



International Arctic Science Committee (IASC)

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The Second SCAR-IASC Bipolar Action Group (BipAG II)

The Scientific Committee on Antarctic Research (SCAR) and the International Arctic Science Committee (IASC) are the major international organisations coordinating research in the two Polar Regions on an international level. All nations undertaking research in the Arctic and Antarctic are members of one or both organisations. The Polar Regions are critical areas of the Earth influencing ocean currents and regional weather patterns as well as hosting a unique biodiversity. Due to the effects of global warming, parts of these regions are now the focus of the most rapid environmental changes seen anywhere on the planet and contributing to global issues such as sea-level rise and greenhouse gas emissions. IASC and SCAR therefore have significant roles in organising the vitally important science needed to understand what is happening in the Arctic and Antarctic and what it may mean for the rest of the world.

Both Polar Regions are cold and remote and share many common features (large ice sheets, extensive sea-ice in winter) but equally also show very many differences. Comparisons of the Polar Regions or research involving both the Arctic and Antarctica is termed bipolar science and it offers great opportunities to better understand what is happening in these regions and how they impact on the rest of the world than if scientists focussed only on their own Polar Region. The Executive Committees of SCAR and IASC created a **SCAR-IASC Bipolar Action Group** (BipAG) that operated for two years (2008-2010) and a second BipAG has recently been established that will operate during 2011 and 2012. The existence of a BipAG ensures that there is an expert group looking at opportunities for bipolar science and its purpose is to provide annual reports to the SCAR and IASC Executive Committees, recommending which bipolar activities should be adopted by the organisations. The recommendations include not only science ideas but also opportunities for developing the next generation of polar scientists, suggestions for more effective science coordination and data management and ideas for better communicating the importance of the Polar Regions for Planet Earth. The BipAG reports will be published on both SCAR and IASC websites.

IASC/SCAR Bipolar Action Group II
Cambridge, 17th May 2011 0845-1800
Darwin College

Attendees

Cynan Ellis-Evans - Chair	UK	Biology
Francisco Navarro	Spain	Ice sheets
Detlef Damaske	Germany	Geology
Sung-Ho Kang	Korea	Marine
Alexander Klepikov	Russia	Oceanography / Climate
Gail A. Fondahl	Canada	Social Sciences
Mark Parsons	USA	Data
Jenny Baeseman	Norway	APECS
Volker Rachold (ex officio)	IASC Secretariat	IASC Executive Secretary
Mike Sparrow (ex officio)	SCAR Secretariat	SCAR Executive Director
Renuka Badhe	SCAR Secretariat	SCAR Executive Officer
Thamban Meloth (by Skype)	India	Ice cores



Outline Agenda

1. Opening
 - Welcome (Mike)
 - Introduction of the members (Cynan)
2. Objectives of this meeting (Cynan)
3. Structure of SCAR and IASC science activities (Volker, Mike)
4. BipAG I Activities, excluding IPY legacy (Volker)
 - Summary of Oslo Meeting
 - Progress with actions
5. Brainstorming session - discussion of potential bipolar activities (pages 2, 3, 4)
6. Preparation of draft report to EXCOMs, including priority list of recommendations
7. Next meeting

Objectives of the meeting

The terms of reference of the Bipolar Action Group II differ from those of its predecessor in that IPY legacy issues are now dealt with directly by IASC and SCAR Executive Committees.

The focus of BipAG II is to identify opportunities for SCAR and IASC to undertake bipolar research and to make appropriate recommendations to both organisations.

The Action Group will be convened for two years (2011-2012) and will report annually to both IASC and SCAR Executive Committees.

Meeting Summary and Recommendations

It was agreed that the Action Group would not attempt to reproduce the breadth and detail of the BipAG I reports but rather focus on identifying a priority list for SCAR and IASC consideration. This report therefore focuses on outcomes rather than a full record of the discussions at the meeting.

The valuable work of the first SCAR-IASC Bipolar Action Group was recognised. It was noted that a number of the recommendations from the BipAG I reports had not resulted in visible outcomes and so these were re-assessed within the meeting. Where necessary, these have been repeated as stronger recommendations and further guidance for action has or will be developed.

(1) Ice Sheet Mass Balance (ISMASS)

BipAG members, recognizing that the mass balance of polar ice sheets significantly affects global sea level, pointed out that a co-ordinated bipolar effort would be extremely important. As a first step, ISMASS has recently become a joint SCAR-IASC group.

Recommendation 1a: *that organising a joint workshop on ice sheet mass balance and sea level changes be given high priority. The workshop would be organised by the ISMASS leadership in consultation with the relevant IASC and SCAR groups. This workshop, that should gather specialists from the different areas of ice sheet mass balance research (in-situ observations, remote sensing, modelling, etc.), would focus on identifying the most relevant topics of interest to ISMASS and, correspondingly, setting a 'roadmap' of ISMASS activities for the coming years. It*

was also proposed that the roadmap could include ISMASS publishing annual or (more likely) bi-annual updates on ice sheet discharges for both Polar Regions. This would complement the current less frequent rhythm of IPCC reporting.

Recommendation 1b: that to improve coordination other organisations with similar subject areas of interest, in particular the International Association of Cryospheric Sciences (IACS), be invited to join ISMASS and that the WCRP/SCAR/IASC Climate and Cryosphere (CliC) Project participates in activities related to ice-sheet mass balance investigations.

(2) Social and Human Sciences

Members discussed methodological issues, perception and representation, understanding or misunderstanding of science. Several other topics under the umbrella of Social Sciences were discussed including tourism, valuing wilderness, the value of research specifically in polar areas, scientific identity of polar researchers and gender balance. It was recognised that the incorporation of social and human sciences on a broader scale are relatively new to both the SCAR and IASC organisations. Building linkages was therefore identified as an appropriate step at this time and that the subject be revisited at a subsequent BipAG II meeting.

Recommendation 2: that SCAR's Social Science Group participates in the IASC Social and Human Working Group meeting to be held at the International Congress of Arctic Social Sciences (ICASS), Akureyi, June 2011, with D Liggett as SCAR Social Sciences representative.
Action: Gail to contact Daniela Liggett about meeting with them in Iceland (done).

(3) Contaminants and Short-lived Climate Forcers

The importance of studying and reporting on short-lived climate forcers (SLCF) like black carbon, some aerosols, and tropospheric ozone and contaminants like POPs, halogen compounds, heavy metals and radionuclides, was discussed. Both SCAR, through their Expert Group (EG) - Environmental Contamination in Antarctica (ECA), and the Arctic Monitoring and Assessment Programme (AMAP) have produced reports on contaminants. AMAP does not have a brief to undertake new research. It was recognised that IASC does not take an explicit role in contaminants research at this time and should not impinge on AMAP responsibilities but a more balanced bipolar research approach could utilise expertise that exists within SCAR and IASC to address polar contamination research questions and complement polar assessments.

Recommendation 3a: that opportunities for IASC to work with AMAP on contaminant and SLCF research be explored.

Recommendation 3b: that a common platform for bipolar contaminant and SLCF work between relevant organizations and programmes be encouraged.

(4) International Partnership in Ice Core Science (IPICS)

IPICS is a bipolar programme that involves a SCAR Expert Group. IPICS is also supported by Past Global Changes (PAGES) and IACS, but there is no relationship with IASC. There was clearly a case for both SCAR and IASC to be linked formally with IPICS to provide the opportunities for future bipolar activities and ensure an effective dialogue.

Recommendation 4: that IASC actively explores the possibility of becoming a co-sponsor of IPICS, with E Wolff (BAS) suggested as a point of contact with IPICS.

(5) Ocean acidification

It was noted that for the Arctic, AMAP is working on an assessment to be presented in 2013 and that for the Antarctic, SCAR has an Expert Group on ocean acidification. Both activities are led by R Bellerby (Bjerknes Center for Climate Research, Norway) but the Arctic activity is assessment rather than research. The Action Group concluded that a bipolar approach to studying ocean acidification was highly desirable but that the existing separate activities led by Bellerby should be continued, rather than SCAR/IASC reinventing the wheel. A future joint workshop to bring together the results of Arctic and Antarctic studies was considered most appropriate and should be established as a target for both groups. Bellerby has apparently already discussed ideas for a potential final joint workshop and report on bipolar approaches to studying ocean acidification.

***Recommendation 5:** that a bipolar approach to studying ocean acidification be encouraged with IASC involved in terms of contributing the Arctic science that may be needed, based on the assessments (using contact R Bellerby). The Action Group also endorsed the idea of a joint workshop, possibly in 2013.*

(6) Ocean-atmosphere CO₂ exchange and CO₂ budgets:

Members of the group noted that the recommendation of BipAG I to encourage bipolar approaches to questions of the effects of changes in sea ice on the ocean-atmosphere CO₂ exchange has not been implemented so far.

***Recommendation 6:** that the need to consider ocean-atmosphere CO₂ exchange and CO₂ budgets as a priority area for research in both polar regions should be discussed by the relevant SCAR and IASC SSGs/WGs.*

(7) Permafrost and Carbon

Permafrost and its carbon content has global significance and it links to the previous recommendation. Members agreed that there is a need for bipolar studies to understand dynamics in permafrost and obtain realistic organic carbon budgets to support regional and global modelling efforts. IPA is doing an excellent job but is a small organisation and would benefit from the more direct involvement of SCAR and IASC.

***Recommendation 7:** that IASC and SCAR actively explore the possibility of new collaborative research programs on permafrost and carbon in cooperation with the International Permafrost Association (IPA) and other relevant international programmes (such as CliC) and ensure that scientists in both Polar Regions are sharing information.*

(8) Polar genomics

Members of the group noted the recommendation of BipAG I to encourage bipolar approaches to polar microbiology and molecular biology had not progressed significantly. Members recognised the inclusion of genomics as a component of existing and developing IASC and SCAR programs but it was felt there may be a unique opportunity to make a significant contribution to broader biological theory through a more explicit bipolar genomics initiative, involving not just microbes but also higher organisms. The different evolutionary timescales of the two regions and their physical separation offer powerful comparisons. This would require discussion between SCAR representatives developing new biological programmes and IASC Working Groups and pointed up the need for these two groups to interact more (see recommendations 14a-c). There was some potential for bipolar studies of human health, but the greatest opportunities lay with more environmental studies. There was also discussion by

the Action Group of more effectively tagging polar molecular data submitted to international databases for easier access by the polar community.

Recommendation 8a: *that relevant representatives of biological research in IASC and SCAR actively consider developing bipolar initiatives, particularly utilising molecular tools to address issues of evolution, adaptation and biogeography.*

Recommendation 8b: *that interested IASC and SCAR groups collaborate to develop agreed ways to tag molecular data for archive in international molecular databases. This would include geotagging of all polar genomic data.*

(9) Geology

The group discussed the potential of linking geological research programs of SCAR and IASC.

Recommendation 9: *that IASC and SCAR explore co-operation on issues of bathymetry, paleoclimate research on geological time scales and plate tectonics and that IASC consider revisiting the disciplinary balance of their Terrestrial WG.*

Action: Volker to approach IASC terrestrial Working Group to ensure appropriate inclusion of (hard rock) geology in their “scientific foci” and “priority activities”.

(10) Observing Systems

Members discussed the Integrated Arctic Ocean Observing System (iAOOS), the Southern Ocean Observing System (SOOS), and the Global Ocean Observing System (GOOS), all of which have biological components. It was also noted that the IASC Marine Working Group and the Pacific Arctic Group (PAG) recently convened a workshop on Distributed Biological Observatories (DBO).

Recommendation 10a: *that IASC and SCAR consider collaborating on biological observatories and discuss the possibility of holding a joint workshop to develop DBO ideas.*

Recommendation 10b: *that representatives from northern observing systems attend the planned SCAR observing workshops at the XXXII SCAR Science Week in Portland and likewise, representatives from the southern hemisphere attend the Arctic Observing Summit.*

Recommendation 10c: *that IASC and SCAR continue to support and engage with the WMO Space Task group with respect to effective coordination of satellite remote sensing of the Polar Regions by the national space agencies. The use of PolarView as a tool to easily access polar satellite data in bipolar activities was also recommended to SCAR and IASC.*

(11) Engaging the next Generation of Polar Researchers

Under this agenda item various APECS suggestions to motivate young researchers to engage in IASC and SCAR activities were discussed. It was emphasised that young researchers do not just want to be supported, they also want a closer relationship with senior scientists and organisations to better understand what motivates polar research. It was noted that the MoU between APECS, IASC, and SCAR had already produced many beneficial outcomes, including the ICSU funded IPY education and outreach assessment.

Recommendation 11a: *that virtual presentations of SCAR and IASC supported young scientists be prepared and presented via the APECS virtual poster sessions.*

Recommendation 11b: that the IASC and SCAR Secretariats, with the support of APECS, produce short videos introducing the two organisations, specifically addressing how early career scientists can become engaged with their activities.

Recommendation 11c: that IASC and SCAR identify lecturers for APECS webinars.

Recommendation 11d: that IASC and SCAR identify participants for possible bipolar workshops for early career researchers at polar conferences and meetings.

Recommendation 11e: that SCAR and IASC work with APECS to find funding (perhaps through external funding organisations, and Foundation grants) to allow continuation of Summer Schools. Polar studies have been historically more focused on research stemming from countries with developed polar research programmes. With the increased input from the fast developing Asian countries like China, India and South Korea on both Antarctic and Arctic research, it would be useful to organize a thematic summer school on bipolar science issues in a suitable Asian country or in conjunction with an Asian research site.

(12) Data management

Members noted that the main focus of BipAG II is on bipolar science but agreed that data management is an essential element of any scientific activity and therefore makes the following recommendations.

Recommendation 12a: To facilitate Arctic and bipolar collaboration IASC, especially through their involvement with the Sustaining Arctic Observing Networks (SAON), should develop a data policy and associated data management strategy, which could draw on IPY and SCAR data policies and strategies, and that the IASC data policy should be presented at the IPY Montreal Conference in April 2012. The data strategy should include identifying a point of contact for each IASC country (Initial data contact for the Arctic could be the same as the Antarctic SCAR contact in some cases).

Recommendation 12b: that the abstract submission template for the IPY Montreal conference should include four questions about data management to help IPY data managers identify and steward IPY data. The questions build from what was used at the last SCAR conference and are as follows:

1. Where do you store your data (or the data underlying this paper)? (Drop-down menu with 4 options, followed by text box for the "Please specify" bit)

- a. on my desktop / laptop computer
without back ups / with back ups: (please specify)
- b. on the file system at my institution: (please specify)
- c. deposited at a data center: ... (please specify)
- d. other: (please specify)

2. Is there a DIF (or other metadata format) description of your data? (multiple answers possible:) (Tickboxes for all 4, with text boxes for (b) and (d))

- a. yes, one or more DIFs submitted in the GCMD
- b. yes, other format: (please specify)
- c. no
- d. not yet, I intend to write a description in (please specify format and/or repository)

3. Are your data publicly accessible? (Tick boxes, with Month and Year dropdown menu for (b))

a yes

b. not yet, I intend to make them publicly accessible in (please specify estimated month & year)

4. What IPY Project was this work part of. Please indicate IPY project number.

Results from the survey should be sent to the CODATA Polar Data Task Group chaired by Scott Tomlinson and Taco de Bruin.

Recommendation 12c: that the Arctic Spatial Data Infrastructure (ASDI) should be engaged in the development of the data strategy because of ASDI's initial success in getting buy in from all Arctic national mapping agencies.

(13) International Polar Decade (IPD)

BipAG II noted that the recent IPD workshop in St Petersburg recommended setting up a framework for more efficient observing / monitoring systems (sites/devices) during an IPD and that such a programme should not start before 2016. It is proposed that an IPD could be announced at the Montreal IPY meeting in April 2012 if key international sponsors (WMO, ICSU, IOC) sign up later this year.

Since the planning of an IPD is still taking shape, BipAG II felt that it was not well placed to make science recommendations at this time and will discuss the issue further at its next meeting.

(14) General Recommendations

To encourage further bipolar studies and to raise the awareness of ongoing SCAR/IASC bipolar activities the group agreed on the following general recommendations.

Recommendation 14a: that relevant activities at the "other pole" be presented at meetings of the SCAR Standing Scientific Groups and IASC Working Groups.

Recommendation 14b: that the SCAR and IASC Secretariats issue a joint bipolar newsletter every 6 months.

Recommendation 14c: that the possibility of regular bipolar meetings combining the SCAR OSC and the ASSW should be explored (every 4 years, possibly starting in 2016).

Recommendation 14d: that the sponsorship of any SCAR and IASC workshop or other activity should necessitate the submission of a short report from conveners (less than one page, one/two paragraphs for public distribution) targeted toward a general audience. This could also take the form of a Frostbyte, ("30 second Soundbytes of cool research") produced by APECS.