the distribution of CHS digital data. And currently CHS is discussing a joint project with Newfoundland for mapping on the Southwest coast of the Province.

Dale Nicholson, CHS Atlantic, distributed and reviewed a report providing additional details regarding the status of CHS data. The report is attached as Appendix C.

### • BASE MAPPING

**New Brunswick:** Réjean Castonguay, NB Geographic Information Corporation (NBGIC), reviewed the status and systematic development of coastal zone base mapping in the Province of New Brunswick, including:

- the process followed regarding the development of a coastal zone policy
- the status of the ETB (Electronic Topographical Base) in NB
- mapping priorities
- progress to date in developing a coastal zone base map database.

A consensus was reached in January 1996 that the coastal base mapping would consist of a digital orthophoto series, to include both hydrographic and topographic data.

NB is currently carrying out a shoreline user requirement study. The Province is communicating with CHS regarding this study and the bathymetric requirements for the coastal base map database.

Additional details are available in Réjean's overheads attached as Appendix D.

**Newfoundland:** Randy Gillespie, Operation Online, reviewed a report prepared by Neil MacNaughton, Director of Surveys and Mapping, on the status of base mapping in Newfoundland. Further details are available in the report attached as Appendix E.

There was a lack of focus in Newfoundland regarding coastal zone mapping. Coastal zone management (CZM) issues are dealt with by the Interdepartmental Land Use Committee which has not met in two years.

**Nova Scotia:** Curt Speight, NSGC, reviewed the status of base mapping in the Province of Nova Scotia.

Curt stated that the pricing for the 1:10,000 digital map files had recently been revised to \$50 per file. A price list is available from the NSGC. Approximately 1500 of the 1600 1:10,000 files for the Province have been completed. Completion of the remaining files is anticipated by mid 1997. Activities will then focus on maintenance and updating.

The Province also has distribution rights for the 1:50,000 digital files derived from scanning the National Topographic System (NTS) map sheets. The cost per file is \$100.

Revenue generated by map sales in NS is deposited into the "Map Fund" and used by the Province to fund private sector mapping contracts. In 1995/96 the Province contracted out \$1.2 million of which \$900K was generated by map sales.

Land Information Centres located throughout the Province (Amherst, Halifax, New Glasgow, Lawrencetown, Sydney, and soon-to-be established Bridgewater) sell the map products. Each Centre is equipped with a large format plotter. The Centres will be provided with digital files on CD-ROM for plotting on demand. Data are also being made available to the public on CD-ROM.

The NSGC is developing a coastal zone base mapping series in cooperation with CHS and NDI. A prototype has been developed; Curt circulated a sample for review. The NSGC is proposing to create a 1:50,000 seamless database using the 1:10,000 database and CHS data. Variations in charting scales will be accounted for. The series is intended to be used as a foundation for thematic coastal mapping; however, the product will not be suitable for marine navigational purposes.

A meeting has been scheduled for mid-June with the four provincial departments contributing to the coastal zone mapping series. A mapping contract should be awarded by mid-fall and the series will be produced over the subsequent two years.

The NSGC is encouraging royalty agreements with the private sector for the development and distribution of value-added mapping products. Partnerships with other government agencies are also encouraged.

**Natural Resources Canada:** Andy Sherin, Geological Survey of Canada - Atlantic, NRCan, reported on the status of the National Topographic Data Base (NTDB). He reviewed contents, standards, availability, the new pricing structure, end user agreements and the range of products available from Geomatics Canada. Information on the NTDB is available on the WWW at <http://www.ccg.nrcan.gc.ca>

An additional 20% is added to the cost of data for formats other than COGIF. Beginning in the fall of 1996 data will be available on an individual theme basis.

Further details are available in Andy's overheads attached as Appendix F.

- **COASTAL GEOMORPHOLOGY**

Kimberley Edwardson, Geological Survey of Canada - Atlantic, NRCan, briefed participants on the Coastal Information System (CIS) developed by the GSC in Atlantic Canada. The prototype, which includes the nearshore, foreshore and backshore, was developed in 1993 for the Port-aux-Basques region of Newfoundland. Areas now mapped include the Avalon Peninsula in Newfoundland and in NS, from Ecum Secum to St. Peters and the east coast of Cape Breton. In NS work was carried out in partnership with Environment Canada and the NSGC.

Kimberley reviewed mapping completed to date, partnerships, and plans for future mapping. In the future mapping is planned for the north shore of PEI, all of NS and all of the Island of Newfoundland; the GSC would like to extend the program to Labrador but the 1:50,000 digital base maps are not available for the area of interest. The shoreline classification system being used for the CIS is a combination of the system being used on the West coast of Canada and the system being used for Environment Canada's National Sensitivity Mapping Program.

ArcInfo is the GIS being used because of its dynamic segmentation capabilities.

Further details are available in Kimberley's overheads attached as Appendix G.

- **INFORMATION MANAGEMENT - DFO MARITIMES REGION**

Dave Swetnam, Information Management Branch, DFO, Maritimes Region, commented that DFO was a data-rich organization. The amalgamation of the Gulf Region and Scotia-Fundy Region into the Maritimes Region and also the amalgamation with Coast Guard have significantly increased the volume of data to be managed. The data are also very diverse.

The Information Management Branch will be coordinating all DFO data in the Region. Coordination will focus on an online data inventory, data storage based on Oracle, Access and FoxPro, and data access (public and private).

Further details are available in Dave's overheads attached as Appendix H.

- **PHYSICAL OCEANOGRAPHY**

Doug Gregory, Physical and Chemical Sciences Branch, DFO, reported on the Branch's physical oceanography data holdings extending from Cape Hatteras to the west of Greenland. The data are collected as part of process-oriented research projects for the nearshore, the shelf region and the offshore.

Doug briefed participants on data of relevance for coastal zone mapping, including Temperature-Salinity Profiles, Ocean Currents and Coastal Temperature data, Climate

Indices and Sea Ice data. These data will be posted on a DFO WWW site later this year.

Further details are available in Doug's overheads attached as Appendix I.

- **SMALL CRAFT HARBOURS**

John Legault reported on behalf of the Small Craft Harbours Branch, DFO. John stated that the Moncton Branch has been using CARIS for the last six years to map, plan and manage the harbours. With the merger of the Gulf and Scotia-Fundy Regions, there are a total of 556 harbours in the new Maritimes Region. Harbour information in the Scotia-Fundy Region and Newfoundland Region are maintained using AutoCad. This will be converted to CARIS.

Colour aerial photographs of the harbours from the 1950s to 1994 are available on CD-ROM.

Further details are available in the report attached as Appendix J.

- **REMOTE SENSING/SATELLITE IMAGERY/  
AERIAL PHOTOGRAPHY/VIDEO**

**AMRS:** Brian Whitehouse briefed participants on the Alliance for Marine Remote Sensing (AMRS) which owns and operates the Centre for Marine Remote Sensing located in Bedford. The mandate of the Centre is to develop applications for marine remote sensing.

Brian distributed a handout describing the Alliance, the remote sensing data services available at the Centre, and the type of remote sensing data available. He also made available a poster produced by the Alliance which provides details regarding satellites, imagery, resolution, etc., appropriate for marine applications.

Currently, available sensors provide 9 metre to 1 kilometre resolution. Commercial satellites are scheduled to be launched within a year which will provide 1 to 4 metre resolution.

The Centre has installed an online archival system, using Oracle, for imagery as part of the national system CEONET.

Further details are available in the hand-out attached as Appendix K.

**New Brunswick:** Réjean Castonguay reported on the aerial photography which will be flown to generate the coastal zone orthophoto base map series for NB. The photography will be true colour at 1:35,000, with 1 metre accuracy (X,Y,Z coordinates).

The flight lines will be east-west; the lines may be extended inland to accommodate some municipalities which are interested in participating in the project.

Restrictions include a minimum sun angle of 40°. Also flying must take place within 2 hours on each side of high tide in areas where the tide is difficult to predict accurately and within 1 hour in areas easy to predict. Because vegetation is required, the photography must be taken no earlier than mid-June. An RFP has been issued for the photography with a closing date of 3 June 1996.

**Newfoundland:** Randy Gillespie reported that photography will be flown for Corner Brook and Southern Newfoundland in 1996.

Randy briefed participants on CASI, a sensor capable of providing a 1-4 metre resolution image. CASI, a powerful tool for coastal applications, can be used for seaweed and phytoplankton distribution, sediment load calculations and shallow water bathymetry (less than 25 metres).

CASI can be operated in two modes with a spectral range from the blue (400 nanometres) to infrared (900 nanometres).

CASI is being promoted by the Canada Centre for Remote Sensing (CCRS) of NRCan. It is currently operated by Ariel Geomatics Inc. and Geomatic Technologies in Atlantic Canada. CASI is used for repetitive coastal surveys in the United Kingdom.

**Nova Scotia:** Curt Speight reviewed the status of satellite imagery and aerial photography in NS. He reported that the NSGC has been designated as the custodian for Radarsat imagery in the Province. The imagery will be available in a couple of months.

The Centre in Amherst is equipped with an aerial photo lab and photos are available through the Land Information Centres located throughout the Province.

Colour infrared photography has been used for identifying seaweed distribution and colour positive photography has been used for monitoring lobster buoy distribution.

Curt distributed maps indicating radar and aerial photography coverages in NS. These are attached as Appendix L.

**Natural Resources Canada:** Andy Sherin displayed an overhead indicating aerial coastal video coverage for Atlantic Canada available from the GSC (refer to Appendix M). More videos are becoming available as GSC Open Files.

Gaps in Newfoundland coverage are included in videos flown by Petrocan and Mobil Oil in 1981. These are available subject to their approval.

Videos are the main source of information for the Coastal Information System, complemented by aerial photos.

## • FISHERIES STATISTICS

Kees Swanenburg, Science, DFO, briefed participants on the fisheries statistical data collected by the Department.

Fishery dependent data, such as Landed Weight, is collected at ports of landing as part of the Dockside Monitoring Program (DMP), operated by the private sector.

Fishery independent data, such as Surveys of Fish Abundance, has been collected by DFO since the 1940s but only since 1970 systematically. The post 1970 data have been incorporated into ECNASAP.

Oracle is the DBMS in use. Access to some of the data is restricted.

Further details are available in Kees' notes attached as Appendix N.

## • POINT AND NON-POINT SOURCES OF POLLUTION

Joe Arbour, Environment Canada, reviewed the data on pollution sources held by the Department, adding that most datasets are on point sources of pollution. Although not specifically coastal, the datasets impact on and are important to CZM.

Point source datasets maintained by EC include:

- National Pollutant Release Inventory. EC has an ongoing commitment to maintain this dataset. It is available on the WWW.
- Ocean Disposal Monitoring Dataset. This dataset is being built and will contain a variety of information, including materials being dumped.
- Point Sources of Pollution as part of the work being done under the Gulf of Maine (GoM) Marine Environment Program. This dataset is included in the GoM Point Source Inventory available on the WWW through the GoM EDIMS. The data relate to BOD and suspended solids.
- Shellfish Shoreline Survey and Classification of Shellfish Production Areas. This dataset identifies potential sources of bacterial contamination.
- A variety of project-specific databases.

Non-point source datasets include:

- ENVIRODAT (formerly NAQUADAT). This dataset contains ambient measurements of water quality obtained from grab samples, primarily from freshwater. Measurements include nutrients, metals, pesticides, organic contaminants and bacterial parameters.
- Database and associated Toolbook application on contamination of shellfish beds and shellfish landings developed as part of the Inshore Case Study of ECNASAP.
- Watershed-based datasets being initiated as part of GoM.

- **FISH HABITAT**

**DFO Région Laurentienne:** Michel Abel reported on the coastal mapping being carried out by the Fish Habitat Management Division, DFO Région Laurentienne.

The majority of the habitat maps were digitized at 1:50,000. The scale for Northern Québec is 1:1,000,000 and some "hot spots" have been digitized at 1:20,000. The maps are based on NAD27; a contract will be issued for conversion to NAD83. Transverse Mercator and Lambert Conformal are the projections being used.

Michel also reviewed the parameters mapped, and the mapping specifications and standards used for a thematic atlas. The data were obtained from scientific studies and fishermen. The atlas will be available on the WWW and on CD-ROM.

Michel also briefed participants on a multi-user interface developed with Toolbook to access multiple databases.

Additional details are available in Michel's notes and overheads attached as Appendix O.

**DFO Maritimes Region:** Bob Rutherford briefed participants on the ongoing CZM mapping program in the former Scotia-Fundy Region. Partnerships have been entered into with communities to map coastal resources based primarily on Traditional Ecological Knowledge (TEK) collected by local people. This approach differs from the conventional method of mapping using information collected by scientists. The geographic extent of the mapping in the Scotia-Fundy Region is the nearshore zone. Bob reviewed the data parameters collected. Additional details are available in the overheads attached as Appendix P.

QuickMap is the desk-top mapping used and FoxPro the DBMS. Hard-copy maps are being produced and communities will also be provided with a digital copy of the database.

Funding is obtained on a project basis. Community groups are responsible for updating the TEK information and other data will be maintained by government departments responsible for collecting those data. Some of the data is relatively static and will not require frequent updating.

Areas mapped in the Scotia-Fundy Region include Passamaquoddy/Letang/Saint John, Shelburne, Victoria, Inverness and Bras d'Or Lakes. Lunenburg is being done and Annapolis/Digby has been started. Most of the Scotia-Fundy Region has been mapped other than the inner Bay of Fundy.

A TEK coastal mapping manual is being developed based on the experience gained during the project.

Meetings are being held regarding the amalgamation of the Habitat Divisions of the Scotia-Fundy and Gulf Regions, as a result of the merging of the two Regions into the Maritimes Region. The coastal mapping efforts in the two Regions also will be merged. John Legault will be responsible primarily for the mapping and Bob Rutherford for integrated coastal zone management (ICZM).

John Legault reported that mapping for the entire Gulf Region would be completed by the end of the fiscal year. MapInfo is the desk-top mapping system being used; it was chosen because it is easy to use and to convert data to other formats and because of collaborative work which is also using MapInfo. Various geo-referencing methods are used, including Loran C coordinates, latitudes/longitudes, and northings/eastings.

Bob commented that the conversion from QuickMap to MapInfo should be relatively easy to carry out; the base maps for the Scotia-Fundy Region are in DXF format and the information is geo-referenced with latitudes/longitudes.

John stated that data collection for coastal mapping in the Gulf Region was carried out by fishery officers and fishermen and verified by the scientific community. Funding from Human Resources Development (HRD) has not been available to hire local people for data collection as in the former Scotia-Fundy Region. The data will be maintained by the government departments responsible for its collection. It is also hoped that fishermen will continue to participate in the process. Open houses are being held to present the information to the general public. The information will be made available in both hard-copy and digital formats. The data parameters being collected are similar to those for the Scotia-Fundy Region.

**DFO Newfoundland Region:** Tim Anderson commented on the interest of DFO Newfoundland in CZM. He also noted the following trends in the Province: an emerging community involvement in CZM, increasing educational levels, increasing knowledge of mapping and GIS, and enhanced levels of stewardship and natural resources.

Tim briefed participants on the ongoing and planned community-based coastal mapping projects in Newfoundland. The location of the projects and a preliminary list of resources to be catalogued are indicated in Appendix Q.

Other CZM-related initiatives in the Region include:

- Voiseys Bay: will undergo an EIA. A smelter may be built on the site.
- Hibernia: oil production is anticipated early 1998; Hibernia Trans Shipment Port: \$100-150 million development.
- St. Georges Bay: nearshore oil exploration.
- Aquaculture industry: mainly present on the south coast of Newfoundland but will be expanding to the remainder of the Island.
- Terranova: oil production is anticipated in 1999-2000.

- **AQUACULTURE**

**DFO Maritimes Region:** Gary Turner briefed participants on the aquaculture industry in the Maritime Provinces. A tombstone aquaculture database on shellfish, Atlantic salmon and trout for the Scotia-Fundy Region is available on a local area network (LAN). Efforts are being made to include the Gulf Region data.

Aquaculture sites in NB and NS are provincially licensed whereas, in PEI, they are federally licensed. A database is maintained to keep track on where sites are located and what activities are taking place; the data are updated regularly. Currently the database can be accessed via Gary; however, an interface will be built to make the data easily accessible to users.

Gary commented that the coastal mapping projects carried out by Bob Rutherford and John Legault will be valuable tools for aquaculture management.

Additional details are available in Gary's overheads attached as Appendix R.

**New Brunswick:** Irfan Yüksel, NB Department of Fisheries and Aquaculture, briefed participants on the GIS implemented in the Department for aquaculture management. The shellfish and marine finfish aquaculture site data are updated on a daily basis.

The UNIX-based GIS system was initiated three years ago; the software being used are PC CARIS and ACCESS. The NBGIC 1:10,000 database is used as base maps. ORACLE has been selected by the Department as its DBMS; databases are now being converted from other DBMS.

The Department has a Web page on the Internet; however, it is reluctant to post the GIS information on the WWW. Information for approved active sites is available on diskette or email via Irfan.

Problems identified by Irfan include different projection systems, datums and geo-referencing systems in use, and overlap in responsibilities and commitments. He also stated that a common shoreline was required for use in the GIS.

Additional details are available in Irfan's notes attached as Appendix S.

**Nova Scotia:** Bob Crawford, NS Department of Fisheries, reported that the Department was having discussions with the NSGC regarding its GIS requirements. A variety of options and applications are being reviewed.

- **SEABIRDS**

Geoff Howell, Environment Canada, reported on the data on coastal and pelagic marine birds gathered and managed by the Canadian Wildlife Service (CWS) of Environment Canada.

Pelagic seabird surveys undertaken over the last 25 years have been compiled into a dataset of approximately 250,000 records which allow mapping of seabird distributions. Aerial surveys of coastal birds have been carried on by CWS for a similar length of time and these data have been displayed, in conjunction with the pelagic dataset and shorebird survey dataset, in the Gazetteer of Marine Birds published by CWS in 1994. This map book is only available in hard-copy at present but by autumn it will be available electronically as a Hypercard or Toolbook application.

Provincial wildlife agencies also collect coastal waterbird data using the same aerial survey technique as CWS and a cooperative program has been initiated which will combine CWS and provincial datasets. The first step in this project, digitizing the coastal survey blocks, has been completed and by April 1997 an easy-to-use shared database for managing and mapping the survey data will be available.

Data on seabird colonies in the Atlantic Region are not yet organized into a coherent database, though the most up-to-date seabird colony censuses have been assembled in the Seabird Gazetteer. A colony database, linked to the coastal waterbird database, is planned for completion next year. This suite of linked databases - colony, pelagic and coastal - will allow rapid access to, and mapping of, the most current coastal and pelagic bird data for environmental emergency response and environmental impact assessments. Tony Lock (426-6052) manages these datasets.

## • **NATURAL RESOURCES**

Randy Milton, NS Department of Natural Resources, briefed participants on the status of wetland mapping in NS. The Department is currently involved in a project to update coastal wetlands mapping which was initially produced 20 years ago. It is anticipated that the project will be completed this fiscal year.

### **3. DEMONSTRATION OF ENVIRONMENT CANADA'S ATLANTIC REGION SENSITIVITY MAPPING PROGRAM**

Eric Theriault briefed participants on the Atlantic Region Sensitivity Mapping Program. The program was initiated as a result of recommendations by the Brander Smith Panel on Tanker Safety. The mapping is being done largely through partnerships. Most of the data being used have not been collected specifically for the Habitat Sensitivity Mapping. The shoreline classification has been done for the entire Atlantic region by Ed Owens.

Eric introduced Stéphane LeBlanc who is providing the GIS expertise for the project. Stéphane reported that MapInfo and the MapBasic language were being used for the mapping, allowing easy exchange between Macintosh and IBM platforms.

Stéphane demonstrated the Habitat Sensitivity Mapping system to the participants. The data include coastal geomorphology, biological resources, including fisheries and

vegetation, human usage, infrastructure and logistical support and land classification. A link has been established between the line segments of the shoreline classification and the shoreline videos obtained from the GSC-Atlantic. The system is used by the Regional Environmental Emergency Teams (REETs) and the East Coast Response Corporations

The following comments/suggestions were made by the participants:

- The primary sources of data should be identified.
- The information should undergo a scientific review.
- The display of polygonal data (e.g., species distribution) requires interpretation.

#### **4. MAJOR MAPPING PARAMETERS AND COMMITMENT OF AGENCIES TO MAINTAIN AND UPGRADE DATABASES**

Eric invited comments from the meeting participants regarding the identification of the primary datasets required for coastal zone mapping. Discussions focused on requirements for both thematic mapping and base mapping.

It was suggested that primary datasets should be defined as the data resulting from the measurement and recording of a single parameter, e.g., sea surface temperature, currents, etc. In contrast secondary datasets, such as "habitat", are a composite of multiple parameters.

The following comments were made:

##### ***How to chose parameters for coastal mapping and information systems?***

- Michel Abel stated that parameters must be chosen on the basis of user requirements. In the case of the St. Lawrence project, they relate to habitat and were chosen to respond to environmental concerns.
- Eric Theriault reported that the ability to respond to oil spills was the basis for choosing the parameters to be mapped in the Atlantic Region Sensitivity Mapping Program. The parameters were identified by in-house experts.
- Tim Anderson indicated that in the case of coastal community mapping, parameters must be based on community values.

##### ***What parameters are required for coastal maps/databases?***

- Réjean Castonguay enquired as to what parameters should be shown on coastal base maps.
- Curt Speight indicated that the approach to be taken by NS will combine the NS 1:10,000 database with available CHS charts and data at various scales to create a seamless database, from which a coastal base map series at 1:50,000 will be produced. The shoreline indicated will be the shoreline from the NS 1:10,000 database. The CHS data being used are at various accuracies. Accuracies will be indicated on the coastal base maps. Because the availability of bathymetric data at

appropriate scales is limited, the production of a comprehensive coastal base map database must be considered a long term program.

- Andy Sherin stated that more detailed bathymetric data were often required. This could be obtained from the source data when available.
- Paul Bellemare commented that the "coastal mapping product of the future" would be derived from the linkage of a variety of databases to create specialized products to meet specific requirements. Until that is feasible, a coastal base map series, such as the one being developed by NS, will serve the purpose on an interim basis. Paul also reported that the production schedule for bathymetric charts was determined based on navigational requirements. However, partnering can change priorities.

Discussions got "bogged down" regarding the identification of parameters required for coastal mapping. Fay Cowie suggested that it could be helpful to firstly identify broad categories of themes, e.g., physical, chemical, biological, climatic and socio-economic. Participants agreed and then proceeded to identify themes/parameters for each of the categories:

**PHYSICAL:** bathymetry, topography, coastal geomorphology, tides, currents, surficial and bedrock geology, physical oceanography

**CHEMICAL:** water chemistry, soil chemistry, sediment chemistry, rock chemistry

**BIOLOGICAL:** populations and distribution of fish, fauna and flora

**CLIMATIC:** water temperature, air temperature, ice

**SOCIO-ECONOMIC:** baseline information for pollution sources, aquaculture, infrastructure, resource extraction statistics

Participants then agreed that there is a requirement to develop a process to identify the basic parameters required for coastal mapping. Custodians of the databases and the structure of the databases should also be identified.

***ACTION:*** Paul Bellemare to form a Working Group to develop a process for identifying key parameters required for coastal mapping.

#### ***Commitments to maintain databases***

Gary Turner commented that in an ideal world all the data required for coastal mapping would be available and easily accessible. But rather than wait forever for "everything", we must tackle this issue on an incremental basis and identify commitments to maintain some of the datasets required for coastal mapping. The following commitments were made:

- **Bathymetry:** Paul Bellemare stated that CHS was committed to maintaining bathymetry.
- **Topography:** Curt Speight stated that the NS Department of Municipal Affairs was

committed to maintaining the topographical database for NS. Agreements are being developed with other agencies to supply other layers, e.g., transportation. The Centre is also studying the use of GPS and remote sensing technologies for maintenance of the database. Réjean Castonguay stated that the NBGIC was committed to maintaining the topographical database for NB. He added that the hypsography is being provided by the Province and the federal government, and the road network by the NB Departments of Transportation and Natural Resources and Energy.

- **Coastal Geomorphology:** Andy Sherin and Kimberley Edwardson stated that NRCan was committed to providing the standard framework for coastal geomorphology. The GSC is working with the provinces to coordinate activities in this area.
- **Aquaculture:** Irfan Yüksel reported that the NB Department of Fisheries and Aquaculture was committed to maintaining aquaculture data in NB. Bob Crawford stated the commitment of the NS Department of Fisheries in NS and Gary Turner stated the commitment of DFO in PEI.

It should be noted that both coastal geomorphology and aquaculture consist of multiple parameters which may be the responsibility of numerous agencies.

#### ***Other discussions***

- Fay Cowie added that there is an immediate need to identify data which can be shared now.
- Brian Nicholls commented that definitions are required to ensure effective communication. Paul Bellemare stated that the S57 standard included models and definitions and added that existing definitions must be adhered to.

## **5. REVIEW OF DATA ACCESS AND EXCHANGE**

Curt Speight described the types of agreements that the NSGC has entered into for accessing data produced by other parties:

- **Unofficial Agreement:** Usually results in the exchange of products or services as mutually agreed to on an informal basis, e.g., informal agreement between the NSGC and Environment Canada regarding exchange of data for the Atlantic Region Sensitivity Mapping Program.
- **Official Agreement:** Requires the preparation of a formal document for signature. The document outlines all the terms and conditions of the agreement, e.g., formal agreement between the NSGC, CHS and NDI regarding the use of bathymetric data for the production and distribution of the NS Coastal Base Series. Official agreements and MOUs, however, can take a long time to negotiate and that the current era of financial restraint has created a "nervous" atmosphere for negotiating.

Curt stated that governments must increasingly justify the value of the data which they are collecting. Government departments should encourage royalty agreements with the private sector. Value-added products based on government data can be developed and

marketed successfully by the private sector. The revenue from royalties can be used by governments to maintain databases.

## **6. VALUE-ADDED PRODUCTS AND REVENUE GENERATION**

Participants further discussed access to data in terms of creating value-added products for revenue. The following comments were made:

- Michel Abel stated that it is important to identify users of data and to ensure that they pay for it. He added that products must be adapted both to meet mandates and to appeal to as wide a user group as possible.
- Kimberley Edwardson stated that the GSC provides users with data in various forms: basic raw data, interpreted data and metadata.
- Curt Speight stated that it was important for governments to structure data in such a way to make it multi-purpose. Revenue is generated through large volume distribution of value-added products.
- Paul Bellemare commented that revenue will not be generated from governments/departments charging other governments/departments for data. Governments should be involved in managing baseline data; for example, CHS has a legislated mandate to manage bathymetry. Revenue will be generated from value-added products, e.g., the electronic chart. He also stated that large fees should be charged for low volume use of data and low fees for large volume use.
- Andy Sherin reported that the GSC was going through the process of identifying value-added products with Geomatics Canada. Traditionally the GSC has used data for leverage. The GSC will also be evaluating the sales of its expertise and knowledge. He added that a federal Treasury Board directive stipulates that products be increasingly paid for by the users.
- Brian Nicholls commented that it was important to publicize the availability of the data and information that is available in Atlantic Canada.

## **7. SUMMARY AND CONCLUSIONS**

Curt Speight summarized the major points made by participants:

- Coastal mapping must be built on an incremental basis, taking advantage of collaborative opportunities.
- Parameters for coastal mapping must be selected on the basis of user requirements. However, it is important to structure data as much as possible in such a way as to make it multi-purpose.
- Governments must generate revenue to maintain the infrastructure by entering into partnership and royalty agreements with the private sector.

Andy Sherin added that the efforts of the Coastal Mapping Working should be coordinated with other ACZISC Working Groups, in particular CCODE, Standards and Database Directory. CCODE is mandated to promote the development of protocols and

agreements to facilitate the exchange of coastal data and information. Andy suggested that the coastal base maps being developed by the NSGC could serve as a CCODE demonstration project.

***ACTION:*** Andy Sherin, Co-chair of the ACZISC CCODE Working Group, to discuss with Curt Speight, NSGC, the possibility of using the NS coastal base map series as a CCODE demonstration project.

In conclusion, Mike Butler added that a Workshop report would be prepared and distributed by the ACZISC Secretariat to all participants. The report will be reviewed by the ACZISC Secretariat and the Coastal Mapping Working Group to determine future directions for the Working Group will be determined. Mike added that the Terms of Reference for the Working Group will be further refined.

Mike and the Coastal Mapping Working Group Co-chairs, Eric Theriault and Curt Speight, thanked the Workshop participants for their active participation.

# COASTAL ZONE MAPPING WORKSHOP

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