



WP **15**
Agenda Item: 2.4
Person Responsible: M.C.
Kennicutt

EXCOM 2013

Barcelona, Spain 22/23rd July 2013

SCAR Science Horizon Scan

1st SCAR Antarctic and Southern Ocean Science Horizon Scan: An Update - 2/7/2013

1. Introduction

At the 2012 SCAR Delegates Meeting it was agreed that an Action Group (AG) be formed to begin planning for an Antarctic and Southern Ocean Science Horizon Scan (SHS). The rationale for the AG and Terms of Reference are detailed in XXXII SCAR Delegates' Meeting Working Paper 28b (http://www.scar.org/members/scarmeetingreports/xxxiiportland12/32_WP28bHorizonScanning.pdf). The membership of the AG was agreed and the first meeting of the Action Group was held at the SCAR Secretariat in Cambridge, UK from December 19-21, 2012. A detailed meeting report is available. The first meeting included opportunities for community consultation by on-line questionnaire, personal appearances, and electronic discussions via Skype.

The AG's Terms of Reference were to:

- 1) develop a clear vision of the intended audiences, objectives and outcomes for the horizon scanning activity - **complete**;
- 2) identify the steps necessary for the activity to be successful and define these steps within a framework of pre-activity planning and preparation, the process to be followed during the activity itself, post-activity consultation procedures and report drafting, and production of final deliverables - **complete**;
- 3) define the processes/mechanism to be utilized before and during the activity to ensure that the participants are fully engaged and time is effectively managed **complete**;
- 4) develop a list of preliminary resources that should be assembled to support the activity - **complete**;
- 5) estimate a budget for the activity - **complete**;
- 6) suggest a strategy for fund raising to support the activity - **complete**;
- 7) assemble a list of the types of people that should be invited and begin to gather a shortlist of invitees – **in progress**; and
- 8) develop a list of partner organizations that should be asked to send representatives - **complete**.

The aim of the Science Horizon Scan (SHS) is to convene a representative subset of leading scientists and professionals to identify the most important, emerging scientific themes for research to be conducted in and from Antarctica and the Southern Ocean over the next two decades. The SCAR 2011-2016 Strategic Plan calls for initiation of a "Horizon Scanning" activity to be held every 4 or 5 years. To support SCAR's mission of leadership in Antarctic and Southern Ocean science and assist in future strategic planning. The SHS is also a community-building exercise. From SCAR's Strategic Plan:

"To sustain a position of leadership, SCAR must maintain a continually evolving vision of frontiers and emerging directions in Antarctic and Southern Ocean science. To this end, SCAR will sponsor a regular assessment of scientific frontiers. The objective will be to assemble the world's leading experts to scan the horizons for emerging frontiers in Antarctic and Southern Ocean science and identify gaps in knowledge. This gathering will draw on data and information from SCAR conferences, symposia, workshops, meetings and other scientific gatherings; the outcomes of SCAR's Action, Expert and Program Planning Groups; National Antarctic Program planning and strategic documents; outcomes of SCAR's Scientific Research Programs; and reports of SCAR's Cross-linkages Meetings. The assessment will produce a 5- and 10- year vision of future directions and grand challenges in Antarctic science. These assessments will inform SCAR leadership and members as it evaluates its scientific portfolio, concludes programs and approves new ones."

The definition of Antarctica and the Southern Ocean historically adopted by SCAR is used:

"...Antarctica, the offshore islands of Antarctica, the surrounding ocean including the Antarctic Circumpolar Current, the northern boundary of which is the Subantarctic Front, and the Subantarctic islands lying south of the Subantarctic

Front as well as those which lie north of the Subantarctic Front but fallwithin the area of interest, namely Ile Amsterdam, Ile St Paul, Macquarie Island and Gough Island....”

In parallel, complementary activities are underway that are addressing SCAR’s scientific advisory mission - the Antarctic Conservation Strategy (ACS) and the Antarctic Environments Portal (AEP) projects. The Science Horizon Scan (SHS) focuses on future directions and emerging frontiers in pure/basic science. The ACS and AEP focus on providing access to policy-ready science. All three of these activities are mutually beneficial and synergistic but each has its own independent timeline, goals, leadership, and processes. This report summarizes progress on organizing and funding the Science Horizon Scan is summarized.

2. Funding of the Science Horizon Scan

Core funding for the Science Horizon was procured through a proposal to the Tinker Foundation. In June, 2013 SCAR was notified of an award of \$200,000 from the Tinker Foundation. In addition, New Zealand’s offer to host the Scan Retreat was accepted. In addition, Antarctica New Zealand and the New Zealand Antarctic Research Institute jointly pledged \$48,000 in financial support of the activity. To date SCAR has allocated \$40,000 in 2012 and 2013 to support planning efforts and conduct of the Scan. Several SCAR members have indicated the likelihood of funding the participation of their nationals in the Scan Retreat (~\$5000/individual to attend the Retreat). Additional support is being solicited from other entities and further proposals will be submitted to various Foundations and organizations. For example, a \$40,000 request for financial support will be considered at the Council of Manager of Antarctic Programs (COMNAP) at their Annual General Meeting in Korea in July 2013. Based on the current commitments the bulk of the funding (~80%) of the Science Horizon Scan is now in hand. It is estimated that the overall Scan costs will be in the range of \$367, 000 inclusive of which \$69,000 remains to be raised (Appendix 1). Not included in the budget is post-Retreat development of publications and wide dissemination activities and these costs will be the subject of future fund raising efforts. It is estimated that post-Retreat activities may require as much as \$100,000 in additional financial support and these activities will be conducted as funds are available.

3. The Science Horizon Scan International Steering Committee (ISC)

As of July 1, 2013 the Action Group it is recommended that the AG be disbanded and replaced by an International Steering Committee (ISC). By agreement of the Action Group all members were asked to continue on the ISC and all have agreed to do so. During the planning phase the AG membership was expanded several times to include the SCAR Executive Committee, SCAR SSG Chief Officers, and the Muse Fellows. These expansions in membership addressed issues of scientific disciplinary representation, gender diversity, and geographic inclusion. The membership of the ISC is summarized in Appendix 1.

4. Timeline and Milestones for the Science Horizon Scan

As plans have been developed for the Horizon Scan the timeline for accomplishment of major milestones has been revised and updated:

- **October 2012:** Formation of an SCAR Action Group for Horizon Scan Planning (AG HSP). - **Complete**
- **December 18-21, 2012:** 1st Meeting of the AG HSP, Cambridge, UK. - **Complete**
- **March 1, 2013:** Submit proposal for funding to the Tinker Foundation. - **Complete**
- **May 15, 2013:** Working website goes live on SCAR web site. - **Complete**
<http://www.scar.org/horizonsscanning/>
- **May 15 - June 15, 2013:** 1st Round Community Solicitation of Scientific Questions. - **Complete**
- **June 2013:** Notification of Tinker Foundation award – USD 200,000. - **Awarded**
- **July 1, 2013:** Transition from AG HSP to the Horizon Scan International Steering Committee (ISC) - **Complete**

- **July 1-15, 2013:** Solicit community nominations for retreat invitations. –**In Progress**
- **July 2013:** Work with ISC to analyse the question database and formulate additional scientific question solicitations. – **In Progress**
- **July 2013:** Identify Retreat break-out discussion group leaders. - **In Progress**
- **July 2013:** Work with Qualtrics to develop survey tools for the Retreat. - **In Progress**
- **August 2013:** 2nd Round Community-wide Solicitation of Scientific Questions (as needed).
- **August 2013:** Horizon Scan Retreat Invitees selected and invited.
- **August 2013:** Summary report of existing planning, workshop, symposia, etc. documents. - **In Progress**
- **September 2013:** 1st ISC meeting (as needed).
- **September–October 2013:** Select additional invitees based on declines of first round invitations.
- **October- December 2013:** Work with discussion group leaders to analyse question database, begin to assemble questions into topical bins for the Retreat, and produce summaries of first impressions.
- **January 2014:** 2nd Meeting of the ISC (as needed).
- **April 21-23, 2014:** Horizon Scan Retreat (*tentatively scheduled for Queenstown, NZ*).
- **May–June 2014:** Develop apex article and glossy final report with assistance from the ISC.
- **July 2014:** Open draft report for community wide-comment.
- **August 2014:** Revise Horizon Scan final report based on feedback from the community.
- **August, 2014:** Presentation of Horizon Scan results to the community at the SCAR Open Science Conference and the COMNAP AGM.
- **September - December 2014:** Town hall meetings, regional meetings, etc. (dependent on funding).
- **September 2014:** Submission of apex article for publication.
- **November-December, 2014:** Finalize apex article.
- **January 2015:** Publication of apex article.
- **February – April 2015:** Production of other Scan outputs (dependent on funding).
- **April 30, 2015:** Project end.

5. Progress

Progress on items of particular note include:

- The bulk of funding necessary to conduct the Scan has been committed.
- The Science Horizon Scan website is operational.
- The 1st Round Scientific Question solicitation has been completed.
- The ISC has been formed.
- Tentative dates for the Science Horizon Scan have been set: April 21-23, 2014; Queenstown, NZ.
- Discussions have been initiated with a private sector company expert in conducting surveys - Qualtrics

More than 350 respondents from 38 countries submitted 751 scientific questions to the 1st Round request for scientific questions. The demographic and disciplinary responses were representative of the breadth of the global Antarctic science community (see Appendix 2).

6. Next Steps

Key steps in 2013 include:

- Continued fund raising activities.
- Finalize and *beta-test* survey tools for conducting the retreat by the ISC.
- Community-wide solicitation of nominations for Retreat participants.
- Selection and issuing of invitations to attend the Retreat.
- A targeted 2nd Round Solicitation of scientific questions.
- Identification of break-out group discussion leaders.
- Finalize local arrangements for Retreat.

7. Summary

To date the Scan has been widely publicized and there is great interest in the activity. Community response has been excellent and activities will continue to ensure broad participation. Efforts will continue to advertise and promote the Scan.

Appendix 1

Summary Budget (24 months): July 1, 2013 – June 30, 2015								
Budget Category	Estimated Budget Amount	SCAR	Tinker Foundation*	AntNZ/ NZARI	Remaining to be Raised	COMNAP Request (pending)	NZ Post (pending)	Kelly Tarletons (pending)
Pre-planning - SCAR	\$15,000	\$15,000			\$0			
Airfare	\$125,000		\$96,000	\$1000	(\$28,000)	\$15,000		
Lodging and Meals	\$116,000		\$69,000	\$47,000	\$0			
SCAR Secretariat Support	\$36,000		\$20,000		(\$16,000)		\$8000	\$8000
ISC Meetings (2)	\$50,000	\$10,000	\$25,000		(\$15,000)	\$15,000		
Professional Facilitation**	\$25,000	\$15,000			(\$10,000)	\$10,000		
GRAND TOTAL	\$367,000	\$40,000	\$210,000	\$48,000	(\$69,000)	\$40,000	\$8,000	\$8,000
*includes \$10,000 from MM Prize)								
**Qualtrics estimated at \$10,000								
Budget Detail and Justification				NOTES				
<p>Total transportation costs are estimated to be ~\$125,000. A major budgetary expense is travel costs associated with assembling the attendees at the Retreat site. Airfare to New Zealand will vary significantly depending on where the traveler resides (e.g., Australia, U.S., and the U.K.). Examples: Melbourne to Auckland - \$600; San Diego to Auckland – \$1700; Hobart, Tasmania to Auckland - \$700; and Cambridge to Auckland – \$2000. To estimate transportation costs an average airfare of \$1800 was assumed. An additional \$200 per person is budgeted for local travel from the place of origin and once at the meeting site. For these estimates it is assumed the Steering Committee has 20 members included in the Science Horizon Scan participants plus 30 invitees for a total number of attendees of 50. An additional \$500 per traveler is added for transport to and from Auckland to Queenstown, NZ.</p>								

<p>Total lodging and meals are estimated to be ~ \$116,000. Lodging and meals is calculated based a 6 day stay for Steering Committee members (n=20) and 4 days for Science Horizon Scan invitees (n=30). This is a total of 240 person days. Estimates are based U.S. on GSA approved meals and per diem for Auckland of \$351/person/day. As per GSA regulations 75% of ME&I (\$158/day) is allowed for one travel day to and one return day per traveler. It is assumed these estimates will include the costs of any associated social events as people are paid a per diem for meals. \$20,000 is added for coffee breaks, Retreat dinner and function, and icebreaker event.</p>	<p><i>6/26 - Updated estimate on revised needs is expected soon.</i></p>
<p>SCAR Secretariat support is estimated to be ~\$36,000.The planning and staging of this event will take significant time in the lead-up and during the event itself. Dedicated time of the SCAR Executive Officer of ~ 12 weeks (or an equivalent part-time hire) is budgeted to ensure adequate support and other administrative costs are included.</p>	
<p>ISC Meetings (2 at \$25,000/meeting) is estimated to be ~\$50,000. As part of planning for the event, two meeting of the International Steering Committee of 20 will be desirable. The location and timing of these meetings have not been decided but a conservative estimate is that each meeting will cost ~\$25,000 for travel, lodging, and other costs. A meeting host will be recruited to defray the cost of ISC meetings.</p>	<p><i>All work to date has been electronic and physical meetings may not be needed</i></p>
<p>Professional facilitation support and publication costs are estimated to be ~\$25,000. Professional administrative and writing assistance will be important to producing high quality products based on the outcomes of the Horizon Scan. Technological support will be needed to develop the program, stage the event, and produce derivative products (such as podcasts, etc.) after the event. Qualtrics, a professional surveying private sector company is being engaged to develop appropriate tools for the project.</p>	<p><i>Qualtrics Estimate is ~\$10,000 for survey tools Resort queried about web casting capabilities</i></p>

Appendix 2.

SCAR Science Horizon Scan International Steering Committee				
(*SCAR SSG – SCAR Standing Scientific Group)				
	Name	Country	Discipline/Topic	Associations
1	Kennicutt II, Mahlon; Chair mckennicutt@tamu.edu	U.S.A.	Oceanography, environmental science, science and policy, ATCM Representative	Past President of SCAR
2	López-Martínez, Jerónimo; co- Chair jeronimo.lopez@uam.es	Spain	Geology	President of SCAR
3	Bromwich, David	U.S.A.	Meteorology Climatology	Chief Officer SCAR Physical SSG*
4	Chown, Steven 2009 Muse Prize Winner steven.chown@monash.edu	Australia (formerly South Africa)	Terrestrial Ecology, Antarctic Conservation Strategy	Chief Officer SCAR's Standing Committee on the Antarctic Treaty System;
5	Elfring, Chris celfring@nas.edu	U.S.A.	Long-range and Strategic Planning	Direct of Polar and Climate Boards U.S. National Academies
6	Hosie, Graham Graham.Hosie@aad.gov.au	Australia	Marine ecology	Chief Officer of SCAR's Life Sciences SSG
7	Kim, Yaedong ydkim@kopri.re.kr	Korea	Geophysics, National Antarctic Program, ATCM Representative	Vice President of SCAR, Korea Delegate to SCAR,
8	Lochte, Karin Karin.Lochte@awi.de	Germany	Marine ecology, National Antarctic Program	Vice President of SCAR, Germany SCAR Delegate
9	Lyons, Berry lyons.142@osu.edu	U.S.A.	Limnology, LTER scientist	Chief Officer of SCAR's Geosciences SSG*
10	Marensii, Sergio smarensii@dna.gov.ar	Argentina	Geology, National Antarctic Program	Vice President of SCAR, Argentina Delegate to SCAR, ATCM Representative
11	Peck, Lloyd lspe@bas.ac.uk	U.K.	Ecologist, Experienced Horizon Scanner	British Antarctic Survey
12	Sanson, Lou L.Sanson@antarcticanz.govt.nz	New Zealand	National Antarctic Program, COMNAP/ ATCM Representative	Antarctica New Zealand
13	Simoes, Jefferson jefferson.simoes@ufrgs.br	Brazil	Glaciology	Brazil SCAR Delegate
14	Shmakin, Andrey andrey_shmakin@mail.ru	Russia	Climate Science	Russia SCAR Delegate
15	Sutherland, William w.sutherland@zoo.cam.ac.uk	U.K.	Ecology, Horizon Scan Expert	University of Cambridge

16	Sparrow, Michael mds68@cam.ac.uk	SCAR	Oceanography/ Climate	SCAR Executive Director
17	Badhe, Renuka rb302@cam.ac.uk	SCAR	Ecology	SCAR Executive Officer
18	Fricker, Helen 2010 Muse Prize Winner hafricker@gmail.com	U.S.A	Satellite imagery, subglacial aquatic environments	
19	Xavier, Jose 2011 Muse Prize Winner jxavier@zoo.uc.pt	Portugal/ U.K.	Marine ecology	APECS, British Antarctic Survey
20	Rintoul, Steve 2012 Muse Prize Winner steve.rintoul@csiro.au	Australia	Oceanography	CSIRO, SOOS and IPCC
21	Nayak, Shailesh secretary@moes.gov.in	India	Geologist	Secretary, Ministry of Earth Sciences
22	Yang, Huigen huigen_yang@pric.gov.cn	China	Astronomy and astrophysics, upper atmosphere physics	Director of Polar Research Institute of China, NAP, IASC
23	Sharaishi, Kazuyuki kshiraishi@nipr.ac.jp	Japan	Paleo -geology, plate tectonics deep-time	Director General National Institute of Polar Research, Japan; NAP
24	Storey, Bryan bryan.storey@canterbury.ac.nz	New Zealand	Geology, tectonics, Earth System Science	Chair LOC for SCAR 2014 Biennial Meetings, Director of Gateway
25	Siegert, Martin 2103 Muse Prize Winner	UK	Glaciologist	