



SDM 14
Agenda Item: 4.2
Person Responsible: S Chown

**XXXV SCAR Delegates Meeting
Davos, Switzerland, 25-26 June 2018**

New Scientific Research Programmes

Report Author

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Summary

According to SCAR's Strategic Plan, Scientific Research Programmes (SRPs) are its flagship science facilitation activities. Currently, six SRPs are underway and will conclude at the end of 2020. These SRPs have modest budgets of US\$ 21 000 per year. Given the convergence of international interests on a few key interdisciplinary research questions over the past eight years, it is proposed that a limited number of next generation SRPs be supported allowing for higher levels of funding and concentration of the SCAR community's efforts for greatest effect. Two emergent themes, in keeping with the SCAR Antarctic and Southern Ocean Science Horizon Scan outcomes, are: (i) the past and future of ice sheets and their implications for climate, global sea levels, biological systems and society; and (ii) improving our understanding of biodiversity, functioning and conservation of marine and terrestrial biota and ecosystems. Discussions with a variety of stakeholders have indicated that given the interests of many national programs, the Antarctic Treaty Parties and NGOs; and the importance of filling key gaps in knowledge, the potential to leverage external funding in support of programs in these two areas is considerable. Alignment with Future Earth objectives and the International Science Council's (ISC) encouragement to support research that underpins achievement of the Sustainable Development Goals makes focusing research on these topics highly compelling. While multiple SRP planning group proposals are likely to emerge by 2020, it is suggested that SCAR would be well served by ensuring that the highest priority topics of global interest are addressed.

Recommendations

Delegates consider the proposal to reduce the number of new SRPs and focus on interdisciplinary themes that address timely, Antarctic questions of global societal significance.

Delegates recognise that with additional external support for such SRPs, SCAR membership support (i.e., national membership fees) could be directed to other SRPs launched post-2020 as bottom-up, community driven priorities arise.

Summary Budget 2017 to 2020

Budget implications associated with the funding of Programme Planning Groups. Potential multi-fold leveraging of SCAR funds from external sources.



SDM 14
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Introduction

The SCAR Strategic Plan 2017-2022 emphasizes that Scientific Research Programmes (SRPs) are SCAR's flagship science facilitation activities. Since the inception of SRPs, the most impactful SCAR science outcomes have been generated by these marquee programs. Currently, six SRPs are underway: Astronomy and Astrophysics from Antarctica (AAA); Antarctic Climate Change in the 21st Century (AntClim21); State of the Antarctic Ecosystem (Ant Eco); Antarctic Thresholds – Ecosystem Resilience and Adaptation (AnT-ERA); Past Antarctic Ice Sheet Dynamics (PAIS); Solid Earth Responses and Influences on Cryospheric Evolution (SERCE). These have served SCAR Members and scientists exceptionally well, as evidenced by their outputs, outcomes, publications, benefits and external reviews. All current SRPs will conclude at the end of 2020, paving the way for a new portfolio of next generation SRPs. The new SRPs will be approved by Delegates at the SCAR meeting in Hobart, Australia in 2020 and commence in 2021.

Developments

Recent outcomes of Antarctic research and science have highlighted several key challenges facing global society that can only be addressed by scientific investigations of Antarctica and the Southern Ocean.

The first key question is, what is the fate of the West and East Antarctic Ice Sheets in a warming world? Their behaviour in response to rising greenhouse gas emissions, or control thereof through the Paris Climate Accord, will determine the success of the Sustainable Development Goals and future global security. The International Science Council (ISC) has recognised the importance of underpinning science in achieving the Sustainable Development Goals. The IPCC has also started paying careful attention to the cryosphere as evidenced by the IPCC Special Report on Oceans and Cryosphere. Within SCAR, meetings; such as the one coordinated by PAIS in Trieste, Italy in 2017; have made clear that there is a convergence of work that explores the interactions between climate change, ocean behaviour, solid earth responses, and biota and ecosystems leading to a better understanding of past sea levels as a window on likely futures. New genomic techniques have revealed the importance of biology/ecology in understanding past ice sheet behaviour and the attendant impacts on critical global processes and carbon/energy budgets. SCAR, as a facilitator of international Antarctic science, therefore has a global responsibility through its membership in ISC, and its broader advisory role, to focus on this question. SCAR is uniquely positioned amongst international organizations to do so. Therefore, new SRP activity should squarely focus on and advance our understanding of ice sheet dynamics.

The second key question is, how will marine and terrestrial biological systems respond to local and global environmental change and conservation interventions that mitigate or adapt to predicted, and in some instances inevitable, change? The bodies of the Antarctic Treaty System are increasingly relying on SCAR for science advice to underpin their decision making and external discussions. Questions about the long-term future of the Southern Ocean as a carbon sink, the impacts on Antarctic marine resources of interactions between



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climate change and resource harvesting and the effects of the growing use of terrestrial areas will require a step-change in SCAR's scientific output. Understanding the function and responses of ecosystems, and the ways in which conservation interventions may affect these, are of global importance. In particular, the Southern Ocean is a unique, natural laboratory where global pressures will play out in the coming decades. CCAMLR, the Antarctic Treaty Parties, the Members of the Committee for Environmental Protection, and bodies of the UN are expecting updates and advice about these matters from SCAR. Therefore SCAR would be well served by organizing its scientific efforts to greatest effect by merging the scientific strands of past and current SRPs into a focused next generation life sciences program. As a consequence of work of AntEco and AnT-ERA, and through collaborations such as ICED and SOOS, and also supported by industry organisations such as IAATO, SCAR is in an excellent position to give effect to such a strategy.

In combination, these research themes resonate strongly with the questions that emerged from the SCAR Antarctic and Southern Ocean Science Horizon Scan. The ice sheet focus addresses matters raised through Questions 3, 4, 7-9, 12-14, 20, 21, 24-34, 43-45. The biological systems focus does the same for Questions 48-66, 74-76. If approved, two integrated, interdisciplinary SRPs in these areas would potentially address more than 40% of the SCAR Horizon Scan's highest priority scientific questions. Therefore, the rationale for a major focus of next generation SRPs covering these themes is robust.

Support

In the case of both of these proposed themes, there are strong indications that external financial support to enhance the science facilitation role of these SRPs would be forthcoming. SCAR has already successfully negotiated support for elements of work close to these areas, and discussions with NGOs and others have indicated that applications for further support would be well received and welcomed. In the past, SCAR has successfully used a similar model to leverage its limited science budget. Examples include Sloan Foundation support for the Circum-Antarctic Census of Marine Life, support from the Belgian government for Anta-BIF, support from the Monaco government for The Monaco Assessment, and an agreement with IAATO to provide scientific information for evidence-based management of tourism activity on the Antarctic Peninsula.

With at least two broad interdisciplinary SRPs, SCAR will be in a strong position not only to facilitate globally important science, but also to generate significant support to do so. The outcomes therefore would strengthen SCAR's position to *'be an engaged, active, forward-looking organization that promotes, facilitates, and delivers scientific excellence and evidence-based policy advice on globally significant issues ...'*

Recommendations

Delegates consider the proposal to focus the next generation of SRPs on a small number of interdisciplinary themes that cover Antarctic questions of global societal significance.



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Delegates recognise that with additional support for such SRPs, membership support (i.e. funding) could be directed to additional SRPs launched post-2020 as bottom-up, community driven priorities arise.

Budget Implications

None at present, except for support for Programme Planning Groups, and in future years, support for the SRPs approved. Potential multi-fold leveraging of SCAR funds from external sources.