



**XXXIV SCAR Delegates Meeting
Kuala Lumpur, Malaysia, 29-30 August 2016**

ICSU Report on the Review of SCAR

Executive Summary

Authors: J Baeseman and the ICSU SCAR/SCOR Review Committee

Important Issues or Factors:

The previous review of SCAR by ICSU was in 1992 (i.e. more than 20 years ago), making a new review long overdue. The Review Panel (listed in Appendix A) was established by the ICSU Committee on Scientific Planning and Review (CSPR) to carry out a review of the performance and future strategy of SCAR. The same Panel was to review both SCAR and the ICSU Scientific Committee on Oceanic Research (SCOR); the Panel early on decided that, although conducted in parallel, separate reviews of the two organisations would be produced.

The SCAR Executive Committee met with the review panel in Potsdam in February prior to the SCAR/IASC Think Tank meeting.

Recommendations/Actions and Justification:

Delegates are asked to read the report, note the list of 15 recommendations, and discuss how SCAR will prioritize and address them.

Budget Implications:

If Delegates wish to address the various recommendations, funds will need to be made available for those activities.



**INTERNATIONAL
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**Report of the SCAR Review Panel
(2015-2016)**

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I. Introduction

The Scientific Committee on Antarctic Research (SCAR) was established by the International Council of Scientific Unions (ICSU, now International Council for Science) in 1957/8. According to SCAR's Strategic Plan 2004-2010, its vision is to establish through scientific research and international cooperation a broad understanding of the nature of Antarctica, the role of Antarctica in the Earth System, and the effects of global change on Antarctica. Its specific mission is to be the leading independent organisation for facilitating and coordinating Antarctic research and for identifying issues emerging from greater scientific understanding of the region that should be brought to the attention of policy makers. For this work SCAR receives funding from national members and donations.

The previous review of SCAR by ICSU was in 1992 (i.e. more than 20 years ago), making a new review long overdue. The Review Panel (listed in Appendix A) was established by the ICSU Committee on Scientific Planning and Review (CSPR) to carry out a review of the performance and future strategy of SCAR. The same Panel was to review both SCAR and the ICSU Scientific Committee on Oceanic Research (SCOR); the Panel early on decided that, although conducted in parallel, separate reviews of the two organisations would be produced.

In carrying out its review the Panel was asked to: Assess the strategic planning and objectives of SCAR, evaluate its recent performance, assess its organisation and planning mechanisms, identify linkages and relationships between SCAR and SCOR as well as with the broader ICSU family, to review the relationship between the International Arctic Science Committee (IASC) and SCAR, and finally to identify inherent challenges and make recommendations on the future evolution of SCAR in a changing scientific environment.

The Panel held two face-to-face meetings (at ICSU in Paris, 14-15 September 2015 and in Potsdam, 23-24 February 2016) between which meetings questionnaires were sent to relevant organisations as well as to the SCAR Secretariat. Responses to the questionnaires were very helpful and contained many thoughtful comments; we are very grateful to the respondents (listed in Appendix B) for helping in the task and also in making our report more relevant to communities that work in and with SCAR. The Panel also had a live question session with Prof. Jeronimo Lopez-Martinez (the SCAR President) and some of the Officers, as well as with Dr Jenny Baeseman the Executive Director, during its meeting in Potsdam.

The Panel wishes to thank Dr. Lucilla Spini and Ms. Maureen Brennan of the ICSU Secretariat for their excellent organisation of its activities and Panel member Dr. Volker Rachold for hosting the Panel in Potsdam.

II. Recommendations

Recommendation 1

SCAR should be encouraged to continue efforts to simplify its structure, as planned in the latest internal review.

Recommendation 2

There is a need to clearly define SCAR's role vis-à-vis the integration of social and natural sciences, as well as the SCAR niche(s) related to fundamental/basic sciences vs Integrated/Interdisciplinary science.

Recommendation 3

SCAR needs to continue to expand linkages with global science (e.g., tropics/Antarctica linkages), and to continue to engage with COMNAP (Council of Managers of National Antarctic Programs) on technology.

Recommendation 4

SCAR should continue to provide science advice to Antarctic policy bodies while guarding its scientific independence and neutrality in developing recommendations related to science-policy formulation.

Recommendation 5

SCAR should engage with Future Earth, continue to work with ICSU bodies including SCOR, IASC and WCRP and should pursue further engagement with ICSU Unions.

Recommendation 6

Intensify efforts to attract potential additional member countries by holding SCAR meetings in those countries.

Recommendation 7

Increase SCAR's capacity building activities in South America, in Asia, and in Africa, especially with young scientists.

Recommendation 8

Continue efforts to increase SCAR membership by working through communication with ICSU Regional Offices.

Recommendation 9

SCAR should continue to foster the participation of women scientists, especially early career women scientists in its activities (e.g., committees, working groups, capacity-building).

Recommendation 10

SCAR should review itself regularly, possibly every 5 years, with an external review by ICSU every decade.

Recommendation 11

SCAR should develop a fundraising strategy to be led/implemented by the Development Council.

Recommendation 12

SCAR should encourage and enhance the use of virtual communication meetings for executive and working groups.

Recommendation 13

SCAR should continue to improve communication channels/tools via the Newsletter, as well as wider communication channels.

Recommendation 14

SCAR needs to give more visibility to science in the Antarctic and the role of SCAR beyond its scientific community, including the broader scientific community, policy-makers, foundations, and the general public.

Recommendation 15

The SCAR Secretariat needs to increase its capacity and future hosting by fostering opportunities for internship, secondments, junior-professional schemes at the Secretariat; sharing resources with other organisations; identifying other in-kind human resources among member organisations, possibly towards the establishment of regional nodes; and addressing the hosting-arrangements beyond 2018.

III. History of SCAR

The plans for the International Geophysical Year (IGY), 1957-58, included a major Antarctic component. At the International Council of Scientific Unions (ICSU) Antarctic meeting held in Stockholm on 9 - 11 September 1957 it was decided that there was need for further international organisation of scientific activity in Antarctica, and that a committee should be set up for this purpose. The Bureau of ICSU invited the twelve nations actively engaged in Antarctic research at that time (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, Russia (USSR), South Africa, United

Kingdom, and United States) to nominate a delegate each to a Special Committee on Antarctic Research (SCAR).

Delegates were also invited from the International Union of Geodesy and Geophysics (IUGG), the International Geographical Union (IGU), the International Union of Biological Sciences (IUBS), the International Union of Pure and Applied Physics (IUPAP) and the Union Radio Scientific Internationale (URSI).

The first meeting of SCAR was held in The Hague from 3 - 6 February 1958, with the main task to "prepare a plan for the scientific exploration of Antarctica in the years following the completion of the International Geophysical Year programme". A Finance Committee was also formed. Three working groups were set up to discuss and prepare future research programmes and each later reported their recommendations to the Committee. For the purposes of SCAR, in 1958 "Antarctica" was defined as being bounded by the Antarctic convergence, and also including the Sub-Antarctic islands on which International Geophysical Year observations were being made (<http://www.scar.org/about/history>).

Subsequently SCAR was renamed the Scientific Committee on Antarctic Research and over the years SCAR's membership grew to 39 member countries and 9 ICSU Union members to date. In 2002 SCAR abandoned its original Working Group structure and reorganised its scientific activities along three Scientific Standing Committees (Geosciences, Life Sciences and Physical Sciences) with their various subsidiary Action and Expert Groups. (See: "A brief account of the evaluation of SCAR, 1958-2006" by Peter Clarkson:

http://www.scar.org/scar_media/documents/aboutscar/Evolution_of_SCAR_1958-2006.pdf). Since 2005 SCAR has maintaining an "Expert Group on the History of the Institutionalisation of Antarctic Research".

More information on the History of SCAR, including the publications of the groups, is available at: <http://www.scar.org/othergroups/humanities/historygroup>.

IV. Terms of Reference (ToR)

The present ToR (called "the Objects" in Section 3 of SCAR's Memorandum of Association) seems satisfactory and appears to work well so we see no reason for recommending any change to them. They can be found at:

http://www.scar.org/scar_media/documents/aboutscar/constitution/Memorandum_Jul_08.pdf

V. Structure

The full organisational structure of SCAR is given at:

http://www.scar.org/scar_media/documents/aboutscar/organisation/Organogram_Feb16_print.pdf

There are 5 Science Themes, 4 Standing Scientific Groups (Geosciences with 2 Scientific Research Programme Groups, 6 Expert Groups and 2 Action Groups; Life Sciences with 2 Scientific Research programme Groups, 4 Expert Groups and 4 Action Groups; Physical Sciences with 2 Scientific Research Programme Groups, 6 Expert Groups and 6 Action Groups; and Humanities with 2 Expert Groups). In addition there are 4 Standing Committees, 2 Advisory Groups and 3 Joint Initiatives with other organisations.

Unsurprisingly this structure is seen by many correspondents, including us, as being too complex, leading to a recommendation that:

Recommendation 1

SCAR should be encouraged to continue efforts to simplify its structure, as planned in the latest internal review.

VI. Science

We support SCAR's practice that all projects have a finite lifetime and clear deliverables, with Scientific Groups, Scientific Research Programmes and co-sponsored activities being internally reviewed by groups of independent scientists every two years.

We also note that the *modus operandi* of SCAR is perceived by several respondents as being overly top-down. From our discussions with the SCAR Officers and Secretariat, we gathered that they consider all scientific activities to be largely bottom-up. There is clearly a perception, if not an actual issue, here that SCAR needs to address. In our view, to be successful every activity will need to be a mixture of bottom-up and top down, with the ratio of the two varying greatly depending on the issue being addressed.

The major tasks for SCAR include:

- i) Sharing information on disciplinary scientific research being conducted by national Antarctic programmes;
- ii) Identifying research areas or fields where current research is lacking;
- iii) Coordinating proposals for future research by national Antarctic programmes to achieve maximum scientific and logistic effectiveness;

- iv) Identifying research areas or fields that might be best investigated by a SCAR Scientific Research Programme and establishing Scientific Programme Planning Groups to develop formal proposals for presentation to the Executive Committee;
- v) Establishing Action and Expert Groups to address specific research topics within the discipline.

Scientific and technical matters that SCAR needs to pay attention to include:

- i) Resolving the issue of how social sciences should be integrated into the natural science activities that SCAR has been involved in traditionally – see later comments on the particular relationship of SCAR with Future Earth;
- ii) Resolving the proper niche of SCAR with respect to the dichotomy of fundamental/basic versus integrated/interdisciplinary science;
- iii) Deciding how far SCAR should be involved in technology transfer of its activities, noting its present involvement on COMNAP (Council of Managers of National Antarctic Programs).
- iv) Deciding how far SCAR should contribute to scientific research outside the Antarctic area *sensu strictu* for example to the role of Antarctica in the operation of the Earth System, noting current work on interaction between Antarctic processes and their effects on waters in the Tropics.

We consider that SCAR provides a valuable contribution to international scientific co-operation in Antarctica and gives considerable help to national strategies. In particular we note that SCAR's two-yearly Open Science meetings are very successful, drawing a large audience from within as well as from outside the SCAR community and should be continue to be strongly supported.

Recommendation 2

There is a need to clearly define SCAR's role vis-à-vis the integration of social and natural sciences, as well as the SCAR niche(s) related to fundamental/basic sciences vs Integrated/Interdisciplinary science.

Recommendation 3

SCAR needs to continue to expand linkages with global science (e.g., tropics/Antarctica linkages), and to continue to engage with COMNAP (Council of Managers of National Antarctic Programs) on technology.

VII. Science Policy

A considerable asset for SCAR is that it has an essentially 'captive' audience. It is needed by the countries that are part of the Antarctic Treaty. SCAR provides objective, neutral and independent scientific advice relevant to policy to the Antarctic Treaty Consultative Meetings and other organisations such as the United Nations Framework Convention on Climate Change (UNFCCC), the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). In the case of IPCC, SCAR should pursue the possibility of being able to propose authors for its assessments. SCAR identifies issues emerging from greater scientific understanding of the Antarctic and Southern Ocean region and brings them to the attention of policy makers. It serves a large community, and the strong focus on Antarctic science and policies makes it powerful.

SCAR makes presentations each year at the Antarctic Treaty Consultative Meeting, which provides an opportunity for a detailed presentation of a policy-relevant area of science. Quoting from one of our respondents: "SCAR forms an important and vital part of the Antarctic Treaty System." Crucially, SCAR has to be politically neutral in the context of the Antarctic Treaty System to keep its scientific integrity.

Recommendation 4

SCAR should continue to provide science advice to Antarctic policy bodies while guarding its scientific independence and neutrality in developing recommendations related to science-policy formulation.

VIII. Partnerships

SCAR has engaged with and helped facilitate various international and national programmes over the years and we encourage SCAR to continue these activities by proactive engagement. In particular we encourage the linkage with other ICSU bodies and Unions, especially SCOR (beyond the recognised Southern Ocean Observing System activities), and other relevant bodies, for example, IASC, World Climate Research Programme (WCRP) and World Meteorological Organization (WMO).

The Panel was particularly concerned at the lack of any engagement with Future Earth, which was considered a potentially highly important programme with which to engage. It was recognised that SCAR has attempted to develop a meaningful link with Future Earth but so far without success. The Panel suggests that ICSU could act as a 'broker' to initiate and develop a dialogue between SCAR and Future Earth.

Recommendation 5

SCAR should engage with Future Earth, continue to work with ICSU bodies including SCOR, IASC and WCRP and should pursue further engagement with ICSU Unions.

IX. SCAR – Capacity Building/Geographical Coverage

We agree with the request of some nations that SCAR should try to help developing countries and actively inform them about SCAR activities so that more nations may become involved in SCAR.

SCAR membership is dominated by countries that are Antarctic Treaty members; therefore there is an absence of some potential member countries, especially from South America, Asia, Africa and the Middle East (e.g. Iran). It follows naturally that non-SCAR member countries lack appropriate capacity in the SCAR area of action. To overcome capacity inability, SCAR has set up Fellowship scheme for early career researchers and a visiting professor programme. SCAR also works with the Association of Polar Early Career Scientists (APECS) as part of their mentor programme. Smaller Antarctic programmes are to benefit from this scheme in the future.

Recommendation 6

Intensify efforts to attract potential additional member countries by holding SCAR meetings in those countries.

Recommendation 7

Increase SCAR's capacity building activities in South America, in Asia, and in Africa, especially with young scientists.

Recommendation 8

Continue efforts to increase SCAR membership by working through communication with ICSU Regional Offices.

X. Gender Issues

There has been a steady rise in the number of women participating in SCAR activities (e.g., committees, working groups, capacity-building) in recent years (currently about 30% of the total are female); however, there is room for further improvement. SCAR is taking measures to increase the participation of women in their activities, including the creation of the "Wikibomb", a documentation to be published in Wikipedia detailing write-ups on outstanding women in Antarctic science as role models.

Recommendation 9

SCAR should continue to foster the participation of women scientists, especially early career women scientists in its activities.

XVI. Reviewing

The 2015 internal review of SCAR involved various components, particularly the three Standing Scientific Groups (Life Sciences, Geo Sciences and Physical Sciences) and analyses of the present structures. The Panel regards this activity as a good example of self-governance. However, recognising that the review was proposed more than a decade after the previous internal review in 2000, we strongly suggest that a regular internal review system is implemented.

In spite of our support for regular internal review, it does have its limitations in terms of independence and perception. For these reasons, we recommend an external review by ICSU should be made regularly, probably about every 10 years.

Recommendation 10

SCAR should review itself regularly, possibly every 5 years, with an external review by ICSU every decade.

XII. Funding/Fundraising

Maintaining sufficient funds for SCAR activities is recognised as a perennial challenge and there is usually never enough to realise all the ambitions of the community (and Secretariat). However, the Panel was interested to hear about the Development Council, which appeared to be rather inactive. However, the Panel recognised the desire in the Executive Committee and Secretariat to broaden the funding base through, for example, personal philanthropic donations and Foundations. The Panel encourages SCAR to re-invigorate the activity of the Development Council and its activities by first developing a coherent fundraising strategy.

Recommendation 11

SCAR should develop a fundraising strategy to be led/implemented by the Development Council.

XIII. Communication and Outreach

The webpage contains very wide and deep information of SCAR activities so that it is straightforward to see what SCAR has been working on and what it has achieved. Two newsletters have been published in each year, presenting various activities and accomplishments in the Antarctic area. SCAR should be encouraged to continue these channels actively.

SCAR has operated a general meeting every year and it is suggested that to improve communication channels between the executive committee and national representatives, and also working groups, remote communication tools such as Skype should be used more.

It is recognised that SCAR has various mechanisms to inform the SCAR scientific constituency of its activities. However, it is increasingly the case that science needs to be communicated to a wider range of stakeholders, including the public. The Panel acknowledges the heavy resource requirements of enhancing the visibility of SCAR and that this burden will fall primarily on the Secretariat. However, harnessing the communication resources of the larger SCAR-linked institutions could provide some useful assistance. The Panel considers there are worthwhile benefits to be gained by increasing public awareness through, for example, increased student engagement, potential new members, widening funding opportunities potentially through philanthropy and charitable foundations (see also Recommendation 11 on fundraising).

Further, by explaining the policy implications of Antarctic research to governmental and private organisations, SCAR may increase their willingness to support its work.

Recommendation 12

SCAR should encourage and enhance the use of virtual communication meetings for executive and working groups.

Recommendation 13

SCAR should continue to improve communication channels/tools via the Newsletter, as well as wider communication channels.

Recommendation 14

SCAR needs to give more visibility to science in the Antarctic and the role of SCAR beyond its scientific community, including the broader scientific community, policy-makers, foundations, and the general public.

XIV. SCAR Secretariat

The SCAR Secretariat has for many years been hosted by the Scott Polar Institute at Cambridge University, U.K. It is led by an Executive Director (Dr. Jenny Baeseman) and has a total staff of 2.6 people. We were very impressed by the quality of the work done, particularly considering the small size of the Secretariat. However, given the many and complex tasks that have to be carried out the system is severely over-stretched. To improve the situation without significant extra expenditure, we think that the SCAR Executive and Executive Director should consider the following possibilities for increasing staff capacity/effort:

- i. Foster opportunities for internship, secondments and junior-professional schemes based at the SCAR Secretariat.
- ii. Share resources with other organisations (e.g., major institutes in Antarctic research).
- iii. Identify other in-kind human resources among SCAR member organisations, possibly including the establishment of regional nodes, which might also help to foster members' engagement. The work and oversight of any regional nodes would be under the management of the Executive Director.

In addition, the Executive and Director need to address the hosting-arrangements for the Secretariat beyond 2018 (when the present arrangements are due to end).

Recommendation 15

The SCAR Secretariat needs to increase its capacity and future hosting by fostering opportunities for internship, secondments, junior-professional schemes at the Secretariat; sharing resources with other organisations; identifying other in-kind human resources among member organisations, possibly towards the establishment of regional nodes; and addressing the hosting-arrangements beyond 2018.

XV. Concluding Remarks

We conclude by commending the Officers and Secretariat of SCAR for the excellent work they do for the Antarctic community both in terms of supporting scientists and the application of their science to policy formulation in a very important the region of the globe. The recommendations we make are meant in the spirit of helping advance the work of SCAR and should not be taken in a negative way. SCAR is an organisation with a proud history of leadership and achievement; we hope this report will help to make its future work even more valuable.

SCAR-SCOR Joint Review Panel

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Respondents to Questionnaires

An International Study of Marine Biogeochemical Cycles of Trace Elements and their Isotopes (GEOTRACES)

Antarctic Treaty Consultative Meeting (ATCM)

British Antarctic Survey

Centro de Oceanologia y Estudios Antarticos, Instituto Venezolano de Investigaciones (COEA-IVIC)

Integrated Marine Biogeochemistry and Ecosystem Research (IMBER)

International Association for Biological Oceanography (IABO)

International Association of Meteorology and Atmospheric Sciences (IAMAS)

International Association of Physical Oceanography (IAPSO)

L' Union Radio-Scientifique Internationale (URSI) / SCAR Expert Group GRAPE (GNSS Research and Application for Polar Environment)

Royal Netherlands Institute for Sea Research (NIOZ) & Univ. of Amsterdam, Netherlands (NL)

SCAR Brazil / University of Sao Paulo

SCAR Ecuador / Escuela Superior Politecnica del Litoral

SCAR India / ESSO-National Centre for Antarctic and Ocean Research

SCAR Iran / Iranian National Institute for Oceanography and Atmospheric Science

SCAR Italy / Italian National Antarctic Program (PNRA)

SCAR Japan / National Institute of Polar Research

SCAR New Zealand / Gateway Antarctica, University of Canterbury; NIWA

SCAR Peru / Peru Antarctic Directorate – Foreign Affairs Ministry

SCAR Russia / Scientific Council on Arctic and Antarctic Research, Russian Academy of Sciences

SCAR Switzerland / Swiss Federal Research Institute (WSL)

SCAR The Netherlands / Netherlands Organisation for Scientific Research (NWO)

SCAR UK / UK National Committee for Antarctic Research

UK Foreign & Commonwealth Office, Polar Regions Department

And

The SCAR Secretariat