

# **Cybercartographic Atlas of Antarctica Workshop**

**Carleton University**

**Ottawa, Canada**

**May 22<sup>nd</sup> – 24<sup>th</sup>, 2002**

Supported by grants from the Canadian Department of Foreign Affairs and International Trade and the Social Sciences and Humanities Research Council of Canada

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## Executive Summary

A workshop for the Cybercartographic Atlas of Antarctica Project (CAAP) was held at Carleton University in Ottawa from May 22nd-24th 2002. The workshop was chaired by Dr. Fraser Taylor, the Canadian representative to the SCAR WG-GGI. The CAAP was formally adopted as an official WG-GGI project at a meeting of project coordinators in Sienna in July, 2001.

During his introductory remarks, Dr. Taylor, Director of Carleton's Geomatics and Cartographic Research Centre (GCRC), stated that production of the Atlas will be facilitated by building infrastructure and equipment supplied by a \$4.5 million dollar Canadian Foundation for Innovation (CFI) grant. The CFI was recently awarded to Carleton's Human Oriented Technology Lab, one of the GCRC's partners. The GCRC has been successful in obtaining significant development funding that is being used to prepare a major proposal that will be submitted in July 2002 to the Social Science and Humanities Research Council of Canada's new program on Initiatives in the New Economy. If successful, a portion of the major funding will be used to develop and produce the CAAP.

The workshop was attended by eight representatives from Argentina, Australia, Canada, China and the United States. The focus of the work was on further developing the concept and content of the CAAP. A number of items were addressed including: development of initial content themes, identification of data sources, establishment of potential standards and methodologies, discussion of technical issues and strategies for gaining broad SCAR support for the proposal.

Initial themes to be considered for development are an examination of ice shelf breakup, national atlases, geodesy in Antarctica, the decline in elephant seal populations and Human activity in Antarctica. A number of potential data sources were identified for use in the CAAP including the Antarctic Master Directory, Antarctic Digital Database and data contributed by National Antarctic Atlas programs. A development approach using standards produced by the Open GIS Consortium, Inc. ([www.opengis.org](http://www.opengis.org)) and ISO Technical Committee 211 ([www.isotc211.org](http://www.isotc211.org)) was adopted. This approach is expected to facilitate incorporation of different information infrastructures into the CAAP.

Presentations based on the work carried out will be delivered at XXVII SCAR in Shanghai in July, 2002. Participants thank the Canadian Department of Foreign Affairs and International Trade and the Social Sciences and Humanities Research Council of Canada, Dr. Taylor and his team at thank Carleton University, for making the workshop possible

## Introduction and background

The term "Cybercartography" was first introduced in 1997 at the International Cartographic Association (ICA) meeting in Stockholm. The idea for a Cybercartographic Atlas of Antarctica first evolved after work on the Cybercartographic Atlas of Latin America had been finalised <[www.atlaslatinoamerica.org](http://www.atlaslatinoamerica.org)>.

The Canadian Committee for Antarctic Research (CCAR) discussed and approved the Antarctic project in 1999. The work was then presented to the Scientific Committee on Antarctic Research's Working Group on Geodesy and Geographic Information (SCAR WG-GGI) meeting in Tokyo, in July 2000. The project was also presented to the Antarctic Treaty's Committee for Environmental Protection (CEP) in Amsterdam in September 2000.

The project was formally adopted by WG-GGI at its meeting in Siena, Italy in July 2001. The project work plan included the requirement of holding at least one of meeting, prior to the XXVII SCAR meeting in July 2002, to discuss the project. A workshop in Puerto Madryn, Argentina in November/December 2001 brought together a number of key stakeholders to discuss the conceptualisation and initial design phases of the project. The Ottawa workshop further developed the atlas concept and design by identifying specific elements of the atlas.

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## Agenda

### Cybercartographic Atlas of Antarctica Workshop

Carleton University, Ottawa, Canada  
May 22<sup>nd</sup> – 24<sup>th</sup>, 2002

Supported by grants from the Canadian Department of Foreign Affairs and International Trade and the Social Sciences and Humanities Research Council of Canada

Chair: Dr. D.R.F. Taylor

Goals of the workshop:

1. Develop a detailed concept for the Cybercartographic Atlas of Antarctica.
2. Establish the approach used to develop The Atlas.
3. Agree on material to be presented at XXVII SCAR in Shanghai.

Workshop Sessions

#### WEDNESDAY, MAY 22<sup>ND</sup>, 2002

09:00-10:30:

- Welcome and opening of the meeting
- Agenda revision and designation of reporters
- Update on The Cybercartographic Atlas of Antarctica Project – developments since the Puerto Madryn Workshop – Dr. Fraser Taylor with additions from workshop participants. Topics: Funding, Partners, Development Approach

10:30-10:45 : Break

10:45-12:00:

Session Introduction – Dr. Fraser Taylor, Carleton University

Presentation: The Web , cartography and information delivery, Dr. William Cartwright, RMIT University, Melbourne Australia

12:00-13:00: Lunch

13:00 - 14:30:

Session Introduction – Dr. Fraser Taylor, Carleton University

Presentation: Canada's Oceans Program Activity Tracking (OPAT) System, Darren A. Williams, Senior Advisor, Integrated Management Program, Marine Ecosystems Conservation Branch, Department of Fisheries and Oceans, Government of Canada

14:30-14:45: Break

14:45 – 16:15:

Session Introduction – Peter Pulsifer, Carleton University

Establishment of a proposal framework for The Cybercartographic Atlas of Antarctica

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**THURSDAY, MAY 23RD**

09:00-10:30:

Session Introduction – Dr. Fraser Taylor, Carleton University

Presentation: Climate Variability and Global Warming impact on Antarctic Ecosystem structure and functioning. Dr. Daniel F. Vergani, MSc. Zulma B. Stanganelli, Lic. Juan Carlos Labraga Argentina - Centro Nacional Patagónico (CENPAT-CONICET), Dr. Ludo Holsbeek, Laboratory for Ecotoxicology and Polar Ecology, Belgium Free University Brussels

Presentation: Geodetic Activities and History of Geodesy in Antarctica Australia. John Manning, Geodesy Group National Mapping Division Geoscience Australia

10:30-10:45 : Break

10:45-11:15:

Session Introduction – Dr. Fraser Taylor, , Carleton University

Presentation: Cybercartographic Atlas of Antarctica, Main Issues and Network Approach. Prof. Dongchen, E., Nengcheng Chen. Chinese Antarctic Center of Surveying and Mapping, Wuhan University , China.

11:15-12:00:

Session Introduction – Peter Pulsifer, Carleton University

Round Table Discussion: All Workshop Participants

Discuss the potential of previously proposed subject areas for inclusion in the Atlas. Some previously proposed subject areas include those presented in previous sessions and:

- Ice – characteristics, processes and effects
- Historical Exploration of the Antarctic
- Proposal of new subject areas for consideration

12:00-13:00: Lunch

13:00 - 14:30:

Session Introduction – Peter Pulsifer, Carleton University

Round Table Discussion: All Workshop Participants

Develop subject areas to be included in the Atlas. Establish details such as:

- Goals of study
- Linkages of subject area to overall Atlas concept and to existing resources
- Geographic coverage and scale
- Content including potential data sources
- Suggested individual case studies (“vignettes”) for incorporation into subject areas
- Supporting research (key studies) related to subject area
- Responsible agency
- Potential methods of data representation. In particular establish themes that would be well supported using a particular method of representation i.e. time series animation, 3D visualization, audio etc..

14:30-14:45: Break

14:45 – 16:15: Development Approach

Session Introduction – Peter Pulsifer

Round Table Discussion: All Workshop Participants  
Establishing functional requirements for a series of Atlas prototypes.

**FRIDAY, MAY 24TH, 2002**

09:00-11:00:

Report Preparation and Next Meeting

11:00-13:00: Lunch

13:00-14:30:

Report Approval  
Closing of Meeting

14:30-18:00: Recreational Outing

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## WEDNESDAY, MAY 22<sup>ND</sup>, 2002

### **SESSION 1:**

#### ***Welcome and Opening***

Dr. D.R. Fraser Taylor (Canada), director of the Geomatics and Cartographic Research Centre at Carleton University opened the workshop. Dr. Taylor stated that the idea for a Cybercartographic Atlas of Antarctica originated in Argentina. The idea grew out of a large project funded by the Canadian International Development Agency (CIDA) and the Inter American Development Bank. The project was in collaboration with eight Latin American countries, with resulting products on CD-ROM and an on-line Atlas (see [www.atlaslatinoamerica.org](http://www.atlaslatinoamerica.org)). The focus was primarily production, capacity building and training. Project participant from the U.S. provided assistance to ensure compliance with the FGDC geospatial metadata standard. From this work stemmed the idea to apply the concept of Cybercartography to Antarctica. Currently in Canada there is a small group interested in the Antarctic Atlas, particularly among scientists interested in comparative research between Canada's north and Antarctica.

#### ***Agenda revision and designation of reporters***

The agenda was accepted as is, with the stipulation that changes may be made as needed during the course of the workshop. Tracey Lauriault and Brian Eddy of the Geomatics and Cartographic Research Centre were assigned as reporters.

#### ***Update on The Cybercartographic Atlas of Antarctica Project – developments since the Puerto Madryn workshop***

#### **Funding:**

Acquiring resources from Canadian sources is difficult for the Antarctic Atlas as Canada's focus has traditionally been on the North. However, some success has been achieved as the importance of Antarctica to the global community is becoming clear. Funding has been acquired from the following sources:

- The Canadian Department of Foreign Affairs and Trade provided a small grant of \$35,000 (CDN) from the Going Global Fund. The purpose of this grant is to further develop The Atlas concept.
- In June 2001, the Social Science and Humanities Research Council of Canada (SSHRC) launched a new program entitled Initiative for the New Economy (INE). The GCRC helped to launch the program by giving a formal presentation to the Honourable Brian Tobin, the Minister of Industry. Through this program, the GCRC was successful in winning a development grant. This grant is being used to develop a larger proposal for a major collaborative research grant on the order of \$2-3 million (CDN). The objectives of the collaborative project are to develop the theory of Cybercartography and test it using functional products. The Cybercartographic Atlas of Antarctica is proposed as one of these products. In all, 89 proposals were submitted, 18 made the shortlist (including the GCRC) and 12 will receive full INE grants. Our proposal was the only one to include a science and mapping component. The major collaborative research grant proposal is due July 15th, 2002. As a result, the efforts of the GCRC staff are currently being directed to preparation of the proposal.
- One of the GCRC's partners, the Human Oriented Technology (HOT) lab has recently received a grant of \$4.5 million (CDN) from the Canadian Foundation for Innovation to extend the Social

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Science building. This extension will include a fully equipped Cybercartography laboratory containing 8 workstations, 2 servers, productivity tools, and other infrastructure.

### **Partners:**

The major collaborative research project outlined in the previous section aims to test the assumption that we can learn from new media. Therefore an alliance with the Department of Psychology has been established to allow for testing of the learning process, and to further develop an understanding of how humans and computers interact. The multidisciplinary Carleton University research team includes:

- The Department Psychology, Dr.G. Lindgaard, director of the Human Oriented Technology, Dr. R. Dillon and Dr. C. Herdman from the Aviation Research Laboratory.
- The Department of English, Dr.B.Greenspan of the Institute for the Comparative Study of Literature, Art and Culture (investigating the use of hypertext narrative).
- The School of Computer Science, Dr. J Rudiger-Sack director of the Paradigm Group and holder of SUN-NSERC Chair in Applied Parallel Computing
- The Norman Patterson School of International Affairs, Dr. M. Hart the Simon Reisman Professor of Trade Policy
- Dr. W. Cartwright of RMIT University in Australia and Dr. G. Gartner of the ICA's Maps and the Internet Commission have recently been added as collaborators.

The Cybercartographic Atlas of Antarctica has formal participation from national and international organizations, including:

- The Canadian Department of Foreign Affairs and International Trade (DFAIT) with grant support from the Going Global Program
- Canadian Polar Commission (CPC) with cash and ongoing advice on content
- Canadian Committee for Antarctic Research (CCAR)
- International Cartographic Association (ICA), Commission on Maps and the Internet and the Commission on Mountain Cartography with expertise from the United States, Austria, and Australia.
- Centro Nacional Patagonico (CENPAT) in Argentina
- Geodesy and Geographic Information working group of SCAR
- The Atlas has been favourably received by the Antarctic Treaty Consultative Meeting, the consultative body for the Antarctic Treaty.
- Currently, twelve nations have agreed to participate or have expressed an interest.

### **Development Approach:**

The intention is to develop The Atlas with content that takes advantage of existing sources of data, particularly those created by SCAR programs. The goal is to support the information needs of the various elements of SCAR and the greater Antarctic community.

In technical terms, standards developed by the Open GIS Consortium (<http://www.opengis.org>) and ISO Technical Committee 211 (<http://www.iso211.org>) will be adopted to facilitate interoperability. For legacy systems that do not use a standards model, the Open Geospatial Datastore Interface (OGDI – <http://ogdi.sourceforge.net>) conversion middleware will be used to make data accessible.

As stated at the workshop in Puerto Madryn, a hub and node organizational approach will be adopted with nodes such as the U.S. and China and with sub-nodes established in collaboration with partners who have important datasets but do not have sufficient technical infrastructure.

The concept is to enable partners to develop products independently (e.g. U.S. and the Chinese Atlases), but to be able to contribute to the larger Atlas infrastructure. Interoperability will be key, and much research and development will be focused in this area.

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It was stated that Centro Nacional Patagonico (Dr. Vergani) in Argentina and the Military Institute in Chile are interested in becoming nodes. Additionally Uruguay, Paraguay and Peru may follow suit.

### **General Statements:**

The general objectives of the meetings were presented as stated on the agenda.

An open discussion was initiated that invited comments on previous statements made or to clarify objectives for the remainder of the workshop.

In general, the following points were made:

- SCAR is restructuring and the details of the new structure will be presented in Shanghai. An organizational chart was distributed (see document scar\_org\_structure\_diagram.pdf). The new structure will include 3 science bins including Physical Science, Life Science and Geoscience. Geoscience is where the Atlas may be positioned. The Atlas will potentially cross all subjects and perhaps early work would be in geoscience with a long term plan of expanding into a production area.
- It will be important to refresh SCAR endorsement and to present the Atlas as a major integral project.
- The project may be large enough to become an action group with linkages to the other bins and an approved Scientific Research Program.
- In Shanghai, The Atlas should be presented at the symposium on climate and sea ice and to COMNAP on the Saturday.
- An important point to communicate is that The Atlas offers SCAR members a venue to disseminate their work.
- As stated by Dr. Taylor, the objectives from the perspective of the GCRC are to:
  1. involve 3 user groups - scientists, managers, and the general public
  2. to receive a seal of approval
  3. receive advice on content from SCAR expertise.
- In the long term, the project's technology and knowledge will need to be transferred upon completion of the initial research and development stage.
- Managing the number of partners will be important from a management perspective as resources during the initial phase will be limited. To facilitate success, there is a need to establish a project scope that matches the available resources. Currently 8 nations are key players (Chile, South Africa, Australia, U.S., UK, China, Argentina, Germany, Poland). These countries have formally expressed their interest.
- CCAMLR is an important group with a good working relationship with SCAR. A presentation should be made to CCAMLR members.
- IAATO is a large tourist organization that could be an important user group and disseminator. IAATO has an annual meeting with the next one being July, 2002.
- Canada's official position on Antarctica will be known once the Strategy document is released along with a new science document to be presented to ministers and CCAR in a few months.

## **SESSION 2**

**Presentation: The Web , cartography and information delivery, Dr. William Cartwright, RMIT University, Melbourne Australia (with additions by Peter Pulsifer, Carleton University)**

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Dr. W. Cartwright provided an excellent historical overview of the evolution of the workstation and key innovations in the field of multimedia communication. An historical analysis of Web trends reveals a shift towards .com domains and a decline in .gov. This suggests a shift to home use. Another interesting observation is that languages other than English are growing in importance.

Dr. Cartwright provided important and unique examples of Cartography on the Web. For example, information on the Web can be represented using Cartography by creating Web-connectivity maps. Maps are appearing in new media, as decision support tools and in educational or multimedia packages. Digital image collections are also emerging. There are downloadable data files, Information Services with Maps, Global Publishing, on-line GIS, on-line map services and Web Atlases. Some limitations were identified including the problems of Web cartography based on specification originally developed for print. Other current limitations/problems identified were, the lack of exploitation of the power of new media, mental restrictions, and the imposition of the rules of technology. The presentation ended with a series of important questions regarding the projection of real space onto 'visualized' space.

Please see the document title [Cartwright\\_Ottawa\\_May\\_2002.pdf](#) for more details.

Mr. Peter Pulsifer added to the presentation by providing a series of content type examples that could potentially be used in a Cybercartographic Atlas of Antarctica.

Please see the document titled [Pulsifer\\_Cartwright\\_Ottawa\\_May\\_2002.pdf](#) for more details.

### **SESSION 3**

#### ***Presentation: Canada's Oceans Program Activity Tracking (OPAT) System, Darren A. Williams, Senior Advisor, Integrated Management Program, Marine Ecosystems Conservation Branch, Department of Fisheries and Oceans, Government of Canada***

Mr. Williams presented information about an operational on-line information system that uses the map as the primary information interface. Formally launched in September 2000, the Oceans Program Activity Tracking (OPAT) System is an interactive mapping and information system designed to track, share and display details on more program activities established under the federal Oceans Act. Using a graphic user interface and linked databases, the system allows program authorities of Fisheries and Oceans Canada to directly convey and edit information on program activities via the internet through the use of electronic forms and on-screen editing capabilities. The system displays these activities in the context of ocean features and uses such as the delineation of marine ecosystem boundaries and the location of submarine telecommunications cables, aquaculture sites, and oil and gas activities in Canada's marine and coastal environments.

Mr. Williams stated that in 1997 Canada was 1st country to pass 'Oceans Act' - a new approach to sustainably manage Canada's oceans with multiple stakeholders. OPAT is a tool used to manage the department's 80 programs. OPAT was developed with a 'learning by doing' approach.

A live demonstration showed how map layers are stored on different servers, the relationship between programs and other themes, and connectivity to other databases (e.g. Statistics Canada). In this distributed model, data accuracy and liability is dependent on the providers of the individual layers. Metadata is provided to allow users to evaluate the data.

For more information on the OPAT System visit [www.dfo-mpo.gc.ca/canoceans](http://www.dfo-mpo.gc.ca/canoceans).

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## **SESSION 4**

### ***Roundtable Discussion: Establishment of a proposal framework for The CyberCartographic Atlas of Antarctica to define a presentation template and establish primary, & top level goals of the Atlas***

A roundtable discussion was moderated by Mr. Peter Pulsifer. From that discussion a number of useful ideas were produced with respect to defining an initial proposal framework for XXVII SCAR. Key ideas have been organized by category.

#### Atlas Users:

- Work needs to be done to identify user types, define user communities/user groups and their knowledge base.
- A baseline assumption is that users have used the Web before.

#### Potential Content:

- JCADM was identified as a primary point of contact for identifying available geo-spatial data and metadata sources.
- Antarctic Digital Data System (ADDS). Contact Lee Belbin in matters pertaining to the ADDS and the Antarctic Master Directory (AMD). An investigation into a strategy for updating and revising the ADDS(?) should be investigated.
- Antarctic Digital Database (ADD). Contact Janet Thomson (BAS) in matters pertaining to the ADD. An investigation into a strategy for updating and revising the ADD should be investigated.
- Metadata will be a prerequisite to participate. Data quality is critical and the data must be reliable and provenance known.
- RadarSat mosaic and related 200m DEM a potentially valuable source of data.
- Visualizations from NASA's Spatial Visualization Studio may be useful.
- Satellite sensors and particularly RADAR sensors are seen as an important source of data. There are a number of repositories and data discovery services that may be used to access these data.
- Much well described data exists in China including a database on Meteorite impacts .
- All agreed that content on the history of Science and exploration in the Antarctic should be included in The Atlas.
- Books, art, movies, currently a large archive of holdings in the U.S.. Some of these holdings are already in digital format.
- John Manning of Australia will investigate the possibility of acquiring a Full set of 1<sup>st</sup> edition history of Antarctica Books.
- An Education component may be welcomed at SCAR and was identified as a current gap in the information delivery strategy.
- CCAMLR data were identified as valuable for looking at fisheries in particular.
- The British Antarctic Survey has a comprehensive database.
- Potential sources may be BEDMAP, ADGRAV, ADMAP
- The Atlas should include a component related to the Antarctic Treaty.
- There is the potential to use the Composite names gazetteer.
- Connect with regional Atlases to take advantage of existing content.

#### Atlas Functionality:

- Data/Knowledge discovery tool. i.e. a search engine that uses spatial concepts to discover geospatial data as well as map information space.
- Near real time or real time locationing, historic, current and forecasting, e.g. location of fishing boats.
- Multilingual interface.

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- Dynamic time series on recent ice breaks. Allow users to understand the process through visualization [NSIDC may be a good source of info...<[www.nsidc.org](http://www.nsidc.org)>]
  - Science based users appear to want data download and more GIS functionality as opposed to just display.
  - Monitoring recent images, i.e. web cams, ice falls, images, animations, moving images, logistics, ship tracking, air craft (this may be of interest to COMNAP).
  - Temporary tracking devices, for example yachts in Southern ocean races.

Long term function ideas:

- o driving/flying through data
- o abandonware – use of familiar interfaces such as video games controls to access data

Important points for presentations at XXVII SCAR:

- Design the presentation to fit the joint SCAR COMNAP meeting, and the Science Forum on the Wednesday while being more specific for the science forum.
- Tie in with key people involved with the previous 14 SCAR 'working groups' [there are Groups of Specialists as well], along with IAATO, CCAMLR, etc.
- Delegates should be able to establish where their research will fit into the Atlas.
- Ensure the position of the project remains within the GGI WG.
- Integrate the Atlas w/new working groups, and illustrate their issues
- Select projects and case studies from each of the key groups: Geoscience, Life Science and Physical Science.
- The concept of knowledge and technology transfer to ensure the inclusion of new information from all sources, including countries with more limited infrastructure.
- Active prototypes desired for the presentations. If possible, this will include development of a sample interoperable system with live connections for a demonstration of connecting to distributed databases.

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## THURSDAY, MAY 23<sup>rd</sup>, 2002

### SESSION 5

**Presentation: Climate Variability and Global Warming impact on Antarctic Ecosystem structure and functioning. Dr. Daniel F. Vergani, MSc. Zulma B. Stanganelli, Lic. Juan Carlos Labraga Argentina - Centro Nacional Patagónico (CENPAT-CONICET), Dr. Ludo Holsbeek, Laboratory for Ecotoxicology and Polar Ecology, Belgium Free University Brussels**

Dr. D. Vergani presented an excellent historical overview of Argentina's activities in Antarctica. Please see the document titled:

Vergani\_history.pdf

for the details of Dr. Vergani's presentation.

In his second presentation, Dr. Vergani presented on Climate Variability and Global Warming impacts on the Antarctica Ecosystems. This research is a joint Belgian/Argentine collaboration. The focus of this research is the use of seals as an indicator species, however the potential exists to study other species including the Adelie Penguin. Dr. Vergani presented a video on the research of Penguins, and the basics of the program. Some of these video products are available to the Atlas. Currently, Penguins census data analysis is ongoing.

Please see the document titled:

Vergani\_impact.pdf

for the details of Dr. Vergani's presentation.

Additionally, Dr. Vergani et al. submitted a detailed description of how this research might be included as a component of the The Atlas. This report is contained in the document titled:

Argentina\_belgium\_content\_proposal.pdf

A lively discussion followed the history presentation. Key discussion points are listed:

- National vignettes need to be included in the Atlas but with sensitivity to historical controversies over whom went where and when. Currently the Atlas of New Zealand and of the U.S. have a page dedicated to history.
- The distributed nature of the Atlas would enable nations to post their own content without the ability for central editorial control.
- Users are certainly interested in history, perhaps each sub-node can create their own histories and then link to the primary Atlas site.
- In terms of identifying existing content, perhaps a robot can scan & filter the net to find historical documents and have a team of historians to review content.

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***Presentation: Geodetic Activities and History of Geodesy in Antarctica Australia. John Manning, Geodesy Group, National Mapping Division, Geoscience Australia***

Mr. Manning presented information about the GGI's GIANT program and the potential to develop an Atlas component based on activity related to geodesy in Antarctica.

Please see the document titled:

Manning\_giant\_program.pdf

for the details of Mr. Manning's presentation.

Additionally, Mr. Manning submitted a detailed description of how geodesy in Antarctica and the GIANT program in particular can be developed as a component of the The Atlas. This report is contained in the document titled:

Manning\_geodesy\_chapter.pdf

During his presentation, Mr. Manning stated that surveying and geodesy is a fairly complete area that is not overly controversial. However, different theories of tectonic movements provide a base for interesting debate. It was suggested that the various theories could be animated and included in the Atlas, potentially resulting in the generation of interest in the scientific community and general population.

## **SESSION 6**

***Presentation: Cybercartographic Atlas of Antarctica, Main Issues and Network Approach. Prof. Dongchen, E., Nengcheng Chen. Chinese Antarctic Center of Surveying and Mapping, Wuhan University, China. (Presented by Peter Pulsifer, Carleton University on behalf of Prof. Dongchen, E.)***

Mr. Pulsifer presented two primary topics: Proposed elements of the Atlas and the Technical Approach. The presentation summarized information provided in two papers submitted by Dr. Dongchen and Nengcheng Chen. The papers are titled:

China\_GIS of Antarctica based on Network.pdf

China\_Cybercartographic Atlas of Antarctica Main Issues.pdf

Please see the document titled:

Dongchen\_china\_contribution.pdf

for the details of Mr. Pulsifer's presentation.

Following the presentation, Dr. Dongchen stated that GeoStar is continually under development, at Wuhun University and it is being developed as a commercial system. It is being marketed in China and an English version is under development for the international audience at a very competitive price. The expectation is that the Atlas will be OGC Compliant within 1 year. The Antarctic data are not live yet but a URL will be sent to members of the workshop. The Project and the tool it uses are considered to be very powerful.

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**Presentation: Information Prospecting. Dr. William Cartwright, RMIT University, Melbourne Australia.**

Dr. Cartwright presented a new concept of ‘prospecting maps’ – that is using the map as a means of ‘exploring the data’ with a ‘map metaphor’. He provided some very useful examples of unconventional mapping techniques in this area (e.g. Mapping money transfers between banks, City of News, standing ‘inside’ the interface & exploring the content). A very interesting User Interface was presented, namely the way to access the data is by way of a using the city metaphor whereby key subject areas are neighborhoods and distinguishing characteristics are data sub-themes.

Please see the document titled:

Cartwright\_data\_prospecting.pdf

for the details of Dr. Cartwright’s presentation.

**SESSION 6: Part II**

**Roundtable Discussion: Discuss the potential of previously proposed subject areas for inclusion in the Atlas.**

A roundtable discussion was moderated by Mr. Peter Pulsifer. From that discussion a number of useful ideas were produced with respect to defining specific subject areas for inclusion in the Shanghai presentation and potentially the Atlas. Key ideas developed are listed.

- There was general agreement on the importance of identifying and presenting a number of specific subject areas or ‘vignettes’ at XXVII SCAR. Each of these ‘vignettes’ should consider the ‘stories’ that each research group would like to tell the world – that is, to put their work /research in a context that invites users to explore more deeply. The three areas of geoscience, physical science, and life science need to be addressed to some extent by the ‘vignettes’.
- July presentations will be directed primarily at scientific users and policy makers. A focus on the general public can come later at a more appropriate venue.
- Logistics, planning and tourism should also be considered
- Participants discussed the use of a ‘book’ metaphor with the central hub acting as the table of contents.
- There was agreement that CCAMLR needs to be linked as they produce valuable data and information.
- Mr. Jerry Mullins stated that it is important to make it clear to various funding agencies how The Atlas will add value to existing programs, for example increasing the audience of the national atlases.
- The importance of linking to JCADM and World Data Centres for data was stressed.

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## **SESSION 7**

Over the lunch break, a model schematic was drafted based on the discussion in Session 6: Part II. Workshop participants interactively designed and modified the Atlas model based on the further discussion. The schematic was modified during the session and a draft copy created. This draft can be found as page 7 in the following document:

Shanghai\_framework\_workshop\_draft.pdf

The remainder of the presentation content was discussed slide by slide with elements being added interactively. The resulting presentation is contained in the framework document Shanghai\_framework\_workshop\_draft.pdf. This presentation includes an introduction to the concept of the Atlas, goals of the Atlas, general themes included, methodology, content, data resources, and prototypes of currently proposed projects.

Other issues to consider were identified:

Data infrastructures; currently the discussion was around presenting content and allowing users to download data, however there was some recognition that eventually a distributed infrastructure model will need to be developed.

The interface will require an approach whereby the information can be accessed from many different lenses. Dr. W. Cartwright presented a Doors/Windows of Perception model for the Atlas, namely SCAR has one perception through the lenses of Geoscience, life Sciences and Physical Science while other users may want to look at the information from the lens of education or perhaps a virtual information lens. The Atlas will need many lenses to meet the needs of its 3 targeted user communities (Scientists, Policy Makers and the General Public) as well as SCAR, and other multidisciplinary projects.

## **SESSION 8**

### ***Round Table Discussion: Establishing communication activities before the Shanghai meetings and meeting outcomes<sup>1</sup>.***

The group worked on a list of organizations, and key people to keep informed and contact regarding the CyberCartographic Atlas of Antarctica (see Table 1).

There was discussion that an acronym dictionary or glossary should be created for audiences who may not be familiar with SCAR acronyms.

It was suggested that time and funds allowing, a presentation should be made to CCAMLR at their conference in Big Sky Montana in early August.

There was discussion about the new SCAR subject bins and the maintenance of some of the SCAR-WG topic areas. It is expected that some will remain, e.g. GGI may continue under the geoscience bin and perhaps be renamed to Geospatial Information Group {GIG}.

The three key objectives for the presentations on the CyberCartographic Antarctic Atlas work in Shanghai are to:

- Refresh endorsement
- Raise the Profile of The Atlas
- Capture the interest of Key Players

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<sup>1</sup> This session was originally planned to establish functional requirements for a series of Atlas prototypes. These requirements were established during the course of previous sessions.

**Table 1. Contacts action list**

Org.	Contact	Position	Nationality	Action	Responsible	Notes
COMNAP	Jack Sayers, Hobart	Executive Secretary	Australia			
	Bonni Hrycyk	Representative	Canada	Contact	Fraser Taylor	
SCAR	Peter Clarkson	Executive Secretary	UK			
	Robert H. Rutford	President	U.S.			
	Ian Allison	Sea Ice Expert	Australia	Contact	John Manning	
	Chris G. Rapley	SCAR Ex. Comm.: Vice President	UK	Contact through Janet Thomson	Fraser Taylor	
	Jörn Thiede	Permanent Delegate	Germany			
	Dr Roland Schlich	Vice President	France			
	Stephen Bigras	Permanent Delegate	Canada	Contact	Fraser Taylor	
	Enrique Marschoff		Argentina	Keep Informed	Fraser Taylor	
CCAMLR	Roger Hewitt	Convenor, WG- EMM	U.S.	Keep informed	Peter Pulsifer	
	David Ramm	Data Manager		Keep informed	Peter Pulsifer	
	Tony Pitcher	Science Expert	Canada	Future Contact		Fisheries Centre, UBC
SEALS	John Bengtson	SCAR Working Group		Keep informed	Working group continuation??	
BIRDS	Eric Wohler	SCAR Working Group		Keep informed		
ANTEC	Tom James	Science Expert	Canada	Contact	John Manning	Modelling GSC - Sydney, BC
ACE	Ian Goodwin	Antarctic Climate Evolution <www.geo.umass.e du/ace/>	Australia	Contact	John Manning	University of Newcastle , AUS
ITASE	Ian Goodwin		Australia	Contact	John Manning	
ANTIME	Ian Goodwin		Australia	Contact	John Manning	
JCADM	Lee Belbin	AAD	Australia	Continue contact	Peter Pulsifer	Critical to keep informed and involved in process
Antarctic Master Directory	Lee Belbin	AAD	Australia	Continue contact	Peter Pulsifer	
IAATO	Denise Landau	Office of the Secretariat	U.S.	Contact	Peter Pulsifer	Meeting July 1-5, Cambridge (Janet Thomson will attend for GGI)
Students on Ice	Geoff Greene	Education Sector	Canada	Contact	Peter Pulsifer through Olav Loken	
GGI	Stefen Vogt		Germany	Keep informed	Peter Pulsifer	
IHO	Ron McNab	Researcher	Canada	Keep informed	Peter Pulsifer/Fraser Taylor	Bathy- metric

## **FRIDAY, MAY 24<sup>th</sup>, 2002**

### ***SESSION 9***

A modification to the agenda was made. In the interest of saving time, Session 10 of the workshop was removed and incorporated into session 9.

The draft notes and presentation were modified and approved by the workshop participants. A final CD-ROM copy of all documents and presentations will be sent to all participants and those people who could not attend.

The meeting was closed, and the remaining participants went on a recreational outing.

## Actions

**Table 2. Action Items (See Table 1 for contact related items)**

<b>Task</b>	<b>Responsible</b>	<b>Due by</b>
Research available satellite imagery repositories and the potential for their use in the Atlas	Peter Pulsifer	During Atlas production
Investigate the possibility of acquiring a Full set of 1st edition history of Antarctica Books	John Manning	During Atlas production
Investigate possibility of presenting to CCAMLR in early August	Peter Pulsifer	July 2, 2002
Create a dictionary of acronyms	Peter Pulsifer	July 5, 2002
Produce a final draft of presentation and send to workshop participants for review and comment	Peter Pulsifer	July 5, 2002
Present Atlas presentations	Fraser Taylor	July 15-26, 2002

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**List of Participants with Contact Details**

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Gabriella Nagy	Carleton University, Canada	nagyg@canada.com	HOT Lab (Human Oriented Technology)	

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