

Report on 1st SCAR Antarctic and Southern Ocean Science Horizon Scan

Queenstown, New Zealand

April 20 - 23



Background

➤ History

- ❑ An element of the SCAR 2011 – 2016 Strategic Plan
- ❑ 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
- ❑ Chuck Kennicutt (Past SCAR President) selected as project leader
- ❑ Funds raised from the Tinker Foundation (USA), Antarctic-NZ and other sources

➤ Objectives

- ❑ “To assemble 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”
[<http://www.scar.org/horizonscanning/>]

The Selection Process

➤ THE QUESTIONS

- ❑ The global Antarctic community was asked to provide input on “how best to create a robust framework and process for collectively identifying future directions in Antarctic science and science advice to policy makers”
- ❑ The community was requested to submit questions relating to any aspect of Antarctic science

➤ THE PARTICIPANTS

- ❑ Members of the community were asked to nominate individuals for participation in the ‘retreat’ [approx. 800 nominated]
- ❑ Approx. 70 participants were selected by the Steering Committee on the criteria of subject specialisation, geographical region, age and gender .
- ❑ Selected participants were invited to attend (90% acceptance)
- ❑ Selected participants were requested to pre-screen the 1000+ questions

The Remit

- To identify, from the 1000+ questions submitted by the international Antarctic community, the 60 most important scientific questions which will be relevant in 20 years hence (2035).
 - ❑ Scientifically unassailable
 - ❑ Of the highest relevance
 - ❑ Will not be resolved in the near future

The workshop



The venue



Accommodation



Unconventional voting
procedure

Our leader



The process: 1000 → 80

- Under the leadership of Prof Bill Sutherland [1,2], the Horizon Scan team was taken through a process of reducing, combining and refining the 1000 questions submitted by the international community.
 - ❑ Day 1. Four groups (geology, marine, ice, terrestrial biology) were asked to refine 60-80 questions to gold (10%), silver (10%) and bronze.
 - ❑ Day 2. Re-formatted groups repeated the process with re-grouped and sub-classified questions
 - ❑ Day 3. All participants were able to vote on the final selection of 60 core questions across all subject areas.

[1] Sutherland, W.J., et al. 2011, Methods for collaboratively identifying research priorities and emerging issues in science and policy, *Methods in Ecology and Evolution*, 2: 238–247.

[2] Sutherland, W.J., et al, 2012, A horizon scan of global conservation issues for 2012, *Trends in Ecology and Evolution*, 27: 12-18

Workshop outputs

➤ 80 unique '20-year' questions, in the categories of:

- ❑ Antarctic Atmosphere and Global Connections [11]
- ❑ Southern Ocean and Sea Ice in a Warming World [12]
- ❑ Antarctic Ice Sheet and Sea Level [11]
- ❑ Dynamic Earth - Probing Beneath Antarctic Ice [8]
- ❑ Antarctic Life on the Precipice [26]
- ❑ Human Presence in Antarctica [7]
- ❑ Near-Earth Space and Beyond - Eyes on the Sky [5]

Planned publications

- Nature Commentary (01 June 2014 submission)
- Antarctic Science review (late 2014 submission)
 - ▣ The full list of 'Foresight Questions' will be made public with these publications. Examples are:
 - *How does small-scale morphology in subglacial and continental shelf bathymetry affect Antarctic Ice Sheet response to changing environmental conditions?*
 - *What is the genomic basis of adaptation in Antarctic and Southern Ocean organisms and communities?*

Expectations

- Enhanced international academic and governmental awareness of the threats to the Antarctic region
- A driver for future international collaborative efforts
- Guidance for the future focus of National Antarctic research programs
- Guidance to the academic research community of the key issues affecting the Antarctic region