

 	WP	14
	Agenda Item:	5.2.3
XXXII SCAR Delegates' Meeting	Person Responsible:	Alessandro Capra
Portland, USA, 23-25 July 2012		

SCAR Standing Scientific Group on GeoSciences (SSG-GS)

Report to the Delegates

Executive Summary

Title: SCAR Standing Scientific Group on GeoSciences (SSG-GS), Report to the Delegates, XXXII SCAR, July 2012

Authors: A.Capra, P.O'Brien, M.Hambrey

Relevant URLs or references to other reports:

<http://www.scar.org/publications/bulletins/Bulletin180.pdf>

<http://www.scar.org/publications/bulletins/Bulletin181.pdf>

Introduction/ Background:

Highlights, Progress and Plans of SSG-GS, were outlined at the SCAR Executive Committee (EXCOM) Meeting, Edinburgh, UK, 18-19th July 2011, by Prof. A.Capra, Chief Officer for SSG-GS.

Information on SERCE PPG was even reported on SCAR Bulletin 181- SCAR Annual report 2011.

A very important event was the XI International Symposium on Antarctic Earth Sciences held in Edinburgh, Scotland, July 2011. The ISAES XI meeting in Edinburgh was attended by 502 delegates, of which 111 were students, demonstrating the vitality of Earth Sciences and the enthusiasm of early career scientists. A total of 563 abstracts were submitted (264 oral, 299 poster). There were 16 plenary talks by leading Antarctic geoscientists, with the remainder of the symposium delivered in 22 parallel sessions. In addition, there were 10 workshops related to ACE, Expert Groups and Action Groups, whilst APECS held an effective mentoring session.

The SSG GS welcomed the offer of Dr. NC Pant and Prof. Ravindra to host ISAES XII in Goa, India in July 2015 and unanimously accepted this proposal.

The GPS for Weather and Space Weather Forecasting (GWSWF) Action Group is discussing its Terms of Reference and will be jointly sponsored by GS and PS. GWSWF became an EG named GRAPE GNSS Research and Application for Polar Environment. SSG-PS interactions with SERCE/POLENET were explored.

There was a relevant discussion on Antarctica geo-heritage and the results are synthesized in a proposal of a new AG.

During CEP meeting in Hobart came out important issues even for GS. See the following report.

Two projects principally coming out from GS will be presented as SRP proposals: PAIS and SERCE.

We also present a report on GS product as Antarctic Seismic Data Library. Then AG and EG and even joint SSGs report are presented.

We also provide brief reports on Public Outreach and on Publications.

SSG *was informed* of the problems that Swedish Antarctic research are facing due to the Oden icebreaker not being permitted for use in the Southern Ocean. The delegates decide to express support to Swedish scientific community, based on acclamated scientific relevance of research results obtained through ODENs utilization. The CO and the Secretary will send a document to SCAR Excom.

Budget Implications: Estimated SCAR funding needed by SSG/GS for the next 2 years (in USD): \$ 20k in 2013 and \$ 25k in 2014. (Pending approval of the finance committee)

Election of Chief Officer, Deputy Chief Officer and Secretary

Nominees:

Chief Officer: Prof. William Berry Lyons, Ohio State University, USA

Nominated by: Prof. Terry Wilson, Ohio State University, USA

Seconded by: Prof. Peter Barrett, Victoria University of Wellington, NZ

Deputy Chief Officer: Prof. Jesús Galindo-Zaldívar, Universidad de Granada, Spain

Nominated by: Prof. Jerónimo López-Martínez, Universidad Autonoma de Madrid, Spain

Seconded by: Prof. Dra. Marta Ghidella, Instituto Antartico Argentino , Argentina

Secretary: Dr Naresh C. Pant, University of Delhi, India

Nominated by: Prof. Rasik Ravindra, National Centre for Antarctic & Ocean, Goa, India

Seconded by: Prof. Michael Hambrey, Aberystwyth University, Wales, UK

These nomination were approved unanimously

Report to SCAR Geoscience SSG on Discussions at ATCM XXV (CEP)

Phil O'Brien attended the CEP meeting in Hobart from the 10-15 June as part of the SCAR delegation. Important issues for the GSSG were raised in the following areas:

Marine Acoustics

SCATS presented the latest review of the science around marine acoustics and the environment. It focussed on peer-reviewed literature published since the last workshop in 2006. There was some discussion on what was left out of the document but it was generally well received. The CEP requested regular updates. SCAR agreed to provide updates but preferred to do so when important developments were published.

Geothermal areas

Several nations (US and NZ) are working on codes of conduct and management regimes for geothermal areas (WP 38 – Mt Erebus ice caves). They have asked for SCAR input.

Recommendation: GSSG should find someone to provide geological input to the work.

Conservation, Human footprint and wilderness values

Several papers (WP 50, IP60, IP52, IP49) discussed issues and guidelines relating to defining wilderness values in the Antarctic and ways of measuring the human footprint. IP 35 discussed the need for an evolving plan for Antarctic conservation. A number of countries and NGOs expressed an interest in increasing the number and area of "Inviolable" areas in the Antarctic.

Recommendation: The GSSG needs to start working on the geological aspects of human footprint, wilderness and conservation. I hope the paper on Geoheritage starts this process. To not engage in the discussion is to risk having geoscience perspectives and interests left out of new measures which could see areas closed to research access without regard for their value to our science.

I recommend that the GSSG start an Action Group to develop a paper for the CEP on Geoheritage values, conservation and management for presentation to the CEP and to engage with subgroups of the CEP working on new measures dealing with human footprint, wilderness and conservation.

The geoscience community has a lot to offer in understanding surface processes and landscape vulnerability and spatial issues with defining areas for special management.

Tsunami Hazards to Antarctic operations

SCAR supported CONMAP in presenting a joint paper to the Operations and Legal Committee of the Antarctic Treaty on the risks posed to Antarctic programs by tsunamis after a request from the previous ATS meeting.

The paper identified a credible threat, particularly to high risk field operations in the coastal zone.

The Treaty has asked CONMAP and SCAR to continue the work. Phil O'Brien volunteers to continue his role in this one but would appreciate any additional help.

Antarctic Specially Protected Area in the Størness Peninsula

Approval of the ASPA proposed for the Størness Peninsula protecting the rare minerals has been held over while interested parties discuss details of the ASPA boundaries and the management plan.

Conclusion: SCAR's role at the Treaty meeting was high profile and greatly appreciated. It is important GSSG engages with the issues raised to maintain science-based advice in the ATS deliberations.

For further information contact Phil O'Brien, phil.obrien.ant@gmail.com

Antarctic Seismic Data Library System for Cooperative Research (SDLS)

Alan Cooper (USA)

1. Rationale for the Group

The Antarctic Seismic Data Library System for Cooperative Research (SDLS) was created in April 1991 under the auspices of the Scientific Committee on Antarctic Research (SCAR) to provide open access to all multichannel seismic reflection (MCS) data collected south of 60° S.

The SDLS functions under the mandates of the Antarctic Treaty (ATCM XVI-12), and as such, all institutions that collect MCS data in Antarctica must submit their data to the SDLS for use in cooperative research projects. MCS data are submitted to the SDLS within 4 years of collection and remain in the library under SDLS guidelines until 8 years after collection. Thereafter, the data are available for unrestricted use, although recognition of the data collector is requested. These data may be obtained from a World Data Centre or, more recently, directly from the SDLS website.

The MCS data in the SDLS may be accessed at the library branches worldwide. The 14 library branches are situated in Australia, Brazil, France, Germany (2), Italy, Japan, Korea, Norway, Russia, Spain, UK and USA (2). MCS data are supplied to SDLS branches in a 'final stack' version in digital SEG-Y format on CD/DVD-ROM where they can be viewed and studied, but may not be copied without permission of the data collector. The SDLS is a research facility and not a data bank; MCS data in the SDLS are for use in cooperative research projects, and may not be used for commercial purposes.

The SDLS has also created a website (<http://www.scar-sdls.org>) and is populating it with the unrestricted MCS data in the library for viewing interactively on-line, and, after appropriate registration, for downloading. The navigation data, in UKOOA format, for all seismic lines are also available for download.

2. Report on Progress

As of July 2011, of the 350,000 km of MCS seismic data recorded in the Antarctic in the last 35 years, 254,000 km (70%) have been submitted by the data collectors and are available at the SDLS library branches for researchers to consult. About 130,000 km of these data are also available directly from the website.

In the past year, an additional 6,200 km of seismic data from France and New Zealand have been submitted to the SDLS and are now in preparation for distribution to the SDLS branches. An NSF funded initiative to encourage the submission of Russian Legacy data has begun with positive results; 4,300 km of seismic data have already been submitted and 31,000 km of both vintage seismic data from the 1980's and more recent surveys are due to be submitted shortly. 2000 km of these data that are only available in paper form will be digitally scanned and submitted to the SDLS as digital images. Included in this project is the recovery of 10,000 km of vintage data that were originally submitted to the SDLS on microfilm. These data will also be digitally scanned and made available to the scientific community as digital images.

3. Future Plans

The preparation and distribution on DVD to the SDLS library branches of the seismic data in-house will continue. Currently work on data from Germany, France, Spain, New Zealand is in progress. The Legacy project will bring in about another 31,000 km of seismic data from Russia that will be processed and distributed on DVD. Additional unrestricted data will be loaded on the website to better facilitate access and availability to researchers.

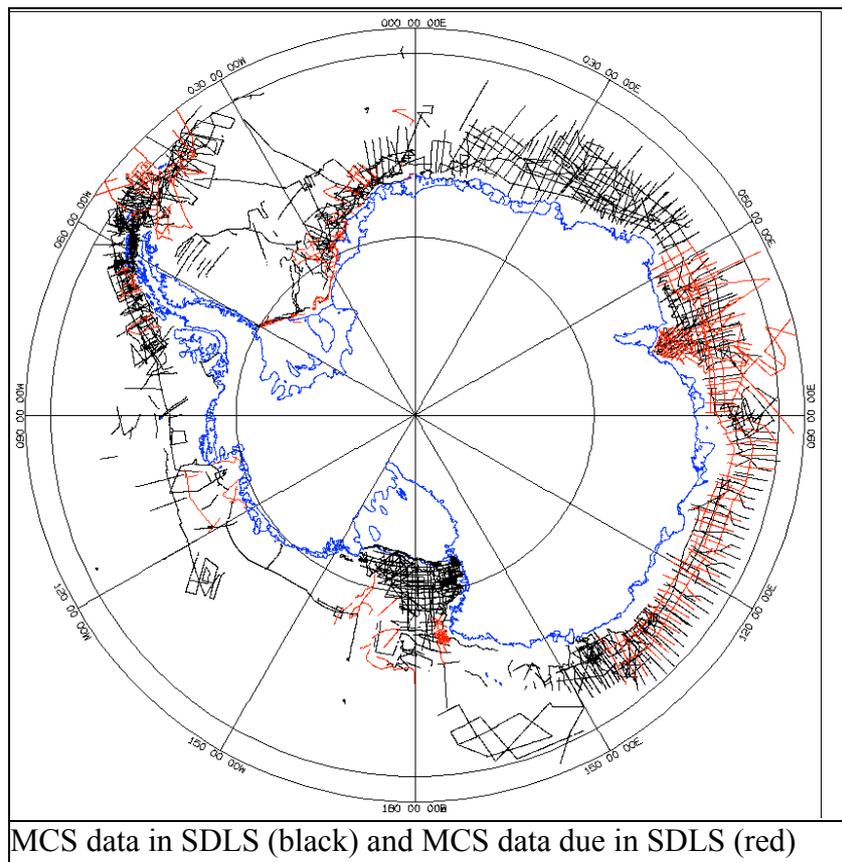
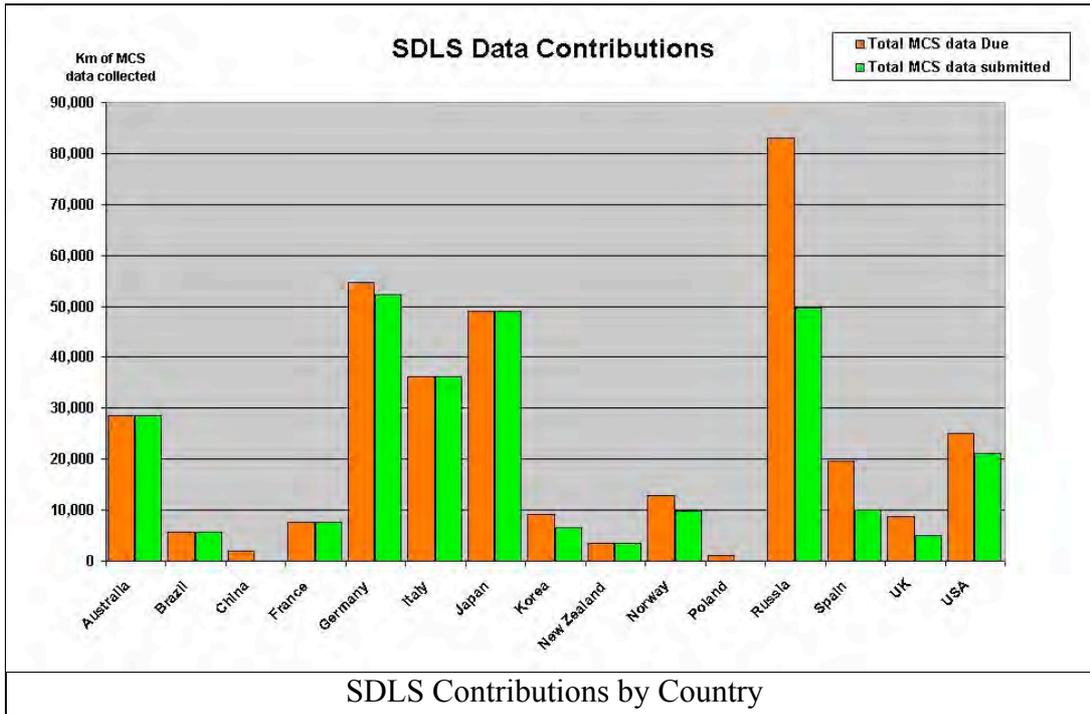
The website itself will be updated and further developed to remove the dependence on the SVG plug-in for the display of certain graphics, thus allowing access to the website from virtually any web browser. Ways of improving visibility and use to users will be investigated including a revised data viewer for both SEG-Y data and graphical (TIFF) images, better connectivity between the seismic and positional data, and web connections that allow the combining of spatial data from other sources with the seismic data. In this latter case, collaborations that have already been initiated with the GeoMapApp developers will be further pursued.

4. Budgetary implications

The SDLS does not receive funding from SCAR. Data submissions and distribution to the library branches are normally funded by the data collectors. The development and running costs of the website and the management and organisation of workshops are currently funded by NSF (USA) and PNRA (Italy) from specific research grants.

Country	Total MCS data collected to 2012 (km)	Total MCS data collected prior to 2008 (km)	MCS data in SDLS at 1st June 2012 (km)	MCS data in preparation at SDLS (km)	Total Data Submitted	Digital MCS data not yet submitted to SDLS (km)	% MCS data submitted to SDLS
Australia	28,652	28,652	28,652	0	28,652	0	100%
Brazil	5,578	5,578	5,578	0	5,578	0	100%
China	2,015	2,015	0	0	0	2,015	0%
France	7,706	7,706	4,900	2,806	7,706	0	100%
Germany	59,621	54,621	43,464	8,930	52,394	2,227	96%
Italy	36,168	36,168	36,168	0	36,168	0	100%
Japan	48,980	48,980	48,980	0	48,980	0	100%
Korea	9,207	9,207	6,577	0	6,577	2,630	71%
New Zealand	3,400	3,400	0	3,400	3,400	0	100%
Norway	12,771	12,771	8,924	910	9,834	2,937	77%
Poland	1,100	1,100	0	0	0	1,100	0%
Russia	95,100	83,000	45,350	4,352	49,702	33,298	60%
Spain	19,675	19,675	0	10,123	10,123	9,552	51%
UK	8,674	8,674	5,034	0	5,034	3,640	58%
USA	25,154	25,154	20,584	500	21,084	4,070	84%
Totals	363,801	346,701	254,211	31,021	285,232	61,469	82%

MCS data recorded in Antarctica in SDLS by country.



SSG-GS Scientific Research Programme Planning Group and SRP proposed - PAIS and SERCE

New scientific research programs were presented in Portland, and they are documented in the final version of the report to the SCAR Delegates; in particular the programs SERCE and PAIS will be of direct relevance to SSG-GS, also as an effect of the cross-linkages activity.

Regarding the proposal to become Scientific Research program see at WP11 5.1.6 for SERCE and WP10 5.1.5 for PAIS.

A discussion on proposed SRPs has been undertaken during SSG GS business meeting.

The GS delegates strongly support the PAIS and SERCE proposals and they complimented the leaders of these potential new programmes for all the their hard work and commitment to embracing the wider community, and developing a strong outreach and educational programme.

Reports on the SSG-GS Action and Expert Groups

Seeps and Vents in Antarctica (SAVANT) - AG

Chairs: Phil O'Brien (AUS) Jodie Smith (AUS)

1. Rationale for the Group

The Seeps and Vents Action Group was established in 2008 to provide the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) with information on hydrothermal vents and cold seeps so their biota can be protected as Vulnerable Marine Ecosystems.

2. Report on Progress

The Action Group has been fairly inactive with retirement of the first coordinator and his replacement going on maternity leave, however, active vents are now being studied in the Antarctic and we have provided researchers with the CCAMLR notification forms.

3. Future Plans

Unless someone actively engaged in seeps and vent research wishes to expand the role of the group, the primary function should be monitoring activities and making sure researchers are aware of the need to notify CCAMLR of the locations of chemotrophic communities.

Assessment and recommendation of multibeam data acquisition for characterizing Antarctic Ice Sheet retreat - AG

Chairs: Phil Bart (USA) and O. Nitsche (USA)

1. Rationale for the group

A detailed post-LGM chronology of the Antarctic Ice Sheet (AIS) retreat is a necessary element of assessing the AIS's future stability. Multibeam bathymetry data have become increasingly valuable for identifying essential elements for establishing the ice sheet retreat history including paleo ice streams, imaging detailed glacial morphological features and their configuration on the continental shelf.

As more and more SCAR member countries deploy and use multibeam systems there is an increasing need to identify best acquisition practices as well as gaps in current data coverage to obtain critical information for the reconstruction of paleo ice flow in Antarctica.

This action group is preparing a document that will provide an overview of existing multibeam systems deployed in polar regions and current usage practices. Based on past experiences this action group will provide recommendations for usage and survey strategies that are likely to provide the best outcome with respect of reconstructing past ice flow.

2. Report on progress

The action group has met last November in Baton Rouge. During this meeting and follow-up conversations a draft report has been prepared.

3. Future plans

Circulate/Distribute report to colleagues from SCAR member countries for comments.
Submit final report to SCAR.

4. Budgetary implications

Potentially, some contributions for participation in the SCAR meeting in Portland.

Antarctic Digital Magnetic Anomaly Project (ADMAP) - EG

Chair :Marta Ghidela (ARG)

1. Rationale for the Group

The Antarctic Digital Magnetic Anomaly Project (ADMAP) aims to map Antarctica's magnetic anomaly field to aid in understanding geological processes. The initial compilation phase was completed when ADMAP produced the first magnetic anomaly of Antarctica in 2001. The digital database of magnetic anomaly observations of the Antarctic collected from the IGY 1957/58 through were 1999 transferred to the World Data Centers in 2009. ADMAP has also launched the next generation magnetic anomaly map of the Antarctic that is expected to be completed by 2013.

2. Recent progress

- The success of the ADMAP special session held during SCAR XXXI-OSC in Buenos Aires in July 2010 led to the proposal of a special issue in a peer-reviewed journal for the publication of the papers. The special issue for the ADMAP papers was arranged with Tectonophysics (Elsevier). The Tectonophysics volume is now a reality (in process) that attracted 22+ papers.
- We are still able to keep track of magnetic surveys completed and being planned (see figure with line coverage from Golynsky et al., 2012).
- The website has been updated with all data sets approved by the working group for public release and is being mirrored in Argentina and at other sites:
<http://www.dna.gov.ar/mararg/admap/>
<http://earthsciences.osu.edu/admap/>

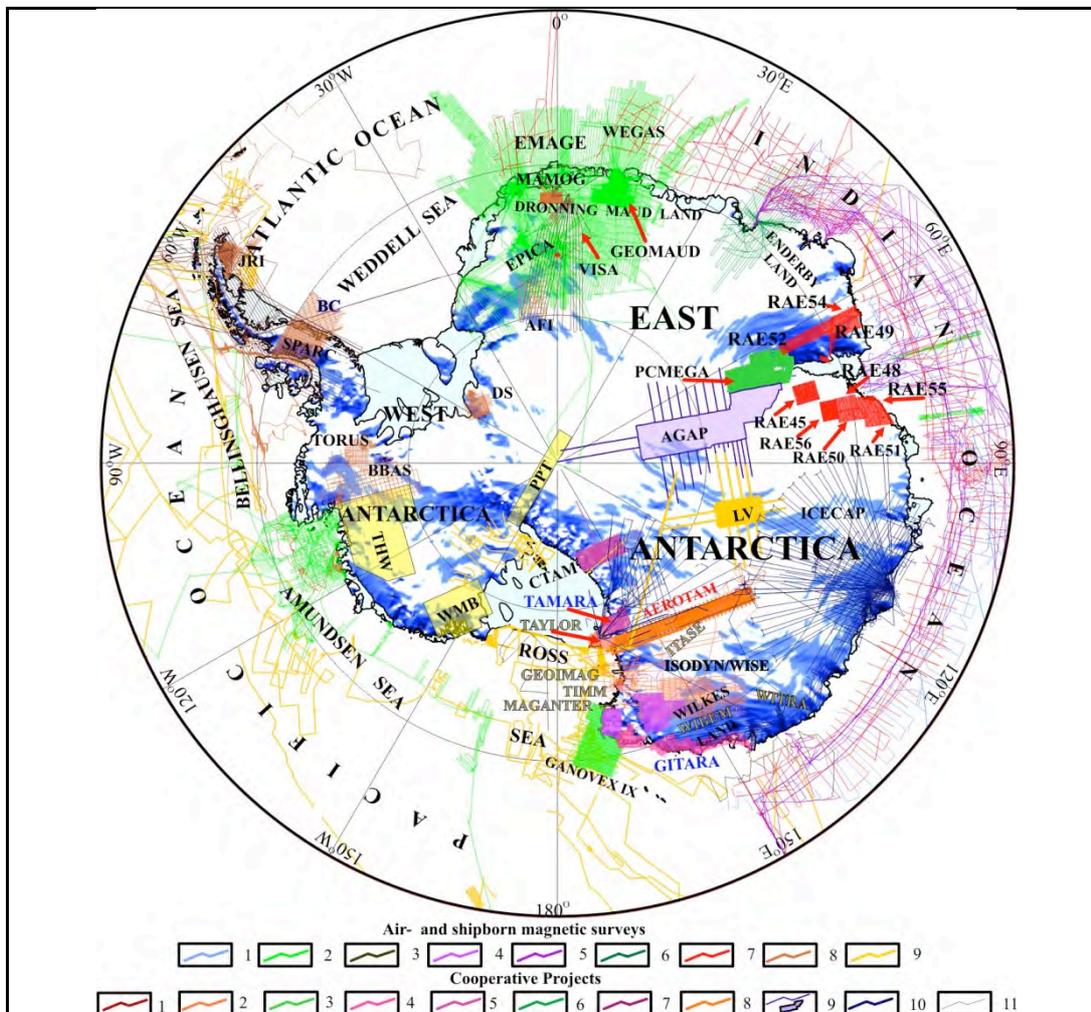
Problems

Lack of funding to:

1. Compile the next generation ADMAP map.
2. Acquire an ADMAP data manager.

3. Future Plans

Since the initial compilation, the amount of magnetic survey data has more than doubled. Thus, ADMAP is working to acquire the services of a database manager to monitor international magnetic surveying activities in the Antarctic and incorporate the new survey data into its database in accordance with the data transfer protocols that the international ADMAP working group has adopted. Figure below displays the updated line coverage from Golynsky et al., 2012.



Line coverage of recently acquired near surface magnetic surveys

Air and shipborne magnetic surveys carried out by national programs: 1 - Australia, 2 - Germany, 3 - France, 4 - Italy, 5 - Japan, 6 - Norway, 7 - Russia, 8 = UK, 9 - USA. Cooperative projects: 1 - UK/USA, 2 - ISODYN/WISE - UK/Italy, 3 - PCMEGA - Germany/Australia, 4 - GITARA - Germany/Italy, 5 - TAMARA and CTAM - USA/Germany, 6 - Germany/Japan, 7 - Norway/Russia, 8 - AEROTAM - USA/Italy, 9 - AGAP - USA/UK/Germany/Australia, 10 - ICECAP - USA/UK/Australia, 11 - ICEGRAV: DTU/Denmark, NGA/USA, University of Texas, University of Bergen/NPI/Norway, IAA/Argentina and BAS/UK. From Golynsky et al., 2012.

Golynsky, A., R. Bell, D. Blankenship, D. Damaske, F. Ferraccioli, C. Finn, D. Golynsky, S. Ivanov, W. Jokat, V. Masolov, S. Riedel, R. von Frese, D. Young, and the ADMAP Working Group. Air and shipborne magnetic surveys of the Antarctic into the 21st century. Tectonophysics, 2012 doi:10.1016/j.tecto.2012.02.017.

Appendices

Please visit <http://www.dna.gov.ar/mararg/admap/>
or <http://earthsciences.osu.edu/admap/>

SCAR Expert Group ANTPAS – Antarctic Permafrost, Soils and Periglacial Environments

Chairs: Guglielmin (Italy) and G. Vieira (Portugal)

1. Rationale for the group

Permafrost in the Antarctic is widespread in the ice-free areas and a key variable for ecosystems, hydrology and geomorphological dynamics. It was only in the last decade that it was possible to have a more accurate overview of the thermal state of permafrost and active layer dynamics in the Antarctic. This followed the installation of new GTN-P boreholes and active layer monitoring sites (CALM) within IPY projects ANTPAS and TSP. However, there is still a lot to be understood about Antarctic permafrost and active layer and mainly on their relationships to other environmental variables. Even in cold permafrost areas, extreme warm events can induce significant modifications in the active layer dynamics as has been shown in the McMurdo Dry Valleys. Other areas of the Antarctic show warm permafrost and several sites suggest that it is thawing fast due following climate change, such as the South Shetlands and Northwest Antarctic Peninsula region. An interdisciplinary approach is needed to fully unravel consequences of this changes in the highly sensitive Antarctic environments.

The Antarctic Permafrost, Soils and Periglacial Environment (ANTPAS) Expert Group aims at promoting international collaboration towards the development and consolidation of Antarctic permafrost research. Such is done through annual organization of workshops and conference sessions, dissemination of an annual newsletter on member activities and promotion of discussion of needs for Antarctic permafrost research. As such and following the IPY approach, ANTPAS promotes the main science guidelines for international cooperation on hot topics in permafrost science in key areas of the Antarctic. ANTPAS links with other SCAR bodies on advisory issues related to permafrost, as well as with other associations, such as the IPA.

2. Report on progress

ANTPAS is currently in a transition stage after the IPY, when more funding has been available for research and coordination. However, in 2011-12 several nationally-funded projects involving international collaboration of ANTPAS members have taken place. ANTPAS has been an essential gathering for developing the concepts and cooperation within these projects. A synthesis of these will be presented to members in the annual Newsletter in the XXXII SCAR Open Science Conference.

In the same event, ANTPAS will be organizing a workshop in the 14 July, aiming at planning future activities of ANTPAS, including the identification of leaders and objectives for the subgroups identified in the past meeting in Edinburgh: a) permafrost, b) soils, c) terrestrial ecosystems, d) geomorphology, e) paleoenvironments.

In 2010-11 ANTPAS activities also included:

- a) Preparation of the SCAR Open Science Conference session 19, on “Antarctic Permafrost, Periglacial and Ice-Free Environments” co-chaired by M. Guglielmin, G. Vieira and L. Zhao. This session will include 12 oral presentations and 34 posters.
- b) Preparation of the ANTPAS workshop to be held in Portland in the 14 July 2012.

- c) Final editing of the special issue of *Geomorphology*, issue 155-156 entitled "Advances on Permafrost and Periglacial Research in Antarctica", edited by M. Guglielmin, containing 12 papers of the XXXI SCAR Osc held on 3-6 August 2010.
- d) Participation in the IPA working group for the revision of the Global Terrestrial Network for Permafrost, by G. Vieira and M. Guglielmin, with the participation of M. Guglielmin in the Potsdam workshop at 10-11 November 2011
- e) Preparation of the 2011-12 ANTPAS Newsletter for distribution in Portland;
- f) Preparation of the new ANTPAS website.

3. Future plans

The meeting in Portland during the SCAR Conference will be of high importance to define the future of ANTPAS. The implementation of the sub-groups will aim at defining a vision for permafrost research in Antarctica after the major outcomes of the IPY. ANTPAS will also continue to promote annual workshops and sessions at the major SCAR meetings or IPA. The implementation of the twin IPA ANTPAS Interest group still needs to be done in 2011-12. A proposal will be discussed in Portland. ANTPAS aims at continuing to play a leading role in the reorganization of the Global Terrestrial Network for Permafrost.

ANTPAS will continue promoting multi-lateral collaboration in Antarctica, through identification of research needs, fostering contacts and supporting national or international applications when contributing to ANTPAS objectives.

Expert Group on International Bathymetric Chart of the Southern Ocean (IBCSO)

Chair: Hans Werner Shenke (GER)

With the engagement of a new Scientific Editor at the Alfred Wegener Institute (AWI) in September 2011, the work on the IBCSO project was restarted. This was made possible by funds from AWI and the IHO/IOC project General Bathymetric Chart of the Oceans (GEBCO).

Since then the work concentrated on acquiring additional bathymetric data and on homogenization of existing data in the IBCSO data base. The multibeam and single beam data sets were submitted by various institutions and collected by different research vessels equipped with divers systems, leading to a huge number of different data formats. Currently all the data submitted until March 2012 is homogenized and prepared to be used in gridding algorithms. However, data still contains blunders and outliers that will have to be dealt with.

In April 2012, a one week Work and Data Exchange Meeting was held at the AWI in Bremerhaven. The meeting aimed to get together bathymetrists from countries interested in contributing to IBCSO and to discuss gridding and cartographic issues as well as harvesting additional bathymetric data. The attendees came from Argentina, Australia, Chile, Italy, New Zealand, South Africa, Sweden, United Kingdom, United States, and Germany.

Amongst others, a road map was set up at the meeting to achieve the objective to finish IBCSO v1 in fall 2012. A data submission deadline on 15 June 2012 was determined within the working plan. Furthermore it was decided to increase the resolution of the IBCSO grid to 500 meters. Along with the cartographic layout the selection and placing of geographic names to be put on the IBCSO map version, was discussed. In agreement among participants the geographic names will be taken from internationally recognized Gazetteers, like the SCAR Composite Gazetteer on Antarctic Place Names and the GEBCO Gazetteer for Undersea Feature Names.

For the purpose of outreach and to re-establish contact with the scientific community a status poster was presented at the AGU Fall Meeting 2011. In July 2012, an oral presentation is going to be held

at the SCAR XXXII Open Science Conference. It is envisioned to also display a first view of the IBCSO v1 grid.

Joint PS and GS EG - ATHENA: Advancing Technologies and Environmental stewardship for subglacial exploration in Antarctica

Chair: J LWadham (GBR)

1. Rationale for the Group

Antarctic subglacial aquatic environments (SAE) have been documented for some time using remote sensing geophysical techniques, but only very recently have plans been devised and implemented to sample and study these environments directly. The long lead in times for the sampling of these lakes is largely related to the technological difficulty of penetrating the overlying ice sheet, but also reflects the cautious approach warranted by the pristine nature of the environments, and their almost completely unknown capacity to sustain viable ecosystems. SCAR (e.g. via SALE) has played a fundamental role in shaping the science priorities and international partnerships in the nascent field of subglacial aquatic research, but now there is an important need for a new path forward that focuses international exchange on the appropriate technology and methodologies required to carry out the science in an environmentally responsible way. The goal of ATHENA Expert Group is to lay the foundations for future SAE exploration via the development of rate limiting Technological and Environmental infrastructure. The aims of this Expert Group are as follows

- a. To establish the critical environmental and technological infrastructure for the future access, sampling and monitoring of Antarctic subglacial aquatic environments (SAE)
- b. To work with SCAR action groups, expert groups and research programmes to promote interdisciplinary science on Antarctic SAE.
- c. To provide an independent and international forum for the sharing of information and data during the run up to and execution of funded lake access drilling campaigns (e.g. US-WISSARD, UK-Lake Ellsworth and Russia-Lake Vostok).

2. Report on Progress

Report on aims:

Under **Objective 1**, the environmental and technological infrastructure has begun to be established for future SAE exploration, coordinated by this Expert Group which has maintained a presence in national campaigns via the actions of its members (e.g. Wadham on Steering Committee of the Lake Ellsworth Programme, Doran on the advisory body for the WISSARD project and Alekhina in the Vostok programme). Clean probes and lake entry technologies are being developed and there is good communication between leading groups.

The presence of the ATHENA Expert Group has undoubtedly enabled a dialogue between national groups to be continued following SALE, and has helped to maintain the exchange of ideas and information on clean technologies (e.g. during the entry into Lake Vostok, which led to a number of “reactive” type media activities by ATHENA and former SALE members), thus addressing **Objective 3. SCAR SSG Business Meeting SSGs LS/PS/GS Portland, USA, 15 & 20 July 2012**
 Person Responsible: J L Wadham, P Doran

This coordination of environmental and technological infrastructure via ATHENA has been aided by the following activities:

- a. **Project website:** A website for the ATHENA Expert Group was established (see <http://www.athena-scar.co.uk/>). This describes the full remit of the group, whilst also providing a central portal for Guidance/Code of Conduct/IEE/CEE documents related to the future sampling of sub-Antarctic aquatic ecosystems.
- b. **Meetings:** A summary of ATHENA meetings conducted to date can be found on the website, together with minutes of these meetings. In short, we have hosted 4 steering committee meetings.
- c. **Conference session/workshop:** the group submitted a session proposal to the SCAR-Open Science Conference in Portland, which was accepted. This session (*Advancing clean technologies for exploration of glacial aquatic ecosystems*, convenors: Wadham, Doran, Vincent) will take place in July 2012. It is being closely coordinated with an aligned session, with Warwick Vincent and Irina Alekhina of the ATHENA Steering Committee as convenors (*“Subglacial Aquatic Environments”*: Vincent, Alekhina, Bell). Both sessions have generated considerable interest in the form of abstract submissions, including representatives from major active subglacial lake drilling campaigns (WISSARD, Lake Ellsworth and Lake Vostok).

We aim to connect more fully with other SCAR groups in the near future (**Objective 2**), but are already doing so with the AG-CCR-SAE (Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments). Once the three funded lake access campaigns have been successfully delivered there will an opportunity to revise the Code of Conduct and ATHENA members will play a central role in this.

3. Future Plans

Two conferences sessions at the SCAR Open Science Conference in summer 2012

Steering Committee Meeting in July 2012 (this falls close to the end of the funding period)

We would like to publish a collection of papers from our session at the SCAR Open Science Conference. We are currently canvassing authors of abstracts to gauge interest in this effort.

Joint PS-GS Expert Group on GNSS Research and Application for Polar Environment and Weather and Space Weather Forecast (GRAPE/ WSWF)

Chair: Giorgiana De Franceschi (ITA)

1. Rationale for the Group

Higher exposure of GNSS based technology to solar perturbations, particularly in polar region, will require more extended investigations, both in variety of approaches and spatial coverage. Increased coverage in the Arctic and Antarctic will provide remote sensing tools to map the ionospheric total electron content (TEC) and precipitable water vapour (PWV) that will make it possible to assess the impact of solar disturbances on the newly attained precision positioning during the next solar maximum that is expected for 2013, and throughout the declining phase of the solar cycle. It may also help in improving short term weather forecasts and in remote sensing for climate change studies.

The International Polar Year (IPY) and International Heliophysical Year (IHY) initiatives left an important heritage in terms of data sharing, expertise exchange and increasing awareness of the current scientific capabilities. In particular, the GWSWF (GPS for Weather and Space Weather Forecasting) www.gwswf.scar.org, a joint SSG GS and PS Action Group, took advantage of the Interhemispheric Conjugacy Effects in Solar-Terrestrial and Aeronomy Research (ICESTAR) and the Polar Earth Observing Network (POLENET) experiences that lead to creation of working groups on specific themes such as the use of geodetic data to study space weather events.

Built on the AG GWSWF, the Expert Group GRAPE intend to continue to follow this route, intensifying the efforts to build and coordinate a robust network of collaborations in order to answer a variety of space weather related needs through ad hoc data sharing and model development.

GRAPE is based on the use of the classical GPS POLENET array and the growing coverage of modern GNSS systems, on the availability of advanced modelling and on the opportunity offered by the advancing solar cycle. The main objectives are:

1. Create and maintain distributed networks of specialized GPS/GNSS Ionospheric Scintillation and TEC Monitors particularly at high latitudes.
2. Identify and quantify mechanisms that cause scintillation and control interhemispheric differences, asymmetries and commonalities in scintillation occurrence and intensity as a result of the geospace environment conditions.
3. Develop ionospheric scintillation climatology, tracking and mitigation models to improve prediction capabilities of space weather.
4. Retrieve tropospheric PWV for input to weather forecast models and to develop regional PWV climatology for atmospheric sensing in remote areas.

2. Report on Progress

The II GWSWF meeting has been held at the Università di Modena e Reggio Emilia, Modena (Italy) 11-12 April 2011, to discuss the objectives in the perspective of the next SCAR OSC and Business Meetings in Portland (USA), 2012. The meeting was attended by representatives from Brazil, Canada, UK, USA, Slovenia and Italy. The main goal, based on the initial success of the AG GWSWF, was the agreement to update the AG in the more ambitious Expert Group GRAPE. The meeting also underlined the need to enhance collaboration to work in synergy with other SCAR EGs or SRPs on the assessment of the ionosphere over the poles. The task is very challenging especially because different scientific contexts mean different data format, different data processing and different data interpretation. On the other hand, the group considers such heterogeneity as a strong point to stimulate advancement of our understanding of space weather effects in polar regions. Several presentations highlighted the bi-polar GNSS network maintenance and enlargement, the data availability through ad hoc data bases, e.g. www.eswua.ingv.it, and investigations carried out with the contribution of different Countries/Institutions. Several expressions of interest have been received through the GWSWF web portal, meaning the usefulness of this facility for coordinating the efforts, disseminating the results and attracting new collaborations.

Recent publications (2011) on peer review journals are listed below:

- Alfonsi, L., L. Spogli, G. De Franceschi, V. Romano, M. Aquino, A. Dodson, and C. N. Mitchell (2011), Bipolar climatology of GPS ionospheric scintillation at solar minimum, *Radio Sci.*, doi:10.1029/2010RS004571.
- Grzesiak M. and A. Świątek, Solar terminator-related ionosphere derived from GPS TEC measurements - a case study (2011), *Acta Geophysica*, doi: 10.2478/s11600-011-0048-7.
- Jayachandran, P. T., C. Watson, I. J. Rae, J. W. MacDougall, D. W. Danskin, R. Chadwick, T. D. Kelly, P. Prikryl, K. Meziane, and K. Shiokawa: High-latitude GPS TEC changes associated with a sudden magnetospheric compression (2011), *Geophys. Res. Lett.*, 38, L23104, doi:10.1029/2011GL050041.
- Pokhotelov, D., Jayachandran, P. T., Mitchell, C. N., MacDougall, J. W. and Denton, M. H., 2011. GPS tomography in the polar cap: comparison with ionosondes and in situ spacecraft data. *GPS Solutions*, 15 (1), pp. 79-87.

- Prikryl, P., Jayachandran, P. T., Mushini, S. C., and Chadwick, R.: Climatology of GPS phase scintillation and HF radar backscatter for the high-latitude ionosphere under solar minimum conditions (2011), *Ann. Geophys.*, 29, 377-392, doi:10.5194/angeo-29-377-2011.
- Prikryl, P., Spogli, L., Jayachandran, P. T., Kinrade, J., Mitchell, C. N., Ning, B., Li, G., Cilliers, P. J., Terkildsen, M., Danskin, D. W., Spanswick, E., Donovan, E., Weatherwax, A. T., Bristow, W. A., Alfonsi, L., De Franceschi, G., Romano, V., Ngwira, C.M., Opperman, B. D. L.: Interhemispheric comparison of GPS phase scintillation at high latitudes during the magnetic-cloud-induced geomagnetic storm of 5–7 April 2010, *Ann. Geophys.*, 29, 2287-2304, doi:10.5194/angeo-29-2287-2011, 2011.
- Wernik A. W. and M. Grzesiak, Scintillation Caused by the Ionosphere With non-Gaussian Statistics of Irregularities (2011), *RADIO SCIENCE*, VOL. 46, RS6011, 9 PP., doi:10.1029/2011RS004716.

3. Future Plans

Efforts will be addressed to maintain and update the current GWSWF web portal into a new version that will highlight the subgroups activities of GRAPE. In particular a data portal development is planned to facilitate sharing and utilization of the GNSS/GPS and geophysical databases. The data portal will be linked to other useful databases for easy access, and encourage the collaboration, data sharing and help in interpretation of the results.

A special issue of *Annals of Geophysics* is in preparation aiming to collect the papers that will be presented during the next SCAR OSC in Portland in the field of interest of GRAPE.

A GRAPE meeting-workshop will be organized in 2013-2014 to provide forum for discussions and to focus the community efforts towards the GWSWF project goals.

4. Budgetary Issues

GRAPE EG is expected to be active along the next 4 years (2012-2015). SCAR SSG GS financial support is requested for improving the existing WEB (www.GWSWF.SCAR.org), for meetings organization, for publications, for participating to international Conferences.

Joint LS/PS/GS AG on the impacts of marine acoustic technology on the Antarctic environment

Chair: Phil O'Brien (AUS)

1. Rationale for the Group

The Acoustics Action Group was established in 2000 to provide the Antarctic Treaty with scientific background on the issue of the potential impacts of acoustic instruments on the Antarctic marine environment.

2. Report on Progress

The Acoustics Action Group held workshops and prepared papers for the Antarctic Treaty in 2001, 2003 and 2006. The issue was not raised in Treaty Meetings for some years but did reappear in 2011 with several papers presented to the CEP. The Treaty requested that SCAR prepare an update of the state of scientific knowledge. Rather than holding another workshop, a literature review was prepared by SCATS and submitted to the CEP in Hobart in June. This approach was preferred because of the great expansion of available literature and the holding of regular symposia dedicated to the subject.

The results of discussions on the CEP will be provided to the SCAR meeting.

3. Future Plans

The best approach appears to be the abolition of a separate Acoustics Action Group and managing future request through SCATS, which has dealt with the 2011 request. This may need to be reconsidered after the Working Paper is presented to the CEP in June.

4. Budgetary Implications

Budgetary implications will be clearer after the CEP meeting. Money will only be needed if another workshop is necessary.

Appendices

Members: (SCATS) Prof Steven Chown, Dr Kevin Hughes, Prof Mahlon C Kennicutt II, Dr Sergio Marensi, Dr Mark Hindell, Dr Phil O'Brien.

AG and EG proposals for 2013-14

The SSG-GS agrees on the continuation of the two Action Group *Seeps and Vents in Antarctica (SAVANT)* and *Assessment and recommendation of multibeam data acquisition for characterizing Antarctic Ice Sheet retreat and Joint LS/PS/GS AG on the impacts of marine acoustic technology on the Antarctic environment*

Action Group on Geological Heritage and Conservation

It is proposed with the aim to consider the issues related to geological heritage and conservation of sites of special intrinsic geological value in the Antarctic, and to update guidelines and codes of conduct related to geological field work.

This proposal is the outcome of an informal paper introduced by Chris Carson (geoscience Australia) and prepared by Phil O'Brien, and follows a wide ranging discussion at the SSG-GS business meeting.

Action Group on Connecting geophysics with geology: key areas for understanding the building stones of Antarctica.

Chair: *Jo Jacobs (Norway)*

Background - The scattered geological exposures of Antarctica have been mapped and understood to strongly varying degrees. The close vicinities of stations are often better studied than remote areas where logistics is demanding. There are still unmapped areas. The systematic aerogeophysical surveying starts to reveal the sub-ice geology of the continent. Major lineaments and the spatial extent of individual tectonics blocks become apparent, the interpretation of which is however often difficult so far. The connection of the exposed geology and the geophysics is often loose, specifically in mountain/nunatak areas that have only sketchily been studied. Key areas need to be identified where detailed geological field studies and focussed geophysics should be carried out in order to understand the significance of major geophysical lineaments and the boundaries of tectonics blocks.

Aims and objectives:

- Identify highest priority areas where lineaments and/or apparent tectonic block boundaries intersect with outcrops

- Coordinate and develop multinational capabilities in geophysics and geology
- Plan and initiate international expeditions to key areas
- Provide improved geological maps, specifically in logistically demanding areas
- Improve connections to adjacent continents within Gondwana/Rodinia and project the knowledge of these into Antarctica
- Identify worthy drill sites for basement recovery and connect to other Antarctic drilling communities

Preliminary workplan:

- Constitute a group of geologists and geophysicists to establish a detailed work plan
- Liaise with ADMAP, PAIS and SERCE groups
- Arrange meetings at EUG 2013, SCAR 2014, Gondwana 15, ISAES

The SSG-GS showed very strong support for this proposal.

The SSG-GS approved the continuation of the following EG:

IBCSO

ANTPAS

ADMAP

GIANT

Joint PS and GS EG Athena

Joint PS and GS EG GRAPE

After the separate meeting held during the week, we add some information on **new planning of the following EG.**

GIANT EG

During the previous period 2012-2012 there have been two meetings of the group: Melbourne, June 28, 2011 and Portland, July 14, 2012. At the Buenos Aires SCAR meeting 2010 it was decided that Gary Johnston will continue as chair and Markku Poutanen as co-chair.

In Melbourne it was agreed that Gary Johnston would give up to chair GIANT, Sam Griffiths of Geoscience Australia (GA) should continue the work. Markku Poutanen agreed to continue as co-chair.

Meanwhile Sam Griffiths left GA, and in Portland there was a discussion on leadership. The group finally agreed on the following proposal:

Proposal 1: Alessandro Capra (Italy) is proposed as the chair of the GIANT, Mirko Scheinert (Germany) is proposed as co-chair.

Proposal 2: GIANT Program Objectives:

- *Provide a common geospatial reference system for all Antarctic scientists and operators*
- *Contribute to global geodesy for the study of the physical processes of the earth and the maintenance of the precise terrestrial reference frame*
- *Provide information for monitoring the horizontal and vertical motion of the Antarctic*
- *Provide advice to broader research community on the application of geodetic techniques and the reference frame in Antarctica .*

- Maintain and develop geodetic infrastructure in Antarctica (permanent observatories, GNSS and especially collocated techniques)
- Contribute with data and expertise to the realization and maintenance of a precise reference frame in Antarctica
- Contribute data and solutions for further analyses, especially for geodynamic applications (e.g. GIA)
- Maintain a close interdisciplinary cooperation (especially to assist SCAR scientific program SERCE)
- Provide information on technology and data access
- Support scientists of neighbouring disciplines in the application of geodetic techniques (esp. GNSS)
- Develop communication and outreach, support the education of early career scientists

In the Portland meeting it was discussed to focus on the core tasks, and to reduce the number of Working Groups within GIANT. As a result the following groups with activities listed are proposed. Membership is open to all.

Proposal 3. GIANT Working Groups:

1. Permanent Observatories

Project Leader: Kazuo Shibuya

- 1) Facilitate new geodetic observatories or repeat measurements at existing observatories (GNSS, Gravity, Tide gauge observations)
- 2) Compile a list of existing data and collocations
- 3) Encourage site operators to make data freely accessible
- 4) Publish links to IERS WG3 on site surveys
- 5) Publish links to web sites with details of all permanent geodetic sites including POLENET
To be included into project 2
- 6) Publish links to the web sites for the services for seismic and geomagnetic networks including IRIS (<http://www.iris.edu/hq/>) and Intermagnet (<http://www.intermagnet.org>)
- 7) Compile lists of absolute gravity observations in Antarctica
To be included into project 3
- 8) Collaborate with other SCAR scientists to identify requirements for space geodetic sites
- 9) Publicise the Ant2000 datum resolution and make available recommended practices for the use of IGS products with this datum

2. Proposed new name: Crustal Movement from GNSS observations

(old name: Epoch Crustal Movement Campaigns)

Project Leader: Mirko Scheinert - Germany

Project Co-Leader: Alessandro Capra - Italy

- 1) Encourage and support coordination of regional episodic GNSS campaigns for reference frame densification or other targeted science applications.
- 2) Maintain “SCAR GPS Database”
- 3) Incorporate linkage / metadata information for permanent GNSS stations
- 4) Encourage the use of appropriate site standards to allow multimodal use of the data
- 5) Cooperate with IAG Subcommission 1.4f for ITRF densification
- 6) Provide network solutions to compare with other solutions, like from POLENET

3. Proposed new name: Gravity Field

(old name: Physical Geodesy)

Project Leader: Mirko Scheinert - Germany

Project Co-Leader: Alessandro Capra - Italy

- 1) Compile surface gravity data, promote new surveys (especially aerogravimetric surveys)
- 2) Compile metadata on all kinds of gravimetric surveys and observations in Antarctica
- 3) Utilise gravity data for precise regional geoid determination in Antarctica
- 4) Collaborate with IAG Subcommission 2.4f “Gravity and Geoid in Antarctica”
- 5) Promote absolute gravity observations to provide a reference to gravity datum. These observations are best taken at bases, preferably collocated with continuous GNSS sites.
- 6) Promote gravity ties of airborne and relative gravity surveys to absolute gravity points

4. Tide Gauge Data**Project Leader: Henk Broksma – Australia (t.b.c.)****Project Co-Leader: Graeme Blick – New Zealand (t.b.c.)**

- 1) Update the connections between tide gauge benchmarks and GNSS sites on GIANT web page
- 2) Encourage gauge operators to calibrate gauges and make offsets available with tidal observations
- 3) Provide best practice examples of the establishment of tide gauges, both bottom mounted and acoustic, including data communication systems and gauge calibration techniques
- 4) Provide tide gauge data to ocean tide modellers including the IGS TIGA project
- 5) Publicise the application of tide gauge data to key science questions through the GIANT web page

5. Antarctic Geodesy Summer School**Project Leader: Mirko Scheinert - Germany****Project Co-Leader: Alexej Matveev – Russia**

- 1) Carry out a summer school on Antarctic Geodesy at Bellingshausen in Austral summer 2013/2014
- 2) Coordinate with similar activities within SCAR Scientific Program SERCE

Proposal 4. Funding

The GIANT groups asks that funds (US\$2000) not used in period 2010-2012 can be transferred to period 2012-2014 for organizing costs of the planned Summers School. The group asks for support for 2012-2014 for the same purpose.

Planned activities 2012-2014

1. Proposal of geodesy summer school at Russian Bellingshausen station 2013/2014. Possibly coordinated with SERCE program? Details / draft program has to be set up and to be communicated by September 2012. Ask for financial support: via SSG-GS
2. GIANT-related workshop should be realized at one of the major conferences in 2013. Proposed EGU2013 in April 2013 in Vienna, session and a splinter meeting will be organized.
3. Renew / update contacts to further institutions of other nations and update e-mail list
4. Development of web services, increase GIANT visibility.

ADMAP EG

The Antarctic Digital Magnetic Anomaly Project (ADMAP) aims to map Antarctica's magnetic anomaly field to aid in understanding geological processes. The initial compilation phase was completed when ADMAP produced the first magnetic anomaly of Antarctica in 2001 and

transferred to the World Data Centers in 2009 its digital database of magnetic anomaly observations of the Antarctic collected from the IGY 1957/58 through 1999. ADMAP has also launched the next generation magnetic anomaly map of the Antarctic that is expected to be completed by 2014. However, since the initial compilation, the amount of magnetic survey data has more than doubled. Thus, ADMAP is working to acquire the services of a database manager to monitor international magnetic surveying activities in the Antarctic and incorporate the new survey data into its database in accordance with the data transfer protocols that the international ADMAP working group has adopted.

Progress during the period

Special issue of the Tectonophysics Journal for ADMAP scientific papers

ADMAP special session at the Buenos Aires OSC, Magnetic anomalies of the Antarctic, we had 22 accepted presentations. This success suggested the idea of making plans for a special journal volume.

The special volume was proposed and accepted by Tectonophysics:

RECENT ADVANCES IN ANTARCTIC GEOMAGNETISM AND LITHOSPHERE STUDIES

16 papers are being processed for publication in the special volume. Some of them are already on the web.

Website updates

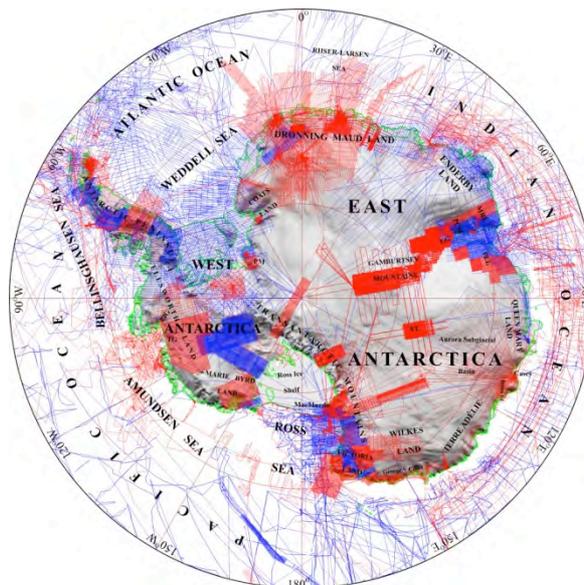
We have updated the existing website and created a new one in Argentina:

<http://www.dna.gov.ar/mararg/admap>

<http://earthsciences.osu.edu/admap>

Keeping track of magnetic surveys completed and being planned

We are able to keep tracks of most of the completed magnetic surveys in Antarctica. Figure below displays the updated line coverage from Golynsky et al., 2012.



Air and Ship Surveys Coverage up to ~2012

ADMAP 1999 surveys (blue) and Newer surveys collected recently (red)

XXXII SCAR Meeting - Portland, Oregon, USA - ADMAP business meeting

We held a business meeting on July Saturday 14. There were 14 attendees to the meeting, which was very active. Several ADMAP members and data holders displayed their work, showing once more progress in Science resulting from analyzing magnetic data.

There were also presentations by other groups that compile similar data (BEDMAP, ANTGG). Interesting exchange of ideas resulted considering the different techniques to be used for each case. Consensus was reached regarding the need of urgently funding sponsors to continue the compilation work and to find a way of producing the new map as soon as possible.

During the ongoing week Hyung Rae Kim informed us about the possibility of obtaining financial support from the **Polar Institute of Korea (KOPRI)** for a data manager position and more.

Tentative plan for the next two years period

ADMAP workshop

This is meant to invite all data holders to discuss and organize an efficient way of producing the new version of the map and data base (ADMAP II). This workshop has to be held as soon as we have made progress in arrangements with the sponsors.

After this workshop, with the consensus and agreement with the data holders, the work of compilation will go fast, as there are skilled people to accomplish it.

We estimate year 2014 for this meeting. We request financial help to hold this meeting, that will be a trigger to give momentum to the production of the desired map and data base.

Tentative funding scheme follows:

Sponsored by KOPRI:

2 years salary for a data manager / scientist

(this position could be shared with A. Golynsky)

2 years salary student

Request to SCAR:

Year 2013: 4000 US\$ for publications costs (Tectonophysics; papers in process)

Year 2014: 10000 US\$ for a workshop (all data contributors to attend)

ANTPAS EG

Report of the meetings in Portland (14 and 17/07/20102) The meeting held in the official date (14 July) was unfortunately attended by a few people and everybody agreed on the necessity to have a second and more attended meeting. So far, on 17th July a new meeting with 14 people coming from 6 different countries was held. In this meeting the two previous co-chair M. Guglielmin (Italy) and G. Vieira (Portugal) were confirmed as well as the secretary M. Balks (New Zealand) and the Com. Of. F. Simas (Brasil).

Respect the previous meeting in Edinburgh (2011) it was decided to not formalize the thematic subgroups but to nominate some contacts persons for the selected research tasks and these will be more involved in the general organization of the group (such as informal steering committee) and they will be responsible regarding their topics for the improvement of the new web site that is now active.

The ANTPAS group has also decided to have at least one annual meeting in correspondence of some of the following international congresses:

2013

8th IAG International Conference on Geomorphology - August 27th to 31st, 2013

International Meeting " Earth Cryosphere. XXI century" April 25-28 2013 at Puschino (Russia).

2014

IV European Permafrost Conference, Lisbon, Portugal, June
OSC SCAR Conference, Auckland (NZ)

Finally the group has decided to have (in case of support from SCAR) a one day workshop especially to promote the cooperation among the young permafrost scientists at Puschino (Russia).

This initiative will be organized in the frame of the Russian Antarctic strategy for 2012-2020 and it could be supported by the organizers of the International meeting above mentioned (Institute of Earth Cryosphere, Institute of phisico-chemical and biological problems in soil science, Lomonosov Moscow state university, Melnikov permafrost institute and Russian academy of science).

For this workshop we ask a special support from SCAR that it could be evaluable in 5000 \$ in order to facilitate the attendance of the young scientists (giving a grant for the travel costs through a reviewed selection).

In case we will not have enough people attending the Puschino proposal we could postpone to next EUCOP in Lisbon (2014).

SSG-GS STANDING SCIENTIFIC GROUPS Budget

Group	Chair E-mail	Purpose	Requested Allocation US \$ 2013	Requested Allocation US \$ 2014
Action Groups				
Cross AG Cold Seeps and Hydr. Vents in Antarctica (with SSG-LS)	Phil O'Brien (Australia) phil.o'brien@ga.gov.au			
Multibeam Data Acquisition	Phil Bart (USA) pbart@unixl.sncc.lsu.edu Frank Nitsche (USA) fnitsche@ldeo.columbia.edu			
Geoheritage and geological Conservation ?	Chris Carson			
	Jo Jacobs			
Expert Groups				
SleGE	DISBANDED			
Geospatial Information GIANT	Alessandro Capra chair alessandro.capra@unimore.it Mirko Sheinert co-chair	annual workshop, international school, data archiving	4000	5000
Joint PS-GS EG on GNSS Research and Application for Polar Environment and Weather and Space Weather Forecast and (GRAPE/ WSWF)	G. De Franceschi (Italy) defranceschi@ingv.it	Annual workshop. Data archiving	4000	3000
Antarctic Permafrost, Soils, and Periglacial Environments (ANTPAS)	Mauro Guglielmin (Italy) Mauro.guglielmin@uninsubria.it Gonçalo Vieira (Portugal) vieira@campus.ul.pt	<i>meetings</i>	3000	3000
IBCSO	H. W. Schenke (Germany) schenke@AWI-Bremerhaven.de			
ADMAP	M. Ghidella (Argentina) mghidella@dna.gov.ar	Meeting. Publications Data archiving	4000	10 000
Cross EG ATHENA	Jemma Wadham (UK) P.Doran (USA) j.l.wadham@bristol.ac.uk	Meeting	2000	2000
Products				
Geology and Glaciology website	Michael Hambrey (UK) mjh@aber.ac.uk	website design and maintenance	2000	2000
Total			20 000	25 000

Publications

The XI International Symposium on Antarctic Earth Sciences, held in Edinburgh in July 2011, is generating two Special Publications of the Geological Society of London: *Antarctic crustal evolution* (chief editor Simon Harley) and *Antarctic Earth Surface Processes and Palaeoenvironments* (chief editor Michael Hambrey). Papers were being finalised after peer-review at the time of writing (June 2012), and will be published online, prior to printing of the complete volumes late in 2012.

In addition, the plenary talks have been expanded in two full papers to be published by the Royal Society of Edinburgh (editors Martin Siegert and Tom Bradwell).

The Geological Society has entered into a formal agreement with SCAR to publish future Earth science volumes, as a result of which SCAR will obtain a financial benefit. This should avoid the often complex problem of finding a publisher for themed conference volumes in the future. Authors benefit in having their papers recognised by ISI Web of Science and Google Scholar, and therefore their citations documented.

Prof. German Leitchenkov (Russia) gave a presentation on a new compilation: the “Tectonic map of Antarctica”, which will be available soon.

Public Outreach

(1) A media forum was held at ISAES in Edinburgh and links with educational bodies enabled the local people to engage with Antarctic Science in a number of venues.

(2) A website entitled “Geology of Antarctica”, hosted by the widely used SwissEduc/Glaciers-Online site, has been developed by Michael Hambrey, GSSSG Secretary in association with Dr Jürg Alean of Eglisau, Switzerland. High-resolution images are being sought to enhance the site. This website has been developed for SCAR to promote understanding of the geology of Antarctica amongst the wider community. Compared with other continents, the geological evolution of Antarctica is poorly known, since less than 2% of the land emerges from beneath the thick cover of glacier ice. Yet where rocks are exposed, their pristine nature and lack of vegetation has enabled geologists to unravel many key components of the region’s history. Photographs with informative captions convey the spectacular geology of the continent. A fuller account of the geological evolution of Antarctica is provided in an accompanying text. See:

www.swisseduc.ch/glaciers/antarctic/geology/index-en.html

A second website, www.antarcticglaciology.org, Antarctic Glaciology, is currently being developed by Dr Bethan Davies (Aberystwyth University, UK). This also is aimed at a general audience, including schools and the wider public. It is hoped that this will be ‘live’ by September 2012, and again contributions from the community are being sought.

Geoscience discussion about OSC

Geoscience delegates recognised that OSC Portland meeting was very successfully and they were impressed by the scientific content. However, it was felt that some geological fields were not so well represented and the reason for this seems to be emphasised on sessions convened by AGs and EGs and SRPs, leaving some areas of geology, notably basement geology, lacking.

The delegates also recognise the substantial financial contribution of the host country and are very grateful for this support. Delegates discussed potential alternative arrangements at a specially relating to the cost of accommodation.

They suggest that University student accommodation, where possible, be explored for future OSCs, especially for the benefit of early career scientists.

Delegates appreciate the separation of SSG business meeting in two days, one before and the other at the end of OSC. This allows discussion of important issues and time to consider nominations for the officers' posts. There is also concern about the clashes with WGs meeting e.g. ANDRILL and it is requested that separate days be allocated for these meetings. Another criticism was the lack of clear information about the timing of all these supplementary meetings.