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## **1st SCAR Antarctic and Southern Ocean Science Horizon Scan**



# 1<sup>st</sup> SCAR Antarctic and Southern Ocean Science Horizon Scan

## ***Introduction and Background***

The “SCAR 2011-2016 Strategic Plan<sup>1</sup>” calls for instituting a “Horizon Scanning” activity, to be held every 4 or 5 years, to support SCAR’s vision of leadership and international cooperation in Antarctic and Southern Ocean science and assist in achieving its mission of excellence in science and scientific advice to policy makers. The process of bringing the global Antarctic science and policy community together on a regular basis is an unprecedented opportunity to enhance existing partnerships, forge new relationships, mentor early career scientists and students, and communicate the importance of Antarctic and Southern Ocean science to a wide audience including the public, policy makers and science funders. It is envisioned that every 4 or 5 years this view of the future will be renewed and updated based on the latest scientific and global developments. Each Horizon Scan begins with assumptions and the current state-of-knowledge and it is reasonable to expect in these times of rapid change that these underpinnings may substantively change over a time period of 4 to 5 years. Regular, and sustained, forward thinking allows for course corrections and recognition of newly emerging trends that are critical to shorter timeframe strategic planning efforts.

The XXXII SCAR Delegates Meeting (July 2012) agreed to form an Action Group to begin planning for an Antarctic and Southern Ocean Science Horizon Scan (referred to as the “Scan”). The Action Group’s Terms of Reference and membership was agreed and the first meeting of the group was held at the SCAR Secretariat in Cambridge, UK from December 19-21, 2012. The meeting format included opportunities for community consultation by on-line questionnaire, personal appearances, and electronic discussions via Skype. There were 49 responses originating in 22 countries to an on-line questionnaire on various aspects of Scan planning. The Action Group developed a framework for the Scan including: the steps necessary for the Scan to be successful, the intended audiences, the objectives, and the wished for outcomes. The group identified a range of possible processes and mechanism to ensure broad and inclusive participation to be implemented before, during, and after the Scan. A list of important foundational resources was assembled to support the Scan’s deliberations. A survey of National Antarctic Program strategic planning documents was seen as an important first step to ensuring that the Scan was aligned with the plans of those that fund and support Antarctic research. A budget for the activity was estimated and a strategy to raise funds agreed. Another discussion topic was how to assemble a list of potential invitees to the Scan. It was agreed that a broad-based call for community nominations for Scan invitees would be effective and encourage wide participation in the Scan. The development of a list of compelling scientific questions will also be initiated with a broad and inclusive call to the community to pose questions. The Action Group used its discussions and community consultations to propose a detailed blueprint for the “1<sup>st</sup> SCAR Antarctic and Southern Ocean Science Horizon Scan”.

## ***Background and Context***

The Scan is being proposed within a framework of activities that is defining a new and robust paradigm for how SCAR’s Antarctic science and policy can work more effectively to benefit society. There are three initiatives within this framework that are mutually supportive and synergistic while having independent goals, budgets, processes, leadership and timelines. Within this framework of science and policy advice, the Scan forms the first element and will provide a community-based vision of the direction of Antarctic and Southern Ocean science in the next two decades. The Scan will not attempt to directly address policy makers’ issues but policy makers will be included as Scan participants, and Scan outputs will benefit the other activities. The second element, the Antarctic Conservation Strategy, is addressing the need to better inform and communicate with and to policy- and decision-makers the scientific principles that underpin the most critical environmental issues facing Antarctica and the Southern Ocean in the next ten to twenty years. The Antarctic Conservation Strategy will consider the utility of the science identified by the Scan in respect to the knowledge needed for conservation and environmental stewardship efforts. As a feedback, the

<sup>1</sup> <http://www.scar.org/strategicplan2011/>

Antarctic Conservation Strategy will inform the Scan of unmet, critical science needs and/or gaps in knowledge from a “science advice to policy-makers” perspective. The third element, the Antarctic Environments Portal, is envisioned as a readily accessible location that provides policy-ready scientific outputs. The Portal development is being led by New Zealand and is co-sponsored by SCAR. Facilitating access to the latest and best scientific findings and knowledge is a critical need of the policy community. The outcomes of the Scan and the Antarctic Conservation Strategy will directly support the objectives and information needs of the Portal. Together, this portfolio of initiatives addresses the common goal of benefitting society by encouraging international partnerships and cooperation, expanding the global knowledge database, informing policy decisions, improving decision-making, attaining conservation and stewardship goals, and educating and engaging the public.

## **Objectives**

The Scan will assemble 50 of the world’s leading Antarctic scientists, policy makers, leaders, and visionaries to identify the most important scientific questions that will or should be addressed by research in and from the southern Polar Regions over the next two decades. The proven method of “Horizon Scanning” (see e.g. Sutherland et al., 2011) will be applied to develop a community view of the 100 most important scientific questions in Antarctic science over the next two decades. The Scan outcomes will assist in aligning international programs, projects and resources to effectively facilitate Antarctic and Southern Ocean science in the coming years. The Scan process of bringing the global Antarctic science and policy community together to plan for the future will also serve as an unprecedented opportunity to enhance existing partnerships, forge new relationships, mentor early career scientists and students, and communicate the importance of Antarctic science to the public and policy/decision makers.

## **Audiences and Beneficiaries**

The audiences for the Scan are: 1) the international Antarctic and Southern Ocean scientific community, 2) the world-wide organizations/agencies that fund and support Antarctic and Southern Ocean science, and 3) the Antarctic Conservation Strategy and the Antarctic Environments Portal which provide direct links to the policy-making community. Several other potential audiences for outcomes of the Scan include:

- Partner organizations with a polar focus or an interest in the Polar Regions –outcomes to inform partners of new directions and identify opportunities for cooperation.
- Academia/Teachers - producing teaching materials and informing educators about important Antarctic topics and why they are important.
- Next generation scientists – highlighting future directions and exciting research opportunities for the next generation of scientists, engaging them in the process, and providing mentoring.
- The Public – educating and informing through high quality outputs.
- Non-governmental environmental and advocacy groups – informing and educating.

## **Methodology**

A “Horizon Scan” is based on a proven, iterative approach to processing hundreds of scientific questions posed by the community through a series of methodical steps to arrive at a prioritized list of the 100 most important and compelling scientific questions. This approach has been successfully used for a wide range of applications that have resulted in highly cited papers that have influenced national priorities for funding and action. Key steps in the process relative to the physical gathering of experts (the “Retreat”) include: pre-Retreat planning with the formation of a diverse and representative International Steering Committee, assembling foundational documents in a database, community-wide solicitations for nominees for Retreat participation and scientific questions, preliminary sorting of questions and recruitment of discussion leaders. At the Retreat the list of 100 most important questions will be embellished within an integrated, substantive narrative.

A large number of planning activities and supportive efforts to define future directions in Antarctic and Southern Ocean science have been or are being conducted. The Scan will build on but not duplicate these

efforts. The Scan is distinctly different from strategic planning activities, which often consider shorter timeframes, 3 to 6 years, and focus on an individual organization's actions and allocation of resources. The Scan has a longer time horizon, 20-years, and will be a collective view of the international community of scientists. The Scan will build on these other documents and planning efforts by the community and National Programs. Outcomes from the Scan will be “ground-truthed” against the plans for investments in Antarctic science, logistics, infrastructure, and technologies.

### **Dissemination**

Post-Retreat activities will include communicating outcomes to the community and producing a high profile article. Other types of outputs will include: short summaries of key topics, prioritized lists of questions, a website, Scan resource databases, a final report, presentation materials, presentations at conferences and symposia, topical papers in journals, and submissions to Antarctic Treaty Consultative Meetings.

### **Reference**

Sutherland W., Fleishman E., Mascia M., Pretty J. and Rudd M. 2011. Methods for collaboratively identifying research priorities and emerging issues in science and policy. *Methods in Ecology and Evolution* 2, 238–247.