



XXXI SCAR Delegates Meeting

Buenos Aires, Argentina, 9-11 August 2010

Agenda Item: 5.1

Person Responsible: Alessandro Capra

Report of the SCAR Standing Scientific Group – GeoSciences (SSG-GS),

XXXI SCAR, 30 July - 2 August 2010, Buenos Aires, Argentina

Executive Summary

Title: Report of SSG GeoSciences

Authors: Alessandro Capra (SSG-GS CO) Phil O'Brien (SSG-GS Deputy CO)

Relevant URLs or references to other reports: SSG-GS report on SCAR web site.

Introduction/ Background: Scientific activity of GeoSciences covers a wide range of actions on Geophysics, Geodesy, Geology fields. The principal actions that will be done should be understood through the AG and EG 2010-12 structure approved, that is the following: **Action Groups:** SAVANT (Cold Seeps and Hydrothermal Vents in the Antarctic); Multibeam Data Acquisition (New Proposal); **Joint AG** (GS and LS) GWSWF - GPS weather and space forecast - Chair G. De Franceschi (ITA). **Expert Groups:** GIANT (Geodetic Infrastructure of Antarctica); EGPPE (EG on Permafrost and Periglacial Environment); IBCSO (International Bathymetric Chart of Southern Oceans); ADMAP (Antarctic Digital Magnetic Maps).

Important Issues or Factors: Concerning **National Representatives Reports on Geoscience** activities, an internal recommendation has been done to enhance communication within the Geoscience Antarctic Community, SSG-GS, and to inform all Antarctic Geosciences researchers on National initiatives. Concerning the **GPS weather WSWF AG** is finding interesting synergies between ICESTAR LS EG and with the GIANT and POLENET groups of GS; this is a positive effect of the cross-SSG meetings initiative. Concerning the establishment of a **new AG on Multibeam Data Acquisition**, the SSG-GS approved the establishment of an Action Group to identify data needs and best practice protocols for mapping of Last Glacial cycle grounding zones using multibeam bathymetry. Concerning **IBCSO EG**, SSG-GS strongly approve the continuation of EG activity but it needs therefore that Secretariat explore with AWI possibility of continuing the provision of a post, either with sole funding from AWI or with joint funding from AWI and other interested institutions or transfer IBCSO to another institution. Concerning a new **PPG proposal**, the SSG-GS recommends the action described in the following point.

Recommendations/Actions and Justification: The Geoscience Science Standing Group recommends that the Solid Earth Response and Influences on Cryospheric Evolution (SERCE) Programme Planning Group be extended in order to prepare a full Programme Implementation Plan for presentation to SCAR in 2012 for approval as a full SCAR Programme.

Expected Benefits/Outcomes: The programme will be designed to synthesize and interpret the extensive new data sets obtained during IPY by the international Polar Earth Observing Network (POLENET) geophysical sensor deployment. PPG plan to promote communication and coordination with other international groups investigating polar ice mass change, glacial isostatic adjustment, and ice sheet contributions to global sea level rise.

Partners: POLENET IPY programme; ISMASS -LS group; SOOS; ACE SRP; UNAVCO (USA); IRIS (USA).

Budget Implications: 17000 US dollars for 2011 and for 2012 GS budget including SERCE PPG budget.

Geosciences Standing Scientific Group Business Meeting

Report to SCAR Executive and SCAR National Delegates Buenos Aires – August 2010

The Geoscience Standing Scientific Group of SCAR covers activities that range over geological, geophysical and geodetical scientific research.

The report of the activities carried out in 2009 and 2010 by the SCAR Standing Scientific Group on GeoScience (SSG-GS) is included in the SCAR Annual Report (XXX) document.

A report of the GSS-GS business meeting held in Buenos Aires, 30 July - 2 August 2010 is presented here for the SCAR Delegates meeting in Buenos Aires, 9-11 August 2010.

Expanded reports of the work of various SSG-GS sub-groups will be available on the SCAR website (<http://www.geoscienc.scar.org>) and will be published in the GeoReach E-newsletter. The website also will contain national and other reports on science produced by the SSG-GS.

Office Bearers 2010-2012

Chief Officer: Prof Alessandro Capra - Department DIMeC - University of Modena and Reggio Emilia, ITALY.

Deputy Chief Officer: Dr. Phil O'Brien Geological Service -Australia

Secretary: Dr. Mike Hambrey – University of Wales, United Kingdom.

SSG-GS Business Meeting Report

The SCAR GeoScience SSG and associated groups met from the 30th July to 2nd of August at SCAR XXXI, following the agenda presented in Appendix 1. SSG-GS noted that an interdisciplinary approach and interactions with other SSGs is essential and many Joint Groups are established and will be established. Particularly noted is the need of a strong interaction with glaciologists. The ISMASS group will be contacted in order to establish strong collaboration within new SERCE PPG.

SCAR strategic Plan - Implications for joint SSG groups and GS

Phil O'Brien opened discussions. Copies of Version 5 were run off to allow for discussion on Saturday and Monday. The group discussed whether the present SSG structure was the best possible one for SCAR. Bryan Storey led the discussion but had not particular alternative in mind. One suggestion was that organisation around major themes such as Ice might work. Some felt that glaciology may fit better in SSG-GS, though glaciology also works closely with other areas in Physical Sciences. There is also growing potential to work with Life Sciences.

The SSG-GS felt less of a problem since the Geographic Information Group was split off at the last meeting. It was felt that Physical Sciences had the biggest issues with everything from astronomy to glaciology in the one group.

One test for the structure was suggested that consisted of monitoring the number of joint meetings between groups (to see if amalgamation was warranted) and the number of times subgroups were meeting (to see if subdivision was warranted).

The SSG-GS concluded that more work to promote interdisciplinary subgroups was always needed. To this end, glaciologists will be invited to ISAES. Members of ACE are engaging with the ACCE authorship group.

A discussion has been made on the structure of SSGs and the OSC. The actual structure of SSGs satisfies the GS, while there is not common position on the OSC and on OSC periodicity. Effectively it should be done every two or every four years but SSG-GS gives the opinion that there are advantages and disadvantages to the two options.

GeoReach

Phil O'Brien presented Mike Hambrey's report. GeoReach was published once in 2010. Issues of lack of response to requests for articles and the problem of up-to-date email lists were identified. A Newsletter approach to communications rather than a listserver seemed to have support in that it reduces email traffic. Phil O'Brien volunteered to put more time into updating email lists and compiling GeoReach from next February. It was suggested that GeoReach be distributed to Life Sciences and Physical Sciences as well.

Proposal for a Geological Outreach website by Mike Hambrey

Phil O'Brien presented a proposal by Mike Hambrey to develop a website that would present the geology of Antarctica aimed at a non-specialist audience as an outreach and education initiative. The initiative received broad support.

Highlights of National Research Programmes

National Delegates in were asked to present any matters of pressing interest that should be drawn to the attention of the group. China and New Zealand presented written reports. There was some discussion as to the best way to handle national reports. The new SCAR Executive position is that the SCAR Delegates report should cover this. The meeting discussed the desirability of publishing reports in GeoReach and Internal Recommendation 1 (see Internal Recommendations below) was approved.

SCADM

SCADM has an Implementation plan with 3 major projects:

1. Building an interoperable data repository network
2. Improve utilisation of SCAR products
3. Polar Common Initiative

33 nations have signed up to the initiative with 10 Data Centres.

SALE (Subglacial Antarctic Lake Exploration)

SALE has dissolved as it has met its objectives. Three subglacial lake drilling programmes are now funded which are Lake Vostok (Russia), Lake Elsworth (UK) and Whillans Ice Stream (USA). A new Action Group on drilling, measurement and sampling technology (**ATHENA**) is proposed to maintain SCAR involvement in subglacial lake exploration. SSG-GS approved the scientific topics of ATHENA.

GWSWF (GPS for Weather and Space Weather Forecasting) Action group

The GWSWF Action group is finding interesting synergies with the GIANT and POLENET groups of GS; the Expert group ICESTAR is considering ways to interact with GWSWF, and possibly generating joint scientific objectives. This is again an effect of the cross-SSG meetings initiative, which seems to have produced good results.

SERCE-POLENET/SERCE PPG

After Terry Wilson's presentation on POLENET activity and on PPG goals, the SSG-GS approved that POLENET/SERCE PPG will continue activity until 2010 and that an implementation plan will be prepared

in order to become an SRP (see External Recommendations and the PPG report below). In Appendix 2, a preliminary SERCE Science programme and work plan is presented.

The **SIeGE group** have decided that their activities would best be included in the proposed SERCE Programme so have agreed to disband and participate in SERCE.

APECS

There was a very interesting presentation on **APECS** (Association of Polar Early Career Scientists). SSG-GS appreciated the presentation and approved to support APECS in putting information on GeoReach and the GS website. Moreover, GS will promote the activity of young researchers in Antarctica and even APECS association.

Future meetings of relevance to the SSG-GS

The next **ISAES XI (Edinburgh, July 2011)** has been presented and a format for session proposals has been distributed by e-mail. A presentation of the **International Geological Congress 2012** has been made. Moreover, it was remembered that at the next **AGU meeting (San Francisco, December 2010)**, several workshops and meetings will be held on Antarctic GeoSciences' relevant arguments.

In addition to AG and EG reports, presentations of Committees and Scientific initiatives have been made, as included on the Annotated Agenda (Appendix 1).

AG and EG Business Meeting Report

The meeting made a number of changes in its activities. One Action Group (AG) is proposed and included in our recommendations. One AG, SIeGE, was terminated. Other Expert Groups (EGs) were approved for continuation. Each AG and EG within SSG-GS is listed below.

SSG-GS approved the continuation of IBCSO but the SCAR Executive Director will contact AWI or other institutions in order to define new chair or chairs (see Internal Recommendations below).

SSG-GS structure 2008-10

Action Groups:

- Cold Seeps and Hydrothermal Vents in the Antarctic (SAVANT) - Chair: Phil O'Brien (Aus)
- Multibeam Data Acquisition (New Proposal)

Joint Action Group:

- GWSWF (GPS for Weather and Space Weather Forecasting) - Chair: G. De Franceschi (Ita)

Expert Groups:

- GIANT Co-Chairs: G. Johnstone (Aus) and M. Poutanen (Fin)
- EGPPE Chairs: M. Guglielmin (Ita) and G. Vieira (Por)
- IBCSO Chair: ?
- ADMAP Chair: M. Ghidella (Arg)

The 2009-2010 AG and EG reports are available on SCAR website; AG and EG work plan are reported.

Action Group on Seeps And Vents in ANTArctica (SAVANT)

SAVANT prepared a paper for the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) Vulnerable Marine Ecosystems workshop in La Jolla, USA in August 2009. The paper set out methods for detecting seeps and vents by physical means and a classification for different indicators. The workshop accepted the approach and requested the preparation of a field guide for seep and vent organisms. This should be possible through SCAR-MARBIN. Subsequently, a pilot study reviewing indicators of shallow gas and fluid escape has been carried

out. Results are presented in a poster for the SCAR Open Science Conference. Seep and vent indicators were defined:

Class 1 Areas: VME confirmed by recovery of organisms or observation (video, stills).

Class 2 Areas: Seepage/venting present but VME not confirmed.

Class 3 Areas: Seepage suspected from geophysical, geochemical or oceanographic observations.

Class 4 Areas: Area or geomorphic feature associated with seepage and vents.

Future work plan:

1. Field guide to major organisms needed
2. Locations of confirmed VMEs needed but not yet available (workshop and SCAR Biology too close, some secrecy on locations because of competition, non-Antarctic community)
3. Not much progress since August 2009 BUT Dr Jodie Smith has joined project and will make SAVANT a priority.

Joint GPS for Weather and Space Weather Forecasting (GWFWS) AG

Experimental Observations - Efforts have been addressed to develop and enlarge the GISTM (GPS for Ionospheric Scintillation and TEC Monitor) network at Southern and Northern high-polar regions. Some GISTM receivers in Antarctica were set for a feasibility study on the possible use of the data acquired by the ionospheric community to reconstruct the water vapour concentration.

Scientific Results - Several papers have been presented/published mainly related to the use of GPS and GISTM data for ionospheric plasma dynamics investigations at high latitude. Preliminary and promising results have also been obtained based on CHAIN (CA) and GISTM receivers in Antarctica. The "climatology" of scintillation has been developed and studied at both the polar regions, highlighting the role of the auroral oval boundaries and the cusp region in the occurrence of the ionospheric scintillation. Experiments to derive the drift velocity of ionospheric irregularities have been carried out by SRC, PL at Svalbard. Errors mitigation techniques due to ionospheric scintillation have been developed and applied to GISTM data at both polar regions. The results are quite promising and can be useful for precise positioning applications.

Website - The website has been developed and hosted by INGV. It contains information on the Action Group activity, contacts, description of polar infrastructures available, and a simple data form to be filled by participants: products and tools can be uploaded to support data analysis.

Main objectives for the future:

- Ionospheric imaging over Antarctica;
- Exchange of data and expertise for the application of tomography to other fields of interest for both the communities, e.g. 3D water vapour reconstruction;
- Exchange of technologies to install and manage remote GPS stations. Enlargement of bi-polar network;
- Possibility to host instruments in the polar stations represented by the two communities.

GIANT (Geodetic Infrastructure of Antarctica)

GIANT EG had a special meeting in Buenos Aires. A report on 2008-10 activity has been completed and a 2010-2012 work plan was approved.

The principal main objectives were defined as following:

- 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 the broader research community on the application of geodetic techniques and the reference frame in Antarctica.

The following working groups were established:

- Permanent Observatories;
- Epoch crustal movements campaigns;
- Physical Geodesy;
- Geodetic Control Database;
- Tide Gauge data;
- Atmospheric research evaluation of models used in analysis of GNSS observations in Antarctica;
- Digital elevation models and height change surveys;
- High accuracy kinematic positioning;
- GNSS modernization programme;
- Antarctic Geodesy summer school.

Expert Group on Permafrost and Periglacial Environments (EGPPE)

Since 2008, the Expert Group on Permafrost and Periglacial Environments has made progress in improving the networking of data and experience exchange among the researchers of different nations operating in Antarctica and studying permafrost. Several new projects under the umbrella of the IPY core project “ANTPAS” (Antarctic Permafrost and Soils) were developed, especially in Maritime Antarctica. To coordinate the different activities and promote the dissemination of new results and knowledge, EGPPE organized three main meetings:

- a) Fairbanks (June 2008), during the 9th International Conference on Permafrost (NICOP) of the International Permafrost Association (IPA);
- b) Longyearbyen, Svalbard (June 2010), during the 3rd European Conference on Permafrost;
- c) Buenos Aires (4th August 2010), during the SCAR OSC Conference.

Two special issues on ISI listed journals were produced: (i) the first in 2008 led by J. Bockheim and M. Balks in *Geoderma*, with the main papers presented on the Workshop previously organized at Santa Barbara (USA), (ii) a special issue in *Geomorphology* led by M. Guglielmin should be printed before next February, with the main papers presented at the Buenos Aires Conference. EGPPE organized sessions on Antarctic permafrost and periglacial environments at NICOP and at the SCAR OSC in Buenos Aires.

After the Svalbard meeting, our Co-Chairman J. Bockheim presented his intention to leave his position. Therefore during the last meeting, which numbered 15 participants, a new Co-Chairman was nominated, as well as a revised steering Committee for EGPPE. The structure of the Group will be the following: Co-Chair Persons: Mauro Guglielmin (Italy) and Gonçalo Vieira (Portugal); Secretary: Megan Balks (New Zealand).

It was also decided that within the Steering Committee, two people would be responsible for the Communications: Jaako Putkonen (USA) and a member from Brazil to be designated. EGPPE produced several papers in ISI listed journals and the complete list of these will be delivered in the next extended report.

ADMAP

The ADMAP expert group held a special business meeting during SCAR 31 in Buenos Aires. About 10 members were present, as well as a representative of the WDMAM (World Magnetic Anomaly Map) project.

Main achievements were:

- Organization of a special session at the OSC that collected 22 abstracts.
- Plans for the third special volume of the ADMAP papers in a peer-reviewed journal, possibly *Tectonophysics*, as commemoration of the release of the CD with the ADMAP 1999 data.
- Plans for the organization of the continuation of compilation and archiving work: a data manager is needed as the amount of work has increased significantly (~1.5 million line km for the 1999 map and more than 2 million to add). There are proposals already submitted.
- An update of the work that is being done with the data acquired by several countries from year 2000 to the present, with the geomagnetic reference model for the Antarctic and the new satellite magnetic compilations.

- Year 2013 is the estimated time for the completion of the second version of the ADMAP compilation.
- Started interaction with AntGP (Antarctic Geoid Project), SSG-GS GIANT Project 3 and IAG project.

SSG-GS Budget

SSG-GS approved the requirement for 2010 residual funds expenses and 2011-12 budgets, which are summarized in the following table:

Initiatives	Action / Expert Group	2010	Budget 2011	Budget 2012	Purpose
	Savant AG			2000	Workshop
	Joint GWSWF AG		2000	2000	Workshop
	Multibeam AG			2000	
	GIANT Geodetic Infrastructure EG	3000	2000	2000	Website, workshop
	IBCSO EG				
	ADMAP EG		3000	3000	
PPG	SERCE-POLENET		9000	5000	Workshop, early career scientists' travel
ANTSCAPE ^{*1}		3400			Early career scientist participation in workshop
ISAES XI ^{*2}		8000			Early career scientists' travel
Communication and website		2000			
ATHENA JG			1000	1000	
Total		16400	17000	17000	

^{*1} - 2010 funds for ANTSCAPE are required for young researchers' travel expenses to assist the ANTSCAPE workshop in November 2010.

^{*2} - The 2010 funds for ISAES XI are allocated in addition to the \$10,000 already given earlier in the year. This 8000 will be used to support early career scientists' travel expenses.

Internal Recommendations

1. Concerning National Representatives' Reports on Geoscience activities:

Recommendation to enhance communication within the GeoScience Antarctic Community, GSSG, and to inform all Antarctic GeoSciences researchers on National initiatives, we recommend that:

- A report from National representatives may be sent to SSG-GS two months before the SCAR General Assembly and SSG-GS business meeting or may be linked to National Programme website;
- All National Reports will be distributed by e-mail to all National Representatives in GeoSciences and they will be published on the SCAR SSG-GS web page and on Georeach;
- National delegates may present short (about five minutes) oral presentation of programmes highlights at SSG-GS business meeting.

2. Concerning the establishment of a new AG on Multibeam Data Acquisition:

The GSSG recommends the establishment of an Action Group to identify data needs and best practice protocols for mapping of Last Glacial cycle grounding zones using multibeam bathymetry.

The Action Group will:

- Identify the highest priority areas where multibeam bathymetry will provide important insights into the position and retreat history of the Ice sheet grounding zone and where such data do not exist.
- Set out survey design guidelines to maximise the value of multibeam surveys in interpreting grounding zone position, behaviour and history of the Antarctic shelf.

The Action Group will produce a report by 2012.

Background: mapping the position of past grounding zones of the Antarctic Ice Sheet is important in providing boundary conditions for understanding ice volume history during the last glacial cycle, in understanding regional differences in ice behaviour and in mapping the availability of refugia for marine benthic biota.

3. Concerning IBCSO (International Bathymetric Chart of Southern Ocean) Expert Group

SSG-GS strongly approves the continuation of EG activity.

Needs therefore to Recommend that Secretariat explore with AWI possibility of continuing the provision of a post, either with sole funding from AWI or with joint funding from AWI and other interested institutions or transfer IBCSO to another institution

External Recommendations for SCAR Delegates

Concerning the proposal for a Scientific Programme Planning Group on “Solid Earth Response and influences on Cryospheric Evolution”

The GeoScience Standing Scientific Group recommends that the Solid Earth Response and Influences on Cryospheric Evolution (SERCE) Programme Planning Group be extended in order to prepare a full Programme Implementation Plan for presentation to SCAR in 2012 for approval as a full SCAR Programme.

Proposal rationale:

- Advance understanding of the interactions between the solid earth and the cryosphere;
- Glacial isostatic adjustment (GIA) and ice mass change;
- The influence of solid earth parameters (e.g. heat flow, substrate) on ice sheet dynamics

The programme will be designed to synthesize and interpret the extensive new data sets obtained during IPY by the international Polar Earth Observing Network (POLENET) geophysical sensor deployment. PPG plan to promote communication and coordination with other international groups investigating polar ice mass change, glacial isostatic adjustment, and ice sheet contributions to global sea level rise.

Appendix 1

SCAR STANDING SCIENTIFIC GROUP - Geosciences (SSG-GS) XXXI SCAR, 30 July - 2 August 2010, Buenos Aires, Argentina

Annotated Agenda

SSG-GS, LS and PS Plenary Session – July 30 (9:00 -11:00)

Welcome to the SCAR Business Meetings – Chuck Kennicutt, President (10 mins)

SCAR Presentation - Mike Sparrow, Executive Director (30 mins)

Mike Sparrow will set the scene for the agenda items that all groups should consider; procedures (budgets, reporting, etc); general items of interest to all SSGs.

SCAR's Data and Information Management Structure – Kim Finney (20 mins)

Kim Finney will present developments with regards to SCAR's Data and Information Management System and other matters of relevance to the SSGs.

SCAR and Climate Change – John Turner (40 mins)

John Turner will give a presentation on climate issues.

Southern Ocean Observing System (Doc xx) (20 mins)

Mike Sparrow will report on the development of the SOOS.

SSG-GS, LS and PS Joint Session – July 30 (11:30 – 13:00)

Scientific matters arising from the ATCM (Doc xx) (20 mins)

Steve Chown will report on ATCM XXXIII and XXXII.

Cross-SSG Action Group on Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments (AG-CCER-SAE) (Doc xx) (15 mins)

Chuck Kennicutt will present the Code of Conduct for the Exploration and Research of Subglacial Aquatic Environments.

Proposed new Expert Group “Advancing Technological and Environmental stewardship for subglacial exploration in Antarctica (ATHENA)” (Doc xx) (15 mins)

Jemma Wadham and Peter Doran will present a proposal for a new cross-SSG Expert Group concerning subglacial exploration.

Cross-SSG Action Group on King George Island) (Doc xx) (10 mins)

Sergio Marensi will report on progress.

Report on the SSG Cross Linkages Meeting (15 mins)

Alessandro Capra will report on the 2009 SCAR Cross Linkages meeting

Cross-SSG Action Group on Prediction of Changes in the Physical and Biological Environments of the Antarctic (Doc xx) (15 mins)

Julian Gutt will give a presentation on progress with the Cross-SSG Action Group.

SSG-GS Session (July 30th afternoon, and August 2nd, all day)

JULY 30 (14:30- 16:00)

Welcome and Apologies (5 mins)

Alessandro Capra, Chair, SCAR Standing Scientific Group - GeoSciences (SSG-GS), will formally open the meeting and welcome all members, observers and alternative members.

Adoption of Agenda and timetable (Doc xx) (15 mins)

SCAR strategic Plan (Doc xx) (15 mins) Implications for joint SSG groups and GS
Phil O'Brien to report.

Discussion on the current structure of SSGs

Georeach (10 mins)

Phil O'Brien to report.

WEBSITE plan for Antarctic geological images (5 mins)

Phil OBrien to report.

Highlights of National Research Programmes (10 mins)

National Delegates in SSG-GS have been asked to present any matters of pressing interest that should be drawn to the attention of the group (5 minutes for each presentation).

coffee break 16:00-16:30

Recommendations (15 mins)

Alessandro Capra will review the recommendations submitted in 2008 in St. Petersburg, the response of the Delegates and the progress made during the intersessional period.

Proposal of New Recommendations (15 mins)

AUGUST 2 (9:00-11:00)

Report from SCADM (Doc.XX) (10 mins)

Kim Finney will present the report.

Expert Group on Geospatial information-Geodesy (GIANT) (Doc xx) (10 mins)

Gary Johnston will report on progress and goals.

Progress report of the Scientific Programme Antarctic Climate Evolution (ACE) (Doc xx) (10 mins)

Peter Barrett will present the progress report of ACE for 2008-2010.

Progress report of the Scientific Programme Subglacial Antarctic Lake Exploration (SALE) (Doc xx) (10 min)

Chuck Kunnicut will present the progress report of SALE for 2008-2010.

Action Group on Seeps And Vents Antarctica (SAVANT) (Doc xx) (10 mins)

Phil O'Brien will report on progress and goals.

Expert Group on Sub-Ice Geological Exploration (SIeGE) (Doc xx) (10 mins)

Bryan Storey and Detlef Damaske will make some comments on this AG.

Expert Group on Antarctic Digital Magnetic Anomaly Project (ADMMap) (Doc xx) (10 mins)

Marta Ghidella will report on progress and goals.

Expert Group on Permafrost and Periglacial Environments (EGAPPE) (Doc xx) (10 mins)

No-one to report.

Matters on Expert Group on International Bathymetric Chart of the Southern Ocean (IBCSO) (Doc xx) (10 mins)

Mike Sparrow will report on progress and matters.

APECS

Francisco Fernandoy will report on APECS activity and goals.

coffee-break 11:00-11:30

Joint PS-GS Action Group on Weather and Space Weather Forecast (WSWF) (Doc xx) (10 mins)
Giorgiana DeFranceschi will report on progress and goals.

Tectonic Map of Antarctica

Product will be presented by German Leitchenkov.

New Action and Expert Group Proposal (Doc XX)

Advancing TecHnological and ENvironmental stewardship for subglacial exploration in Antarctica (ATHENA) (10 mins)

Peter Doran (Illinois) and Jemma Wadham (Bristol) will report.

MULTIBEAM Data Acquisition

To be made by Philip Bart (see Internal Recommendations).

POLENET IPY - Solid Earth Responese and Influences on Cryosphere Evolution (SERCE) Progress report and PPG development 2010 - 2012 (Doc xx) (Aug 2nd) (10 mins)

Terry Wilson will present the progress report of POLENET/ SERCE and goals for PPG in 2009-2010 (see External Recommendations).

lunch break 13:14:30

SCAGI -- Graham Blick will report.

Future meetings of relevance to the SSG-GS (10 mins)

REPORT ON ISAES XI, Edinburgh, July 2011 (10 mins)

Jane Francis will report on Symposium organization.

INT Geological Congress 2012

To be made by Phil OBrien

Discussions on:

- Strategic Plan
- Structure of SSGs
- OSC structure and periodicity

Financial Requests - Integration (Doc xx) (10 mins)

Alessandro Capra will present a proposed budget for the SSG-GS for 2011-12 based on financial requests received during the meeting and on 2010 fund in case forwarded to 2011.

New Recommendations (15 mins)

Alessandro Capra will present the new recommendations for the Delegates.

Approval of Report and Closure (15 mins)

Appendix 2

SERCE (Solid Earth Response and influences on Cryosphere Evolution) Science Programme and Work Plan:

Crustal Motion Patterns

- GPS
- Seismicity
- Active tectonics / neotectonics
- Faulting; basin subsidence; uplift; volcanism

Ice Dynamic Processes

- Glacial earthquakes / icequakes
- Heat flux
- Subice geology/hydrology
- Parameterization for ice-sheet models
 - ISMASS

Glacial Isostatic Adjustment

- Vertical crustal motions
- Earth Rheology (maps/grids)
 - Seismic
 - GPS-modeling
 - Parameterization for earth models
- Improved modeling capability

Ocean Processes

- Tide Gauge measurements
- Integration GPS/satellite measurements
 - Ocean tide loading
 - Circumpolar current

Ice Mass Balance & Sea-Level Change ** Bi-Polar **

- Ice History: Last Glacial Maximum
 - ISMASS
- Modern ice mass change
 - 'PGR correction' – GRACE, CRYOSAT, IceSAT
 - Elastic response

Data Management & Observing Infrastructure

- Geodesy - GIANT
- Seismology
- Ice history/dynamics – ISMASS
- SOOS: Southern Ocean Observing System
- Technology

Capacity Building / Education & Outreach

- Technology
- Short courses
- E&O activities - Public-web, multimedia