

# TOKYO MEETING

## 10-14 JULY 2000

---

### RECORD OF PROCEEDINGS FOR WORKING GROUP ON GEODESY AND GEOGRAPHIC INFORMATION

SCAR XXVI, TOKYO, JAPAN

10 - 14 July 2000

#### ATTENDANCE

Representatives from 13 SCAR member countries were in attendance as per the list in Appendix A. In summary:

**Members or representatives:** Australia, Belgium, Chile, China, Germany, Italy, Japan, Korea, New Zealand, Poland, Russia, United Kingdom, United States of America

**Apologies:** Jaakko Makinen, Finland; Michel Le Pape, France; Shri D.P. Issar, India; Joern Sievers (who was represented by Reinhard Dietrich as substitute delegate) Germany; Trond Eiken, Norway; Lars Sjoberg, Sweden; Andrew Johnson, UKHO; Hector Rovera, Uruguay and Federico Mayer, Argentina.

**Official Observers:** Dr Minoru Sasaki - International Hydrographic Organisation (IHO), Larry Hothem, FIG, Reinhard Dietrich, IAG;

**Additional observers:** Hiroshi Une, ISCGM, Dr Alessandro Capra, Italy; Prof Chiara Ramorino, Italy; Shouchi Matsumara, Japan; Kazuo Shibuya, Japan; Hiromichi Tsuji, Japan; Vladimir Berk, Russia

**Invited presenters:** Julian Priddle GLOCHANT, Prof Bob Rutford SCAR President, Lee Belbin JCADM, Wayne Pollard, CCAR; Jay Zwally, NASA

#### 1. MEETING ADMINISTRATION

The Chairman, Mr Drew Clarke, opened the meeting at 1055 on Monday 10 July in Room 503 of the National Olympic Memorial Youth Centre. Mr Clarke apologised for the late starting time - this was due to a Chief Officers meeting with the SCAR Executive.

##### 1.1 *Rapporteur*

Glenn Johnstone (WG-GGI Executive Officer) was rapporteur for the meeting

##### 1.2 *Agenda*

The agenda as circulated was accepted.

##### 1.3 *Minutes of previous meeting*

The minutes of the previous meeting, held in July 1998 at Concepcion, were confirmed.

##### 1.4 *Circulation of Program Reports*

The project reports for GIANT and Geographic Information were circulated.

##### 1.5 *Circulation of National Reports*

National reports from Argentina, New Zealand, China, Chile, the USA, Uruguay, Russia and Germany were circulated. National reports provided before the meeting are in the agenda papers provided for the meeting. See Appendix F (Located in Agenda Papers).

##### 1.6 *Summarise Actions Arising from Concepcion and WG-GGI Coordinators meeting*

Mr Clarke went through the list of actions arising from XXV SCAR and the WG-GGI Coordinators meeting and gave a brief summary of each item. Some points will be reported on in individual Program Reports and nearly all action items have been completed.

##### 1.7 *WG-GGI Communication Issues*

Members discussed WG communication issues including the web site, listservers and newsletters

The general feeling was that communications have worked well so far and the format of data available is good.

Henk Brolsma commented that contact details of producers and retailers of Antarctic maps is required. Glenn Johnstone said that an email requesting this information had been sent to the GGI listserver the week before and that results would be posted on the GGI web site.

Members felt there was no requirement for "members-only section" of the web site as that all the information should be freely available.

Glenn Johnstone was asked to send ISO TC211 contact names/addresses for National representatives out to GGI members.

Members also said they would be happy for Glenn Johnstone to send ISO TC211 updates to GGI-L listserver.

## **2. SCAR REVIEW PROCESS & OUTCOMES**

Mr Clarke introduced the report. Formally commissioned in April 99 by Prof Rutford. Ad-hoc review team was headed by Phil Smith & composed of 9 other members. Drew participated in the review and was the only Chief Officer from WG's. Members were chosen by SCAR Executive. Submissions were received from most SCAR WG's and CO's. 2 Meetings were held – 1 in Cambridge and 1 in Buenos Aires.

3 main issues were identified:

1. the need to engage delegate body of SCAR more in the scientific research being undertaken in the WG's
2. Need to modernise communications
3. More flexible operating structure (inc. WG's)

In all 20 recommendations were made by the Ad-hoc group.

4 Vice Presidents - to be responsible for one sub-program each. The sub-programs identified were; Scientific Affairs, Outreach and Education, Scientific Liaison and Internal Affairs.

SCAR office – recommends the appointment of an Executive Director (more senior than current EO) and upgrade the current administrative support to the ED. The promotion of SCAR science is important.

WG and delegates meeting was recommended to be split into 2 meetings, 3 months apart. The first would be an Antarctic science symposium (poster sessions, papers, meetings, etc) – it would also be open to all Antarctic scientists. The second meeting would be of the SCAR delegates would consider the reports from the first meeting.

There would be two types of groups formed:

1. action groups (focussed on science) with representatives being appointed (by whom?)
2. infrastructure / product development (ie. data management and environmental monitoring type of science.)

GGI would be considered a monitoring-type of group.

The new structure of "action groups" and "infrastructure groups" will have their work programs reviewed by SCAR delegates at the delegates meeting every 2 years. Those projects deemed worthy of merit will be endorsed by SCAR and may receive funding.

The Review does not question or suggest how all of the recommendations will be carried out or implemented

There may be some sort of hand-over period in the next 2 years for existing WG's if they become "action groups".

The Review report and recommendations will be formally presented to SCAR on Monday 18<sup>th</sup> July.

Members discussed a number of issues relating to the Review and its recommendations.

Roberto Cervellati said that it is important for SCAR to consider that other languages be used during SCAR meetings. This has been considered by the Review and is Recommendation 13.

Rienhard Dietrich supports the idea of an Antarctic symposium every 2 years where science reports, papers, etc are given

Janet Thomson sees there might be some practical implications for splitting the WG and Delegates meetings, for example the need for some people to attend 2 meetings (travel twice) instead of only one. This will need to be sorted out and the symposium needs to be a well structured event.

Hugo Declair commented that many other WG's already have other symposia to attend during each year and that yet another conference may be one too many for researchers to participate in.

Executive Director (ED) recommendation is probably the most important as the ED can really drive the organisation.

Janet Thomson commented that the current delegates are often remote people and who, to date, have provided little or no feedback on the SCAR meeting and decisions that have been made. Delegates appointed should have a stronger science background. Participation of non-Antarctic scientists in SCAR is important.

The WG recognised that there is a need for change at the top of SCAR; that the science meeting is good idea; and there is still a lot of uncertainty regarding the change from WG's to new structure (whatever that may be).

Phil Smith and Mike McGeary attended the meeting and commented favourably on the WG-GGI's response.

Phil would like to go to ICSU to try and get a grant to help with implementation of the Review findings.

### **3. WG-GGI RESPONSE TO STATE OF THE ANTARCTIC ENVIRONMENT REPORT (SAER)**

Members discussed a number of issues surrounding the GGI response to the SAER.

- Access to the data will be important. GGI could provide the fundamental structure.
- Information should be presented in an integrated way through a GIS-based structure and technology.
- Information infrastructure needs to be compiled as a base-line. Material lends itself well to presentation as web based and GIS mapping
- If the SAER is presented as book only, the flexibility to be responsive to changes is reduced.
- GGI has already created / coordinated a number of fundamental datasets (ADD and CGA in particular) that can be contributed to an SAER.
- Resourcing of this project requires discussion

## **4. PROGRAM REPORTS**

### **4.1 GIANT - Coordinator: Australia**

Mr Manning tabled a program summary report, and spoke of the general progress. The program report is Appendix D2 (Located in Agenda Papers).

The activities from the Heppenhiem Coordinators meeting were reviewed (Appendix D2 in the agenda papers). In Action Item 1 Larry Hothem was to liaise with the NSF regarding Terra Nova Bay utilising a satellite link to send out GPS data from TNB to McMurdo. Mr Hothem reported that a reliable power supply at TNB is required all year round. Prof Capra said that satellite costs are high and radio transmission will have to be used. This is possible and there is a high volume of data coming out from TNB. There is still some work required at the practical level to make this work. Mr Hothem says that once the TNB data is transmitted to McMurdo it will be easy to re-transmit by satellite to IGS.

It was noted that power generation (wind and solar) presentations will be taking place at the SCALOP meeting. It is worthwhile checking progress in this field and strengthening liaison between WG-GGI and SCALOP.

4.1.1 *Permanent Geodetic Observatories* *John Manning and Hans Werner Schenke*

Proposed permanent GPS sites (emanating from the ANTEC proposal) – exact position (Mt, nunatak, etc) will have to be documented.

*Develop and publish GPS base station specifications*

This has to be carried over to the next program

*Evaluate accurate local ties between collocated techniques*

Larry Hothem mentioned that there is a 5" sampling rate and output every hour from MCM4 – it is being used by users other than the traditional geodetic users (eg. meteorological, ionospheric studies, etc)

Overall this project has only really been half done – the Chief Officer recommended that it be carried over to next program for 2000-2002.

4.1.2 *GPS Epoch Campaigns* *Reinhard Dietrich*

Presentation by Reinhard Dietrich – in agenda papers

4.1.3 *Physical Geodesy* *Alessandro Capra*

Presentation given by Alessandro Capra – in agenda papers

Whilst there has been progress in all items from XXV SCAR work program there is still quite some more work to do. This is a huge project and it also relies on a number of other SCAR and non-SCAR initiatives for data.

4.1.4 *GLONASS Evaluation* *John Manning*

Report provided at the meeting. In the future this project should be rolled into the Permanent Observatories project.

4.1.5 *Differential GPS Base Stations* *Larry Hothem*

Standards developed by US Coast Guards have been taken up by about 35 countries. Coordinated by International Lighthouse Authorities (ILIA). dGPS is required for good positioning of shipping. Liaison with COMNAP is important. Would like to know of other dGPS activities happening around Antarctica.

John Manning reported on the presentation to COMNAP on Monday 10 July on dGPS and its applications to logistics and scientific research. A paper on dGPS was circulated to members at the meeting.

The future of this project requires review during the GIANT program development.

4.1.6 *Remote Geodetic Observatories* *Larry Hothem*

Report on activities between 1998 - 2000 was provided (in agenda papers)

4.1.7 *Information Access* *John Manning*

Most of the activities within project were completed.

A number require review and the "Datum for Dummies" paper will need to be carried forward to the next work program in 2000-2002.

The posting of photo idents on web project also requires redefining – it has been difficult to progress this item.

## **4.2 Geographic Information Program - Convenors: Germany and UK**

### **4.2.1 Standards**

*Janet Thomson / Henk Brolsma*

Map and data standards is a long standing project – starting in 1992. Considerable progress has been made in the past 2 years with a draft mapping data dictionary and symbology paper produced. Janet Thomson asked for feedback from members to be forwarded to her. The next stage of this project will be to incorporate the data dictionary work into a SCAR spatial data model. Janet Thomson's report appears in the agenda papers.

The process for integration and publication by SCAR hard copy and on web will require further discussion during the meeting.

### **4.2.2 Place Names**

*Roberto Cervellati*

Report in agenda papers. Only 5 countries to date have contributed to the descriptions (of the letter "A") which has been disappointing. Mr Manning and Mr Clarke wished to congratulate Profs Cervellati and Ramorino on another 2 years of excellent work. The CGA is one of the WG-GGI showpieces in terms of products and there continues to be a deep commitment to its maintenance and further development by the Project Leaders.

Presentation of dates, language, distribution of the data and integration with the Map Catalogue are issues for consideration.

Regional names: Germany are unable to continue with this project. It was considered that it would still be useful for GGI to continue with this work if possible.

### **4.2.3 Topographic Database**

*Janet Thomson*

Report in agenda papers. Version 3 is now available from the ADD home page on the web.

### **4.2.4 King George Island GIS**

*Jan Cisak*

Jan Cisak gave presentation on his work. Prof E Dongchen gave a summary of the Wuhan workshop and Glenn Johnstone presented the recommendations from Wuhan. The summary and recommendations are available as a separate document.

### **4.2.5 Geographic Data Integration**

*Glenn Johnstone*

Report in agenda papers. Almost all of the activities identified at XXV SCAR have been completed. The next major step is to have a GIS specialist take over the integration of all the fundamental datasets for the 1:5Million scale product - a similar project to BEDMAP. The Data Library will continue to be maintained by the Project Manager.

### **4.2.6 Maps and Charts Catalogue**

*Henk Brolsma / Jerry Mullins*

Presentation given by Henk Brolsma on what AAD are doing with the on-line catalogue (available as a PPT file). Both Mr Clarke and Mr Manning congratulated Mr Brolsma on the work he and the AAD have done since the last SCAR meeting on this project. It has required a huge amount of work to get the entries into the online catalogue and the design of the database has required a lot of thought.

The issue of maintenance of entries in the map catalogue was raised. Mr Broslma said that GGI members will be supplied with an ID so they can add, update or revise their entries through an on-line maintenance program.

## **5. SCAR Coordination, International Liaison and Other Programs (held jointly with the WG Glaciology)**

Reports from coordination and liaison bodies: BEDMAP, RAMP, Cybercartographic Atlas of Antarctica and IHO were received before the meeting. The following bodies / agencies either spoke to their report or spoke to the Working Group. Appendix E (Located in Agenda Papers).

### **5.1 IHO and Hydrographic Commission on Antarctica**

Dr Minoru Sasaki – Ocean Surveys Division of Japanese Hydrographic Service - spoke to the IHO report.

Mr Brolsma asked about an Antarctic tide gauge data contact at IHO – Dr Sasaki said he will have to talk with Cde John Leech about this.

Mr Mullins informed members that some bathymetric data from McMurdo to Cape Adare which had been collected by USGS was being held at Woods Hole and could be made available to members if they wished.

### **5.2 SCAR Executive**

Prof Bob Rutford spoke about the SCAR review. Prof Rutford would like to see the Working Groups remain - they still have an important role to fulfil. SCAR is now 42 years old and not much has changed over that time. The current functioning of SCAR is not working well. Time allocation of SCAR Executive and members is an issue. Being a voluntary organisation it does not run programmes and suffers from problems found in other voluntary organisations. COMNAP is a parallel institution and also doesn't run programmes. Under ICSU rules national representatives have to be informed of recommendations in order for action to be initiated. Funding and organisational operations are different in every country – need to understand each others programmes. Don't know what SCAR will look like in 2 years.

Prof Rutford said he hoped for some resolution next week on the Review recommendations and implementation will start after that (to be completed by XXVII SCAR).

Current SCAR budget is not adequate – need to find other sources (philanthropic foundations, etc). A real skill required for more acquiring / finding more funding hence the need for a good ED (if that recommendation is accepted).

Oceanography discipline has been dropped and should be picked up again.

### **5.3 GLOCHANT**

Julian Priddle, outgoing Chief Officer of GLOCHANT gave a presentation on the structure and objectives of GLOCHANT. Viewgraphs of the presentation were copied for members. The program is interactively coordinating (linking) and promoting involvement of a number of Antarctic climate related programs. Dr Priddle outlined a number of programs that have taken place over the last 2 years:

1. ASPeCt - sea ice observations.
2. ITASE – Workshop on Antarctic variability over the last 200 years.
3. GLOCHANT workshop on Southern Ocean large-scale variability

Mr Clarke asked how much emphasis is being placed on production of data products within GLOCHANT. Dr Priddle replied the datasets that are needed the most would be the data archaeology (ice shelves, etc), information that goes back further than the remote sensed data currently does.

### **5.4 BEDMAP**

David Vaughan submitted written report - delivered at the meeting by Mrs Thomson. Appendix E (Located in Agenda Papers). Printed map has been completed and will be distributed to all SCAR members and WG (SEG, Geology, Glaciology, etc) members. Database of all the datasets used in compiling the BEDMAP product is available from the BEDMAP web site.

### **5.5 RAMP**

Ken Jezek submitted a PowerPoint presentation which was spoken to by Glenn Johnstone. Appendix E (Located in Agenda Papers).

### **5.6 GEBCO**

No report.

### **5.7 GOSEAC**

No report.

### **5.8 Antarctic Glaciology and Coastal Change project**

Mr Mullins presented a report of this project - on behalf of Mrs Jane Ferrigno and Dr Richard Williams (Appendix E - located in Agenda Papers). AGCCP will use the RAMP mosaic as a base to ortho-rectify the Landsat TM imagery. Dr Swithinbank has also marked the glaciers around the continent as well as the coastline. Mr Clarke asked if draft compilations of the maps will still be sent to people who have worked in the area. Mr Mullins said Mrs Ferrigno plans to continue this practice.

## **5.9 Cybernetic Atlas of Antarctica**

Wayne Pollard, McGill University, Canada made a presentation on behalf of Dr. Fraser Taylor.

WG thought in general that the project has a place in the WG program and would really like to have Dr Taylor in attendance before deciding any further action. Could have an application to a SAER given the environmental flavour of the Atlas.

Maintenance of the Atlas is an issue. Who will maintain it once it's been completed?

Also an issue is the duplication of efforts – particularly as USGS have the on-line Antarctic atlas being developed.

The presentation raised a number of issues that were carried over into the Program Development for 2000-2002 part of the meeting.

## **5.10 Global Mapping (ISCGM)**

Presentation given by Mr Hiroshi Une on the status of Global Map. Paper and PowerPoint presentation have been provided.

## **5.11 JCADM**

Lee Belbin gave a PowerPoint presentation on the status of JCADM and what has happened over the past 2 years.

More NADC's in operation. Spain, Italy. National data management policies. 2000+ metadata records. Bi-polar operation now a possibility as northern hemisphere counterpart agencies are going to adopt the JCADM model of the ADDS and NADC's.

## **5.12 ICESAT**

Jay Zwally gave a presentation on the ICESAT (Ice, Cloud, land Elevation Satellite).

ICESAT will have a GLAS (Geoscience Laser Altimeter System) on board. Glaciologists hope that this will result in the ice sheet surface being better defined.

70 metre footprint every 170 metres. Average height as well as surface slope and surface roughness will be measured.

Visit <<http://icesat.gsfc.nasa.gov>> and <<http://icesat4.gsfc.nas.gov>> for further information.

## **6. JOINT MEETING WITH OTHER WG'S (SOLID EARTH GEOPHYSICS, GLACIOLOGY, GEOLOGY, JCADM & ANTEC)**

Terry Wilson – Convenor gave a presentation to a combined meeting.. ANTEC's Goal: improve understanding of the unique neotectonic regime of the Antarctic plate.

ANTEC science objectives were outlined. Draft science plan has been developed.

Interplay between topography, structure and ice dynamics

ANTEC science planning workshop, in Siena, Italy on July 11-14 2001. Implementation plan of programs will be developed. Workshop will be open to SCAR and non-SCAR people.

Proposal for a Penrose conference Sept 2002 is being considered.

Areas of interest that GGI is working which would interest other WG's are: GIANT and GI projects. Mr Clarke gave a brief outline of each Programs projects and the Project Leader as a reference if people were interested in following up on a particular project.

Geology followed with concerns about the SCAR review. Sub glacial lake – GoS proposal. Joint session with SEG on drilling initiatives.

Solid Earth Geophysics reported on the following projects

1. ADMAP (the Antarctic Digital Magnetic Anomalies Project). 5 year program is close to being finished. A database will also be set up.
2. ADGRAV - Robin Bell reported that this project has not moved forward and international collaboration has not happened.

Glaciology reported to the meeting that they are still in the reporting phase within their WG meeting. There are still a number of programs reports to be given.

The German Environmental Agency has banned the collection of ship acoustics / seismics as it was not known what effect the signal would have on the wildlife. This has affected a number of projects in the Working Groups and recommendations on how this might be dealt with are being drafted for presentation at the SCAR Delegates meeting.

## **7. NATIONAL REPORTS**

There were 7 written national reports on Antarctic activities provided before the meeting. Additional reports from 8 countries were circulated at the meeting. Appendix F (Located in Agenda Papers)

Reports were provided from:

Argentina, Australia, China, Chile, Finland, Germany, Japan, Italy, New Zealand, Norway, Russia, South Korea, Uruguay, United Kingdom and the United States of America.

Japan spoke to parts of their report and gave a PowerPoint presentation.

## **8. REVIEW OF PROGRAM STRUCTURE**

The chairman reviewed the success and shortcomings of the program structure over the past two years. It was generally felt that the approach had been a considerable success particularly in terms of being able to manage projects under 2 Program banners.

The chairman outlined the current structure of the Working Group:

- \* Geodesy (GIANT) - Convenor: Australia
- \* Geographic Information - Convenors: Germany and UK

Mr Manning asked if the role of Program Convenors was required in the future.

Prof Dietrich agreed with the current structure and he thought that Mr Manning, as the GIANT Convenor did this Convenors job well.

Mrs Thomson, as the GI Program Convenor said it was good to have a bi-program split for WG-GGI and thought the GI Program didn't require a Convenor as the form of the program doesn't lend itself easily to a convenors role. She thought the internal linkages between projects are not there as much as it is in the GIANT Program.

Mr Bevin said it was good to have a convenor so they have an overall picture of the program.

Prof. Cervellati said he was disappointed that Dr Joern Sievers was not be able to participate in the meeting and that the WG missed his input during the week. He hoped that Dr Sievers would be able to participate in future meetings.

Mr Clarke asked if it was better to have co-convenor for the GI Program. Mrs Thomson said that it would as a backup, however, there was limited interaction between the 2 Convenors over the last 2 year period.

Members commented that the Executive Officer role has worked well for the WG and has meant Project Leaders have been pushed a bit more to maintain the momentum on their projects.

Development of program plan summaries, with activities shown as dot points has worked well and is at an appropriate level of detail. This should continue with the new work plans.
--

Mr Clarke considered that some fine tuning of the overall structure was required to better achieve the right balance in the overall program objective. To that end it was decided, during the following agenda item, that the Information Access project within the previous GIANT program could itself be turned into a Program, as both the GIANT and GI Programs had an outreach requirement / component to them.

The overall structure will change slightly with the introduction of the Outreach Program spanning both the GIANT and GI Programs.

## **9. PROGRAM DEVELOPMENT FOR 2000 - 2002**

A new structure was proposed and accepted by the Working Group.

1. Chief Officer
2. Program Coordinators for "Geodesy", "Outreach" and "Geographic Information"
3. Project Leaders, and

An Inter-sessional meeting with Coordinators and Leaders is required. There was also a need for another Place names workshop and GIANT workshop as well as a Geographic Information Workshop to be held inter-sessionally to maintain program contact.



## 10. State of the Antarctic Environment Report (SAER)

Due to slippage in the WG-GGI agenda and the fact that the WG has already discussed input into the SAER (Agenda Item 3), it was recommended by the Chief Officer that the WG continue with development of the 2000-2002 Work Program rather than attend the SAER session. This was accepted by members.

The outcome of the SAER meeting will be made available to GGI members when the report is posted on the SCAR web site.

## 11. FINALISATION & PRESENTATION OF PROGRAM PLANS FOR 2000 - 2002

### 11.1.1 GIANT

A list of projects and activities for each, within the GIANT Program was circulated.

### 11.1.2 Geographic Information

A list of projects and activities for each, within the GI Program was circulated.

### 11.1.3 Outreach

A list of projects and activities for each, within the Outreach Program was circulated.

### 11.2 Finalisation of Programs

The final versions of the GIANT, Outreach and Geographic Information Programs for 2000 -2002 appear as Appendix G.

### 11.3 Election of officers

Mr Clarke called for the election of Program Coordinators for the Geodesy, Outreach and Geographic Information Programs for the following two years. Mr Manning was elected as Coordinator for the GIANT Program. Mrs Thomson was elected Coordinator for the Geographic Information Program. It was agreed that as the Outreach Program spans both the GI and GIANT Programs the new Chief Officer would become Coordinator for that Program.

## 12. ACTIONS & RESOLUTIONS

### 12.1 Review of Standing Resolutions

Based on previous discussions in the meeting the 6 standing resolutions from XXV SCAR were carried over to this meeting - the only alterations being to Resolutions 4 and 5. The members then discussed 2 further standing resolutions, all of which were adopted by members. Appendix H is the new set of Standing Resolutions for WG-GGI and these were submitted to the SCAR delegates meeting.

### 12.2 Summary of Actions Arising:

1. **All members** to contribute digital data for update of ADD.
2. **All members** to advise Project Leader of the availability of mapping, digital data, control, photography, etc. in their countries for KGIS.
3. **All members** to notify Executive Officer of contacts for those organisations and people responsible for production and distribution of Antarctic maps.
4. **All Members** to send corrections, updates and descriptions of Place Names to Prof Cervellati.
5. **Executive Officer (EO)** to circulate minutes, final report to SCAR, program (GIANT, Outreach and GI) plans, actions list.
6. **EO** to update web site with:
  - program (GIANT, Outreach and GI) work plans
  - report to SCAR (with attachments)**Chief Officer (CO)** to advise members on outcomes of recommendations and funding applications. This will be included in the package of minutes and reports.
7. **CO & EO** to arrange WG-GGI Coordinators meeting (with Italy)
8. **CO & EO** to develop liaison arrangements with SCALOP (symposia, reports and precision of geographical coordinates issue)
9. **CO & EO** to maintain international liaison with the following bodies - IAG, IHO, GEBCO, ICA, ISCGM, GSDI, IGES, etc.
10. **CO & EO** - actions identified in boxes above

### 12.3 Recommendations to SCAR

The meeting approved 2 WG-GGI recommendations for SCAR consideration, in summary:

1. Geodetic and Geographic Information; and
2. Airborne gravity data for geoid computation;

WG-GGI agrees with other WG proposals regarding environmental concerns / restrictions being placed on Antarctic research by the German Environmental Agency.

The full text of recommendations to SCAR is shown in Appendix H.

### 12.4 Proposed meetings

The Working Group proposes the following meetings in 2000 - 2002:

1. ANTEC meeting, Siena, Italy, 9-13 July 01
2. Coordinators meeting, Siena, Italy, 14 July 01
3. GI workshop, Siena, Italy, 12-13 July 01
4. GIANT Workshop (AGS'01), St. Petersburg, Russia, 17 - 21 July 01

## 13. ADMINISTRATIVE ARRANGEMENTS FOR 2000 - 2002

### 13.1 Appointment of Chairman for 2000 - 2002

Drew Clarke said he was unable to continue and would not be seeking another term as the Chairman primarily because the alteration to the SCAR Constitution has placed a limit on the number of years a person can remain a Chief Officer. Both Mrs Thomson and Mr Manning thanked Mr Clarke for his outstanding contribution as the Chairman in the past 8 years. These sentiments were echoed by all members. Mrs Thomson proposed Mr Manning as the Chairman for the next two years, this was seconded by Mr Alexander Yuskevich from Russia. Mr Manning accepted and stated that he was very pleased to be working with the group.

## 14. DEVELOPMENT OF FUNDING APPLICATIONS - SCAR AND NON-SCAR SOURCES

Members discussed which projects in both the GIANT and GI Programs should be funded. Some time was spent discussing what funding was required. In the end 8 funding applications were developed for 6 WG projects.

Funding applications for both 2001 and 2002 were developed for the following:

Project / Meeting Name	Requested 2001	Requested 2002
Physical Geodesy Project	10 000	10 000
Antarctic Geodetic Symposium 2001	13 000	
Topographic Database (ADD) Project	10 000	
SCAR Spatial Data Model		10 000
Geographic Information Workshop	10 000	
Place Names (CGA) Project	2 000	2 000
<b>Total</b>	<b>45 000</b>	<b>22 000</b>

## 15. WORKING GROUP RESPONSE TO THE SCAR REVIEW

- Support in general the Review recommendations – in particular the SCAR office and delegates involvement.
- Operating Group meeting has to move into an Antarctic Science Conference – support the split between
- Language issue is important. WG-GGI supports Recommendation 13 - that SCAR consider the use of languages other than English during SCAR meetings.

### Reservations:

- VP / Committee Structure is too large
- Communications – integrate and should be a single function
- don't change all the WG / GoS

## **16. WORKING GROUP REPORT TO SCAR**

The meeting agreed that the outgoing Chief Officer would present the WG-GGI report to the full SCAR meeting next week. Appendix J is the report of the WG-GGI to XXVI SCAR.

## **17. DRAFTING OF FINAL REPORT TO SCAR**

The outgoing CO, new CO, EO and GI Program Coordinator spent some time on Friday afternoon going over the funding applications and the WG report to the SCAR delegates meeting next week.

### ***17.1 Formal meeting closure***

The outgoing Chief Officer thanked all members for their participation in what was a very productive meeting. He said that he has enjoyed his time as Chief Officer, particularly as members have been very professional, committed to their work and very easy to work with. Mr Clarke closed the meeting at 1200 noon on Friday 14 July 2000.

Mr Manning once again wanted to acknowledge the tremendous contribution Mr Clarke has made to the WG over the past 8 years and would like to have him contribute in a less formal capacity from time to time. Mr Clarke said that he would like to do this.

Prof E Dongchen invited members to attend the XXVII SCAR meeting probably in Shanghai, China in 2002.

## LIST OF DOCUMENTS AVAILABLE FROM THE XXVI SCAR MEETING

### 1. Program Reports 1998 - 2000

GIANT

### 2. Project Reports 1998 - 2000

Antarctic Digital Database

Permanent Geodetic Observatories

Composite Gazetteer of Antarctica

GPS Epoch Campaigns

Map and Data Standards

Physical Geodesy

Antarctic Geographic Data Integration

GLONASS Evaluation

Summary & Recommendations from KGIS Workshop

Differential GPS Base Stations

Map Catalogue

Remote Geodetic Observatories

Information Access

### 3. Background papers

Internet GeoStar

Proposed National Geodetic Database

GeoStar & GIS of Antarctica

Consolidation of Antarctic Tide Gauge Information

Geodesy & Digital Cartography of Fildes Peninsula, KGI, Antarctica

On-line Geodetic Infrastructure Information

Autonomous GPS in the Transantarctic Mountains

ANTEC requests to SCAR Working Groups

A Unified Datum for the Antarctic Geodetic Infrastructure

GPS Navigation Applications in Antarctica

EGM96 & OSU91a in Antarctica

### 4. National Reports 1998-2000

Argentina

Japan

Australia

New Zealand

Chile

Poland

China

Russia

Finland

South Korea

Germany

UK

Italy

Uruguay

USA

### 5. Other reports to the meeting

RAMP

JCADM

IHO

ANTEC

BEDMAP

ISCGM (Global Map)

GLOCHANT

Cybercartographic Atlas of Antarctica

Antarctic Glaciology and Coastal Change Project - USGS

### 6. List of GGI members and observers - name, address, phone, fax, email and web

### 7. List of Acronyms

Glenn Johnstone

Rapporteur

24 July 2000

## SCAR WG-GGI MEMBERS CONTACT DETAILS XXVI SCAR, TOKYO, JAPAN

Name	Address	Email / Web Page
Ing Federico Mayer	Servicio de Hidrografia Naval Avenida Montes de Oca 2124 1271 BUENOS AIRES <b>ARGENTINA</b>  <b>Phone:</b> +54 11 43 02 24 11 <b>Fax:</b> +54 11 43 02 24 11	<a href="mailto:shn@rina.hidro.gov.ar">shn@rina.hidro.gov.ar</a> <a href="http://www.hidro.gov.ar">http://www.hidro.gov.ar</a>
Mr John Manning <b>CHIEF OFFICER</b>	Manager, Geodesy AUSLIG PO Box 2 BELCONNEN ACT 2616 <b>AUSTRALIA</b>  <b>Phone:</b> +61 2 6201 4352 <b>Fax:</b> +61 2 6201 4366	<a href="mailto:JohnManning@auslig.gov.au">JohnManning@auslig.gov.au</a> <a href="http://www.auslig.gov.au/">http://www.auslig.gov.au/</a>
Mr Henk Brolsma	Mapping Officer Australian Antarctic Division PO Box 361 Kingston, TASMANIA 7051 <b>AUSTRALIA</b>  <b>Phone:</b> +61 3 6232 3528 <b>Fax:</b> +61 3 6232 3351	<a href="mailto:henk.brolsma@antdiv.gov.au">henk.brolsma@antdiv.gov.au</a> <a href="http://www-aadc.antdiv.gov.au">http://www-aadc.antdiv.gov.au</a>
Prof Hugo Declair	Vrije Universiteit Brussel Geografisch Instituut Pleinlaan 2 B-1050 BRUSSELS <b>BELGIUM</b>  <b>Phone:</b> +32 2 629 3383 <b>Fax:</b> +32 2 629 3378	<a href="mailto:hdeclair@vub.ac.be">hdeclair@vub.ac.be</a> <a href="http://www.vub.ac.be">http://www.vub.ac.be</a>
Dr. Herbert Erwes	Conselho Nacional de Desenvolvimento Científico e Tecnológico - CNPq SEPN 509 A, sala 404 70 750-901 BRASILIA - DF <b>BRAZIL</b>  <b>Phone:</b> +55 61 348 9567 <b>Fax:</b> +55 61 348 9394	<a href="mailto:pacileon@usp.br">pacileon@usp.br</a> <a href="http://www.cnpq.br/">http://www.cnpq.br/</a>
Prof Victor Villanueva- Lopez	Instituto Antártico Chileno (INACH) Sede Punta Arenas Romula Correa No. 375 esq. Av. Espana Punta Arenas <b>CHILE</b>  <b>Phone:</b> <b>Fax:</b> +56 61 211 667	<a href="mailto:victorvillanuevalopez@latinmail.com">victorvillanuevalopez@latinmail.com</a> <a href="http://www.inach.cl">http://www.inach.cl</a>
Prof E Dongchen	Chinese Antarctic Centre of Surveying and Mapping Wuhan Technical University of S&M 129 Luoyu Road WUHAN 430079 <b>PEOPLES REPUBLIC OF CHINA</b>  <b>Phone:</b> +86 27 8788 5134 <b>Fax:</b> +86 27 8788 4185	<a href="mailto:qhwang@wtusm.edu.cn">qhwang@wtusm.edu.cn</a> <a href="http://www.wtusm.edu.cn/">http://www.wtusm.edu.cn/</a>

Capt Ulises Iñiguez Carrión	Armada del Ecuador Instituto Oceanográfico (INOCAR) Avenida 25 de Julio - Base Naval Sur Via Puerto Marítimo PO Box 5940 GUAYAQUIL <b>ECUADOR</b>  <b>Phone:</b> +593 4 484 723 <b>Fax:</b> +593 4 485 166	<a href="mailto:inocar@inocar.mil.ec">inocar@inocar.mil.ec</a> <a href="http://www.inocar.mil.ec">http://www.inocar.mil.ec</a>
Jaakko Makinen	Finnish Geodetic Institute Geodeetinrinne 2 PO Box 15 FIN-02431 MASALA <b>FINLAND</b>  <b>Phone:</b> +358 9 2955 5317 <b>Fax:</b> +358 9 2955 5200	<a href="mailto:Jaakko.Makinen@fgi.fi">Jaakko.Makinen@fgi.fi</a> <a href="http://www.fgi.fi">http://www.fgi.fi</a>
Mr Michel Le Pape	Chef du Service de Géodésie et Nivellement Institut Géographique National 2/4 Avenue Pasteur 94 165 SAINT-MANDÉ <b>FRANCE</b>  <b>Phone:</b> +33 1 43 98 83 31 <b>Fax:</b> +33 1 43 98 84 50	<a href="mailto:Michel.Le-Pape@ign.fr">Michel.Le-Pape@ign.fr</a> <a href="http://www.ign.fr">http://www.ign.fr</a>
Dr Jörn Sievers	Bundesamt für Kartographie und Geodäsie Richard-Strauss-Allee 11, FRANKFURT am Main DE-60 598 <b>GERMANY</b>  <b>Phone:</b> +49 69 63 33 313 <b>Fax:</b> +49 69 63 33 441 or +49 69 631 49 05 21 (on-line to PC)	<a href="mailto:sievers@ifag.de">sievers@ifag.de</a> <a href="http://www.ifag.de">http://www.ifag.de</a>
Shri D.P.Issar	Director, Geodetic & Research Branch Survey of India Karanpur PO Box No. 77 DEHRADUN 248001 (UP) <b>INDIA</b>  <b>Phone:</b> +91 135 654 528 <b>Fax:</b> +91 135 747 623	<a href="mailto:naithani@vsnl.com">naithani@vsnl.com</a> (temporary)
Prof Roberto Cervellati	Progetto Antartide ENEA CR - Casaccia Post Office Box 2400 00100 ROME AD <b>ITALY</b>  <b>Phone:</b> +39 06 3048 4816 <b>Fax:</b> +39 06 3048 4893	<a href="mailto:roberto.cervellati@casaccia.enea.it">roberto.cervellati@casaccia.enea.it</a> <a href="http://www.pnra.it">http://www.pnra.it</a>
Mr Akira Yaguchi	Planning Department Geographical Survey Institute (GSI) Kitasato 1, Tsukuba-shi Ibaraki 305-0811 <b>JAPAN</b>  <b>Phone:</b> +81 298 64 4514 <b>Fax:</b> +81 298 64 8087	<a href="mailto:a-yagu@gsi-mc.go.jp">a-yagu@gsi-mc.go.jp</a> <a href="http://www.gsi-mc.go.jp">http://www.gsi-mc.go.jp</a>

Dr Moon Young Choe	Polar Sciences Laboratory Korean Ocean Research & Development Institute (KORDI) Ansan, PO Box 29 SEOUL 425-600 <b>REPUBLIC OF KOREA</b>  <b>Phone:</b> +82 31 400 6414 <b>Fax:</b> +82 31 408 5825	<a href="mailto:mychoe@kordi.re.kr">mychoe@kordi.re.kr</a> <a href="http://www.kordi.re.kr">http://www.kordi.re.kr</a>
Mr Tony Bevin	Surveyor-General Land Information New Zealand Private Box 5501 WELLINGTON <b>NEW ZEALAND</b>  <b>Phone:</b> +64 4 498 3507 <b>Fax:</b> +64 4 460 0575	<a href="mailto:tbevin@linz.govt.nz">tbevin@linz.govt.nz</a> <a href="http://www.linz.govt.nz">http://www.linz.govt.nz</a>
Mr Trond Eiken	Institute of Physical Geography University of Oslo PO Box 1042 BLINDERN N-0316 OSLO <b>NORWAY</b>  <b>Phone:</b> +47 22 85 7913 <b>Fax:</b> +47 22 85 7230	<a href="mailto:trond.eiken@geografi.uio.no">trond.eiken@geografi.uio.no</a> <a href="http://www.geografi.uio.no">http://www.geografi.uio.no</a>
Dr Jan Cisak	Instytut Geodezji i Kartografii ul Jasna 2/4 00-950 WARSZAWA <b>POLAND</b>  <b>Phone:</b> +48 22 828 0269 x121 <b>Fax:</b> +48 22 827 0328	<a href="mailto:astro@igik.edu.pl">astro@igik.edu.pl</a> <a href="http://www.igik.edu.pl">http://www.igik.edu.pl</a>
Dr Alexander Yuskevitch	State Aerogeodetic Enterprise - AEROGEODEZIJA 6 Bukharestskaja Street St. Petersburg 192102 <b>RUSSIA</b>  <b>Phone:</b> +7 812 166 49 24 <b>Fax:</b> +7 812 166 56 41	<a href="mailto:aerogeodezia@actor.ru">aerogeodezia@actor.ru</a>
Mr Richard Wonnacott	Chief Directorate Surveys & Mapping Department of Land Affairs Private Bag X10 MOWBRAY 7705 <b>SOUTH AFRICA</b>  <b>Phone:</b> +27 21 685 4070 <b>Fax:</b> +27 21 689 1351	<a href="mailto:rwonnacott@sli.wcape.gov.za">rwonnacott@sli.wcape.gov.za</a> <a href="http://w3sli.wcape.gov.za">http://w3sli.wcape.gov.za</a>
Prof Lars Sjöberg	Royal Institute of Technology Department of Geodesy and Photogrammetry SE-100 44 STOCKHOLM <b>SWEDEN</b>  <b>Phone:</b> +46 8 790 7330 <b>Fax:</b> +46 8 790 7343	<a href="mailto:sjoberg@geomatics.kth.se">sjoberg@geomatics.kth.se</a> <a href="http://www.geomatics.kth.se">http://www.geomatics.kth.se</a>

Mrs Janet Thomson	Mapping & Geographic Information Centre British Antarctic Survey High Cross Madingley Road CAMBRIDGE CB3 0ET <b>UNITED KINGDOM</b>  <b>Phone:</b> +44 1223 221 424 <b>Fax:</b> +44 1223 362 616	<a href="mailto:jwth@bas.ac.uk">jwth@bas.ac.uk</a> <a href="http://www.antarctica.ac.uk">http://www.antarctica.ac.uk</a>
Mr Jerry L Mullins	National Mapping Division US Geological Survey National Center, Room 2D324 12201 Sunrise Valley Drive, MS 521 RESTON, Virginia 20192 <b>UNITED STATES</b>  <b>Phone:</b> +1 703 648 5144 <b>Fax:</b> +1 703 648 4165	<a href="mailto:jmullins@usgs.gov">jmullins@usgs.gov</a> <a href="http://www.usgs.gov">http://www.usgs.gov</a>
Lt. Col. Héctor Rovera	Servicio Geográfico Militar Av. 8 de Octubre 3255, CP 11600 MONTEVIDEO <b>URUGUAY</b>  <b>Phone:</b> +598 2 487 1810 <b>Fax:</b> +598 2 487 0868	<a href="mailto:sgm@iau.gub.uy">sgm@iau.gub.uy</a> <a href="http://www.iau.gub.uy/">http://www.iau.gub.uy/</a>

## Additional Members

Name	Address	Email / Web Page
Commodore John Leech	<b>International Hydrographic Organisation</b> 4, Quai Antoine 1er B.P. 445 - MC 98011 MONACO CEDEX <b>Principality of MONACO</b>  <b>Phone:</b> +377 93 10 81 00 <b>Fax:</b> +377 93 10 81 40	<a href="mailto:dir2@ihb.mc">dir2@ihb.mc</a> <a href="http://www.iho.shom.fr/">http://www.iho.shom.fr/</a>
Prof Reinhard Dietrich	<b>International Association for Geodesy</b> Institut für Planetare Geodätie Technische Universität Dresden DE-01062 <b>GERMANY</b>  <b>Phone:</b> +49 351 463 4652 <b>Fax:</b> +49 351 463 7063	<a href="mailto:dietch@ipg.geo.tu-dresden.de">dietch@ipg.geo.tu-dresden.de</a> <a href="http://www.gfz.ku.dk/~iag/">http://www.gfz.ku.dk/~iag/</a>
Mr Larry Hothem	<b>International Federation of Surveyors</b> National Mapping Division US Geological Survey National Center, Room 2D312 12201 Sunrise Valley Drive, MS 521 RESTON, Virginia 20192 <b>UNITED STATES</b>  <b>Phone:</b> +1 703 648 4663 <b>Fax:</b> +1 703 648 4165	<a href="mailto:lhothem@usgs.gov">lhothem@usgs.gov</a> <a href="http://www.im.se/fig5/">http://www.im.se/fig5/</a>



Dr Hans Werner Schenke	<b>General Bathymetric Chart of the Ocean (GEBCO)</b> Alfred Wegener Institute for Polar & Marine Research PO Box 120161 D-27515 Bremerhaven <b>GERMANY</b>  <b>Phone:</b> +49 471 4831 1222 <b>Fax:</b> +49 471 4831 1149	<a href="mailto:schenke@AWI-Bremerhaven.de">schenke@AWI-Bremerhaven.de</a> <a href="http://www.nbi.ac.uk/bodc/gebco.html">http://www.nbi.ac.uk/bodc/gebco.html</a>
Mr Jack Sayers	<b>Council of Managers of National Antarctic Programs (COMNAP Secretary)</b> GPO Box 824 Hobart, TASMANIA 7001 <b>AUSTRALIA</b>  <b>Phone:</b> +61 3 6233 5498 <b>Fax:</b> +61 3 6233 5497	<a href="mailto:jsayers@comnap.aq">jsayers@comnap.aq</a> <a href="http://www.comnap.aq/">http://www.comnap.aq/</a>
Mr Mark Thorley	<b>Joint Committee on Antarctic Data Management (Chief Officer)</b> British Antarctic Survey High Cross Madingley Road CAMBRIDGE CB3 0ET <b>UNITED KINGDOM</b>  <b>Phone:</b> +44 1223 221 594 <b>Fax:</b> +44 1223 362 616	<a href="mailto:M.Thorley@bas.ac.uk">M.Thorley@bas.ac.uk</a> <a href="http://www.icadm.scar.org/">http://www.icadm.scar.org/</a>

## Observers

Prof Chiara Ramorino	Progetto Antartide ENEA CR - Casaccia Post Office Box 2400 00100 ROME AD <b>ITALY</b>  <b>Phone:</b> +39 06 3048 3130 <b>Fax:</b> +39 06 3048 4893	<a href="mailto:antar@casaccia.enea.it">antar@casaccia.enea.it</a> <a href="http://www.pnra.it">http://www.pnra.it</a>
Prof Alessandro Capra	Department Distart University of Bologna Viale Risorgimento 2 40136 - BOLOGNA <b>ITALY</b>  <b>Phone:</b> +39 051 209 3101 (-04) <b>Fax:</b> +39 051 644 8073	<a href="mailto:alessandro.capra@mail.ing.unibo.it">alessandro.capra@mail.ing.unibo.it</a> <a href="http://www.unibo.it">http://www.unibo.it</a>
Mr Hiroshi Une	Secretariat of ISCGM Geographical Survey Institute (GSI) Ministry of Construction Kitasato-1 TSUKUBA-SHI IBARAKI-KEN, 305-0811 <b>JAPAN</b>  <b>Phone:</b> +81 298 64 6911 <b>Fax:</b> +81 298 64 6923	<a href="mailto:une@gsi-mc.go.jp">une@gsi-mc.go.jp</a> <a href="http://www1.gsi-mc.go.jp/iscgm-sec/">http://www1.gsi-mc.go.jp/iscgm-sec/</a>

Mr Hiromichi Tsuji	Geographical Survey Institute (GSI) Ministry of Construction Kitasato-1 TSUKUBA-SHI IBARAKI-KEN, 305-0811 <b>JAPAN</b>  <b>Phone:</b> +81 298 64 4515 <b>Fax:</b> +81 298 64 8087	<a href="mailto:tsuji@gsi-mc.go.jp">tsuji@gsi-mc.go.jp</a> <a href="http://www.gsi-mc.go.jp/">http://www.gsi-mc.go.jp/</a>
Dr Kazou Shibuya	Centre for Antarctic Environmental Monitoring National Institute of Polar Research 9-10 Kaga 1-chome Itabashi-ku Tokyo 173-8515 <b>JAPAN</b>  <b>Phone:</b> +81 3 3962 4712 <b>Fax:</b> +81 3 3962 2529	<a href="mailto:shibuya@nipr.ac.jp">shibuya@nipr.ac.jp</a> <a href="http://www.nipr.ac.jp">http://www.nipr.ac.jp</a>
Prof Yoshio Yoshida	Faculty of Geo-environmental Science Rissho University 1700 Magechi, Kumagaya-shi Saitama 365-0194 <b>JAPAN</b>  <b>Phone:</b> <b>Fax:</b>	<a href="mailto:yyoshida@ris.ac.jp">yyoshida@ris.ac.jp</a> <a href="http://www.ris.ac.jp">http://www.ris.ac.jp</a>
Dr Vladimir Berk	Director of Cartgeocentre 26, Onezhskaya Str. Moscow 125413 <b>RUSSIA</b>  <b>Phone:</b> +7 095 456 95 38 <b>Fax:</b> +7 095 124 35 35	
Prof. Jeronimo Lopez	Department Geologia Facultad de Ciencias Universidad Autonoma de Madrid 28049 Madrid <b>SPAIN</b>  <b>Phone:</b> +34 91 397 4513 <b>Fax:</b> +34 91 397 4800	<a href="mailto:jeronimo.lopez@uam.es">jeronimo.lopez@uam.es</a>
Mr Glenn Johnstone <b>Executive Officer</b>	Director, SDI International AUSLIG PO Box 2 BELCONNEN ACT 2616 <b>AUSTRALIA</b>  <b>Phone:</b> +61 2 6201 4393 <b>Fax:</b> +61 2 6201 4366	<a href="mailto:GlennJohnstone@auslig.gov.au">GlennJohnstone@auslig.gov.au</a> <a href="http://www.auslig.gov.au/">http://www.auslig.gov.au/</a>

## ACRONYMS USED BY THE SCAR WORKING GROUP ON GEODESY AND GEOGRAPHIC INFORMATION

ADD	Antarctic Digital Database
ADGRAV	Antarctic Digital Gravity project
ADMAP	Antarctic Digital Magnetic Anomalies Project
AGDI	Antarctic Geographic Data Integration project
AGS	Antarctic Geodesy Symposium
ANTEC	SCAR Group of Specialists on Antarctic Neotectonics
BAS	British Antarctic Survey
BEDMAP	Ice Bed Elevation Mapping project – British Antarctic Survey
CGA	Composite Gazetteer of Antarctica
CHAMP	Challenging Mini-satellite Payload
COMNAP	Council of Managers of National Antarctic Program
DCDB	Data Center for Digital Bathymetry
DGPS	Differential Global Positioning System
DEM	Digital Elevation Model
DIF	Data Interchange Format
DORIS	Doppler Orbitography Information System
EGM96	Earth Geopotential Model 1996
FIG	International Federation of Surveyors
GEBCO	General Bathymetric Chart of the Ocean
GIANT	Geodetic Infrastructure in Antarctica
GIS	Geographic Information System
GLOCHANT	SCAR Group of Specialists on Global Change and the Environment
GLONASS	Global Navigation Satellite System
GOSEAC	SCAR Group of Specialists on Environmental and Conservation Affairs
GPS	Global Positioning System
GRACE	Gravity Recovery And Climate Experiment mission
GRS	Geodetic Reference System
GSDI	Global Spatial Data Infrastructure
IAG	International Association of Geodesy
ICESat	Ice, Cloud and Land Elevation Satellite
IERS	International Earth Rotation Service
IGeS	International Geoid Service
IGEX	International GLONASS Experiment
IGS	International GPS Service
IHO	International Hydrographic Organisation
IOC	International Oceanographic Commission
ISCGM	International Steering Committee for Global Mapping
ISO TC211	International Standards Organisation - Technical Committee 211
ITRF	International Terrestrial Reference Frame
IUGG	International Union of Geodesy and Geophysics
JCADM	Joint Committee on Antarctic Data Management
KGIS	King George Island GIS
NADC	National Antarctic Data Centre
PRARE	Precise Range and Rate Experiment
RAMP	RADARSAT Antarctic Mapping Program
SEG	SCAR Working Group on Solid Earth Geophysics
SPA	Specially Protected Area
SCAR	Scientific Committee on Antarctic Research
SSSI	Site of Special Scientific Interest
VLBI	Very Long Baseline Interferometry
WG-GGI	SCAR Working Group on Geodesy and Geographic Information

## STANDING RESOLUTIONS

### of the XXVI SCAR

#### WORKING GROUP ON GEODESY AND GEOGRAPHIC INFORMATION

Tokyo, Japan, 10 - 14 July 2000

##### Standards

1. That members will apply approved SCAR geodetic and geographic standards, specifications and guidelines in their national Antarctic programs (noting that the standards, specifications and guidelines in the 1994 Standing Resolutions will continue to apply until superseded).

##### Directories

2. That members will contribute all relevant information to SCAR directories of Antarctic geodetic and geographic information.

##### Information Exchange

3. That members will exchange and make freely available geodetic and geographic data, in accordance with the Antarctic Treaty. Two copies of maps, charts and other geographic publications shall be automatically distributed to the Antarctic Mapping Centres of the SCAR countries.

##### Control Points

4. That members will make ground control points, including photographic identifications, and tide gauge information available on the World Wide Web for use in other Antarctic mapping and research applications.

##### Geodetic Datum

5. That members adopt the International Terrestrial Reference Frame 2000 (ITRF2000) at an epoch of 2000.0 together with the GRS80 ellipsoid, as the geodetic datum for all Antarctic activities. This Antarctic ITRF2000 datum be known as the Antarctic Geodetic Datum 2000 (AntGD2000).

##### Representation

6. That whenever possible, national representation at Working Group meetings should include both geodetic and geographic information specialists.

##### Web site

7. That the Working Group maintain, through member contributions, a comprehensive web site outlining project activities, reports and contact details.

##### Global Programs

8. That the Working Group shall support all relevant global science programs through the contribution of Antarctic geodesy and geographic information, including the Global Mapping project and the International Earth Rotation Service.

## RECOMMENDATIONS TO XXVI SCAR

### WORKING GROUP ON GEODESY AND GEOGRAPHIC INFORMATION

#### 1. Geodetic and Geographic Information

*Noting* the Antarctic Treaty Article III (1c) requirements regarding data exchange,

*Recognising* that the information products produced by the SCAR Working Group on Geodesy and Geographic Information are all derived from the work of national committees and operators the Working Group *recommends* that:

SCAR *recommends* that National Committees and operators provide continuing access to all SCAR members of fundamental data including:

- geodetic observations and databases;
- geodetic control point and tide gauge records;
- topographic and bathymetric data; and
- place names data.

#### 2. Airborne Gravity Data for Geoid Computation

*Noting* that:

- a determination of high resolution geoid in Antarctica benefits:
  - research of ice density of the Antarctic ice sheet;
  - determination of surface elevation relative to mean sea level; and
  - the calibration and validation of satellite missions;
- there is a major gap in gravity data required for the computation of a high resolution geoid in Antarctica

*Considering*:

- the current lack of gravity data;
- that it is necessary to acquire gravity data at close intervals, optimally spaced between 10 and 50 km;
- that new satellite gravity missions will leave a gap from 82 to 90 degrees south;
- that airborne based gravity is considered the most cost effective and reliable method for collecting data

The Working Group *recommends* that:

SCAR *recommends* National Committees and National operators, SCAR Working Groups and Groups of Specialists, directly or through their national Antarctic scientific authorities

1. *support* a scientific programme of airborne gravity to cover gaps in Antarctica gravity data and
2. *encourage* all researchers to coordinate their efforts in Antarctic gravity data acquisition in, particularly airborne gravity data, and to provide data to the SCAR Working Group on Geodesy and Geographic Information project on Physical Geodesy.