



THE SOUTHERN OCEAN OBSERVING SYSTEM

ANNUAL REPORT

TO THE SCOR EXECUTIVE COMMITTEE

2014

The Southern Ocean influences climate, sea level, biogeochemical cycles and biological productivity on a global scale. Many of the most difficult and pressing issues faced by society—how to mitigate and adapt to climate change and sea-level rise, how to manage the effects of ocean acidification, and how best to conserve marine resources and biodiversity—cannot be addressed effectively without improved understanding of Southern Ocean processes and feedbacks and their sensitivity to change. The most urgent research challenges in the Southern Ocean often span traditionally separate scientific disciplines. The Southern Ocean Observing System (SOOS) provides the sustained, integrated, multi-disciplinary observations required to meet these challenges.

SOOS is a joint initiative of SCAR and SCOR, and is endorsed by POGO, WCRP-CLIVAR, and WCRP-CLiC.

SOOS was officially launched in August 2011 with the opening of the International Project Office (IPO), hosted by the Institute for Marine and Antarctic Studies, University of Tasmania. A Scientific Steering Committee (SSC) of 16 international members oversees the strategic development and implementation of SOOS activities and products.

The SOOS Executive Officer presented SOOS activities to the SCOR Executive Committee at the November 2013 meeting in New Zealand. This report provides an update on activities from November 2013 until end May 2014. SOOS welcomes all comments and suggestions on the activities identified herein. All acronyms external to SOOS are defined on page 14.

1. PROGRESS ON THE SOOS IMPLEMENTATION PLAN

1.1 Development of the SOOS 10-year Detailed Implementation Plan

During the first 2 years of SOOS, strategic activities were generally defined through a combination of needs outlined in the *Initial Science and Implementation Strategy* (see www.soos.aq/index.php/products/soos-products?view=product&pid=1), discussions at the annual SSC meetings, and development of workplans for each of the 6 SOOS Science Themes. Following the publication of the SOOS 20-year Vision (www.soos.aq/index.php/products/soos-products?view=product&pid=19) in 2013, we are now better placed to identify the trajectory of activities and products required to achieve our vision of an integrated, multidisciplinary and sustainable observing system for the Southern Ocean.

What is now needed is the development of an *Implementation Plan*, which will detail the required activities and products (both theoretical and in the field), and align these with a realistic timeline. This Implementation Plan must also articulate the funding and infrastructure requirements for the planned activities. A clear and realistic Implementation Plan, whilst remaining flexible, will prevent mission-drift, provide continuity in direction and enable clear pathways of engagement for the scientific community.

The 2014 meeting of the SSC (sponsored by SCOR) will focus almost entirely on the development of the Implementation Plan. It has also become clear over the last year, that much of SOOS activities thus far have focussed on addressing gaps in the scientific priorities and knowledge. However, these activities are secondary to the key objective of SOOS, which is to design an observing system and enhance current observation efforts. The SOOS Executive Committee will be asking the SSC to identify key activities that are needed to focus our efforts towards observing system design and enhance field activities, and will also suggest a new governance structure that is required to facilitate and coordinate implementation of the plan.

It is intended that the draft Implementation Plan will be available from the SOOS website by the end of 2014. SOOS will be inviting feedback from its sponsors and endorsers following the development of this plan following which SOOS may seek publication of the proposed Implementation Plan for exposure to the international research community.

1.2 Southern Ocean Air-Sea Fluxes Initiative

At the 2013 SSC meeting in China, the SSC identified Air-Sea Fluxes (across all disciplines and systems) as being a priority gap in Southern Ocean observations. As a first step towards addressing this issue, SOOS has identified an international core group of people to help define the objectives of the Initiative and to organise a workshop.

The Organising Committee comprises: Sarah Gille (Chair, Scripps, USA), Alberto Naveira Garabato (NOC, UK), Mark Bourassa (FSU, USA), Eric Schulz (BOM, Aus), Simon Josey (NOC, UK), Matthew Mazloff (Scripps, USA) Hiroyuki Tomita (JAMSTEC, Japan), Andrew Lenton (CSIRO, Aus), and Carol Anne Clayson (WHOI, USA).

The workshop objectives are to:

- 1) Consolidate information concerning current state of air-sea observing flux efforts in the Southern Ocean
- 2) Discuss where the critical gaps are and what current and emerging technology may be used to address them
- 3) Discuss synergies between the in-situ data, satellite data and modelling communities, and how such synergies can be better exploited to mutual benefit
- 4) Develop a realist strategy for improving key flux measurements on a range of timescales.

Still in the planning stage, this workshop will likely take place in Europe in Spring 2015. Initial discussions are taking place with SOLAS and CliC to identify overlapping interests. The organising committee is in the process of identifying a potential host, as well as additional funding and sponsorship for the workshop. At present, the two likely locations include Bern, Switzerland (if funding is sought from the International Space Science Institute), or in Kiel, Germany (if funding is sought through SOLAS from GEOMAR). The SOOS IPO currently plans to contribute 10 000 AUD towards this workshop, although this is dependent on continuation of existing IPO sponsorship in 2015.

All information on this initiative, including a link to download the workshop prospectus, is available from the SOOS website (www.soos.aq/index.php/science/air-sea-fluxes).

1.3 Satellite Data Initiative

Satellite data products are an integral component of SOOS and our requirements for data are only going to increase through time. In 2012, the WMO Polar Space Task Group (www.wmo.int/pages/prog/sat/pstg_en.php) contacted SOOS and highlighted that they needed to hear a strong, consolidated user voice to ensure that Southern Ocean requirements are being met and incorporated into strategic planning of future missions.

In addition to this, at the 2012 and 2013 SSC meeting, it became apparent that there are many issues with accessing satellite data, understanding what data is available, and also many significant issues with calibration and validation of Southern Ocean satellite data.

In order to address the abovementioned issues, SOOS has instigated the development of a Southern Ocean Satellite Data Initiative.

The objectives of this initiative are to:

- 1) Identify existing and planned Southern Ocean satellite data products and to make this information known to the greater scientific community
- 2) Identify new products that could be produced from existing data (e.g., improved algorithms and byproducts)
- 3) Communicate SOOS data requirements to data providers (including long-term requirements) with one, consolidated user-voice
- 4) Enhance satellite data validation efforts

In March 2014, SOOS joined with CliC and the WMO PSTG and invited the Southern Ocean community (science, logistical, etc.) to contribute to a survey on Southern Ocean Satellite Data Requirements. This survey will provide an avenue for users to articulate their requirements (across all disciplines and spatial/temporal scales) and will be compiled into a Community Report that will be submitted to WMO PSTG as the consensus view on our data requirements. The survey closes 30 May 2014. The SOOS IPO is in the process of hiring someone with satellite data expertise to compile this information. We are expecting a draft of the report to be available from the SOOS website by the end of 2014.

For more information on this initiative, and for a link to the survey, visit the SOOS website (www.soos.aq/index.php/science/satellite-data).

1.4 Identification of Essential Ocean Variables (EOVs) and Ecosystem Essential Ocean Variables (eEOVs)

A key objective of SOOS is the design of a multidisciplinary and sustainable observing system. As a first step towards this objective, we need to select those parameters, or Essential Ocean Variables (EOVs) that will provide us with the information needed to detect, track and attribute (either directly or using models) change in the physical, biogeochemical and biological systems of the Southern Ocean.

EOV activities of the last year have focussed predominantly on identification of ecosystem Essential Ocean Variables (eEOVs) (for details of other EOV activities see section on Collaborative Activities). In 2013, SCOR led SOOS's successful proposal to ICSU for funding for a workshop on *Identifying ecosystem Essential Ocean Variables for measuring changes in marine ecosystems*. As reported to SCOR EXCOM in Nov 2013, this globally focussed workshop was modified to focus solely on the Southern Ocean in an effort to avoid duplication with the GOOS Biology Panel activities.

The workshop was hosted by Oscar Schofield (SOOS Co-Chair) of Rutgers University in March 2014. Nearly 30 international scientists attended, and invitations were extended to representatives of GOOS, GOOS Deep Ocean Observing System (DOOS), US Integrated Ocean Observing System, IOCCP, IOCCG, GEO BON, IndiSeas, SCOR, SCAR, CCAMLR, Palmer LTER, US AMLR, IMBER and APECS, although not all could attend. SCOR provided the support for 2 developing country scientists to attend the workshop.

Significant preparation occurred prior to the workshop to develop a process that the community could agree was the correct path for firstly identifying the candidate eEOVs, and then prioritising them. The process designed by the Framework for Ocean Observing and the outcomes of the GOOS Biology Panel were used as a base for this work. Key outcomes of the workshop will be highlighted in the official report to ICSU (which will be made available on the SOOS website at www.soos.aq/index.php/science/ecosystem-variables) and include a community agreed definition of an eEOV, an agreed level for eEOVs within the hierarchy of ecosystem properties, identification of the overarching ecosystem parameters that the eEOVs should address, and some key examples of candidate eEOVs.

The workshop participants are currently expanding the list of candidate eEOVs. In parallel, SOOS has submitted a SCOR Working Group proposal to support the next steps in the process; using the defined candidate eEOVs to design a Southern Ocean biological observing system.

1.5 National Activities and Capabilities Initiative

A key issue highlighted by the SSC during the 2013 SSC meeting is that we do not have a good understanding of the observations that are being taken routinely by all nations (at sea and from bases). This then, makes it difficult to properly identify gaps. We also do not have a clear picture of the funding structure and process across all Southern Ocean nations, the research infrastructure and capabilities of nations, the key data repositories and policies, the dominant shipping tracks, and the strategic science plans for their Southern Ocean research. In addition to this, many nations have fishing fleets that regularly fish the Southern Ocean, and in some cases nations also must undertake fish stock monitoring surveys for CCAMLR reporting. This information is important as fishing vessels are potential opportunistic observation platforms.

This initiative will compile information on national capabilities and activities and produce a user-friendly, web-based product that will enable all users to search and identify national efforts. It will utilise the existing communities of CCAMLR, COMNAP, POGO, SCAR and SCOR to gather the information, and will also likely be an important information source for these communities. It is hoped that such information can be used by researchers in the forward planning of research proposals, and will enable greater cross-utilisation of national infrastructure and capabilities.

Action on this product so far have been preparatory in nature. The IPO has outlined the requirements for the product, worked to secure financial support for its production, and identified an appropriate person to carry out the work. Some information relevant to this product has already been collected through the SOOS Asian workshop and resulting publications. This initiative will officially start in July 2014. SCOR has provided funds to enable SOOS to produce this product. Where possible, open-source visualisation tools and in-kind IT support will be used to display the information online. The information will be compiled by Dr Tom Remenyi from the Antarctic Climate and Ecosystems Cooperative Research Centre (ACE CRC, Hobart, Australia) who will be contracted by SOOS to produce this product.

More information will be available on this initiative on the SOOS website under “Activities” once it has officially started.

1.6 Under Ice Initiative

A workshop was held on this initiative in 2012. Activity on this initiative has stalled mainly due to the lack of time that the leaders have to put towards it. However, over the last year they have been working on development of the Under Ice Strategy and it will be presented to the SOOS SSC at the June 2014 SSC meeting.

See www.soos.aq/index.php/science/under-ice for more information.

1.7 Standardised Methods and Protocols Initiative

There are multiple methods that can be used when measuring or monitoring ocean variables and parameters. Not all methods produce observations that are equal in quality and precision, and variability in methods can lead to significant comparability issues. For measurement of many variables, international standards and protocols exist, however this information can be difficult to access and is widely distributed across many websites. In many cases, users are unaware that they exist.

The objective of this initiative is to compile all available internationally agreed standards and make the information easily accessible. During this process, any observations that do not have a consensus standard methodology will be identified, and the requirements for developing one will be assessed.

Action on this initiative has been preparatory. Funds have been secured by SCOR to produce this product, the SOOS IPO has outlined the requirements for the product and identified an appropriate person to carry out the work. This initiative will officially begin in July 2014, and in-kind support of any additional production costs (e.g., website programming) will be sought. Dr Tom Remenyi (ACE CRC) has been hired to carry out this work.

More information will be available on this initiative on the SOOS Website under “Activities” once it has officially started.

1.8 Priority Observations Task Group

The Priority Observations Task Group (PO-TAG) is being coordinated by Tosca Ballerini, the APECS representative on the SOOS SSC.

The objective of PO-TAG is to identify the observations that are critically lacking in the Southern Ocean, and highlight those that could be made quickly/cheaply underway on ships (and hence could in theory be done from tourist ships, resupply ships as well as research ships), or from, for example, small inflatable boats deployed from coastal Antarctic stations. This information will be useful to nations seeking to leverage more effort from their existing operations and make more significant contributions to SOOS without necessarily having to increase infrastructure.

Since November 2013, numerous observation communities and experts in the fields of physics, biogeochemistry and biology have been contacted for their input on this product. A spreadsheet of information is currently being compiled and includes information on key observations of sea ice, ice shelves, carbon, water properties, biology-plankton, biology-top

predators and biology-benthos. As expected, it has been easier to identify priority measurements for the physics and the biogeochemistry than for the biology. At the Rutgers workshop on eEOVs for the Southern Ocean it was suggested that PO-TAG should create an online survey to for input from the greater biological Southern Ocean community on what and how to measure the biology. The members of PO-TAG will discuss the merits of this survey over the coming months. The SOOS IPO and PO-TAG will also discuss the most effective way to visualise the information collected.

1.9 Data Management Sub-Committee

The SOOS Data Management Sub-Committee (DMSC) comprises 14 international members who represent various topical and national data centres (www.soos.aq/index.php/data/dmsc). Dr Kim Finney (AAD, Australia) was an SSC member and DMSC chair from 2012 until March 2014, when she rotated off due to new work commitments. Steve Diggs (CCHDO, USA) has been a member of the DMSC since 2012, and was elected in early 2014 by the SOOS EXCOM to replace Kim Finney on the SSC and DMSC Chair.

As reported in 2013, SOOS has been working with NASA GCMD to develop a Metadata Portal. This is currently in beta testing phase and will hopefully be officially released before Autumn 2014. In addition to the testing of the portal, the release date is dependant on the development of the Metadata Portal Cookbook (see also section 3.2), which is presently in planning phase.

The SOOS data web pages are overdue for a significant update and this will be coordinated by Steve and his team at CCHDO. This will include a more dynamic supply of links and information on Southern Ocean data repositories. We are in the final stages of securing an agreement with NSF (funders of CCHDO) for in-kind support of IT and programming help to develop and maintain data components of the SOOS website and advance other areas where possible.

Steve Diggs and the SOOS IPO have recently organised the 2nd DMSC meeting, which will be held alongside SCAR in Auckland, from the 29-30th August 2014 (see also section 4.3). This workshop will be hosted and sponsored by the National Institute for Water and Atmospheric Research (NIWA) and the SOOS IPO will contribute funds to cover travel costs of attendees.

1.10 Collaborative Activities

There are many international organisations and programmes of relevance to SOOS Objectives and where possible SOOS works with these communities in the organisation of activities and delivery of products.

SOOS/COMNAP Task Group

As reported in the 2013 report to SCOR, SOOS was invited by the Council Of Managers of National Antarctic Programs (COMNAP) to hold a workshop at their annual meeting. The objectives of this workshop were to identify collaborative projects that SOOS and COMNAP could work together on. Following a very successful workshop, SOOS and several COMNAP members put forward a proposal for a number of activities to COMNAP EXCOM. Unfortunately, none of the proposed activities were approved.

Following this, COMNAP has developed a Task Group comprising national representatives who are interested in working further with SOOS. This Task Group is being led by Rob

Wooding (AAD, Aus). Although a number of meetings have taken place between Rob and the SOOS Executive Officer, no proposed actions have progressed.

SOOS will continue to communicate activities and requirements to COMNAP and the Task Group, as COMNAP represent an important community, particularly with regard to future planning of logistics and infrastructure for the SOOS Pilot Study. COMNAP will also be an important community to include in the development of the National Capabilities and Activities product (see section 1.5).

POGO

In 2013, SOOS was invited to hold a workshop alongside the POGO Annual Meeting in Hobart, Australia (Jan 2014). Given the potential of POGO members to allocate the resources and support of their institutes, SOOS developed a workshop that was focussed on identifying specific actions for POGO institutes to become more involved in SOOS. We proposed that POGO institutes work with SOOS to develop a multi-national funding bid on one of two field initiatives. Although supportive in principle, POGO members did not commit their institutes to developing a funding proposal.

A number of proposed Action Items were approved and are outlined below:

A) 2.1.1. Sustain Action Item 7 from POGO-14 and support the growth of the SOOS Metadata Portal. Action: POGO members.

B) 2.1.2. Work with SOOS, ODIP, COMNAP, JCOMMOPS to coordinate the various ship schedule databases; support population of the ODIP shipping database with information on Southern Ocean activities. Action: Secretariat and Executive Committee.

C) 2.1.3. Provide POGO endorsement for the Southern Ocean Carbon and Climate Observations and Modelling (SOCOM) project. POGO Members encouraged to take part in the project by deploying additional floats with biogeochemical sensors in the Southern Ocean. Currently only USA, UK, Australia, Argentina, Brazil, South Africa and Switzerland participate. Action: Chair to write letter of support. Members to investigate potential participation in the project.

SOOS is in the process of following up these Action Items with POGO and the relevant communities.

CCAMLR

SOOS has a strong connection to the Convention for the Conservation of Marine Living Resources (CCAMLR). Andrew Constable (SOOS Vice Chair) is an Australian representative to CCAMLR, and the Executive Officer regularly meets with Keith Reid (CCAMLR Science Officer) to discuss collaborative activities.

In 2013, CCAMLR was involved in the development of candidate eEOVs and supported Keith Reid to attend the SOOS eEOV workshop in the USA. In addition to this, the SOOS Executive Officer met with Andrew Wright (CCAMLR Executive Secretary) to discuss CCAMLR contributions to the SOOS Satellite Data Requirements survey (See section 1.3). Also discussed was the potential for joint CCAMLR/SOOS projects through the “Antarctic and Southern Ocean Internship” as part of the Masters programme at IMAS, University of Tasmania.

IAATO

The use of tourist vessels as platforms for collecting observational data has great potential. SOOS has plans to work with the International Association of Antarctic Tourist Operators (IAATO) to identify mechanisms by which this might be achieved. It is expected that once

SOOS has moved further forward in the design of an observing system, we will be better placed to prioritise and *quantitatively* articulate our requirements.

In 2014, SOOS SSC member Dan Costa initiated discussions with IAATO, specifically on identifying Tourist activities in the Peninsula region.

GOOS, DOOS, OOPC

A number of international initiatives are starting to address the issue of identifying EOVS. SOOS is working with those communities where possible to avoid duplication. For example, GOOS and IOCCP recently held a workshop to identify candidate EOVS for biogeochemical systems. A number of SOOS SSC members were present at this meeting and it is intended that over the course of the next year, SOOS will use the GOOS outcomes to then define biogeochemical EOVS specific to the Southern Ocean. SOOS also intends to, where possible, work with OOPC in the identification of physical oceanographic EOVS (although there has been no activity to report on as yet). Further, the GOOS-DOOS is being developed and, where relevant, SOOS will work with this community to achieve overlapping objectives. A DOOS representative also attended the SOOS eEOV workshop.

ODIP

The Ocean Data Interoperability Program (ODIP) is an international initiative to contribute to the removal of barriers hindering the effective sharing of data across scientific domains and international boundaries.

Roger Proctor (SOOS DMSC) made SOOS aware of this initiative in early 2013. As a key product of ODIP, they will be “Establishing deployment and interoperability between Cruise Summary Reporting systems in Europe, US, and Australia, making use of GeoNetwork, towards interacting with the POGO portal.”

SOOS has plans to work with ODIP to develop a Southern Ocean component to the Cruise portal. This was highlighted at the January 2014 POGO SOOS workshop and although action has more recently stalled on this, it is hoped it will be reinvigorated at the upcoming DMSC meeting.

2. OTHER ACTIVITIES

2.1 Communication Activities

Website

The SOOS website (www.soos.aq) was developed in early 2012 and was based almost entirely on the SOOS *Initial Science and Implementation Strategy*. Since this time, the direction and focus of SOOS has been clarified, activities have developed and thus the website structure and content is outdated. The SOOS Executive Officer is in the process of a complete overhaul of the structure and content of the website, in order to provide better information on activities and products and details on how the community can be involved. SOOS encourages everyone to provide feedback on the website to ensure it stays up-to-date and relevant.

Newsletter

In 2013, SOOS developed a new digital newsletter (see Resources on SOOS website), which updates the SOOS community on all IPO and SOOS activities and products. Where possible, we also source short articles from endorsed projects, and other relevant international

programmes to keep our community informed of broader activities. The newsletter is generally produced quarterly. One issue have been produced since the last report to SCOR, the second issue for 2014 will be published in the second week of June.

Publications

Two SOOS publications have recently been accepted for publishing at the journal *Advances in Polar Science*. These publications are the key outcomes of the 2013 SOOS Asian Workshop:

1) Swart, S. et al., in press - *Advances in Polar Science: The SOOS Asian Workshop: Exploring possibilities for collaboration*.

2) Liu, J. et al., in press - *Advances in Polar Science: The SOOS Asian Workshop on Southern Ocean research and observations*.

Meetings

The SOOS Executive Officer has represented (and presented) SOOS at a number of international meetings since Nov 2013:

POGO Annual Meeting (Jan 2014, Australia)

POGO Communications Workshop (Jan 2014, Australia)

Australian Meteorological and Oceanographic Society Conference (Feb 2014, Australia)

Ocean Sciences Meeting (Feb 2014, USA)

Sea Ice Symposium (Feb 2014, USA)

IMOS Annual Planning meeting (Feb 2014, Australia)

International Programme of Antarctic Buoys (IPAB; Mar 2014, Australia)

SOOS eEOV Workshop (Mar 2014, USA)

Upcoming meetings include the SOOS SSC meeting (Norway, June 2014), the SCAR Open Science Conference (NZ, August 2014), the SCAR Delegates Meeting (NZ, August 2014), and the SOOS DMSC meeting (NZ, 29-30 August 2014).

The SOOS SSC has also represented SOOS at a number of international meetings. The official list will be compiled at the upcoming SSC meeting in June 2014.

2.2 Reports

SOOS was asked by SCAR to provide a report on recent activities to the 2014 Antarctic Treaty Consultative Meeting. Mike Sparrow from SCAR will present the SOOS report. SCOR will be notified (through SCOR Secretariat) of any issues or comments of relevance raised by ATCM members.

SOOS will also prepare a report for presentation at the 2014 CCAMLR meeting, as it has done in previous years.

2.3 Endorsed Projects

SOOS provides endorsement for individual research projects, large national and international research projects, national and international collaborative and coordination programmes, and data management initiatives.

SOOS has endorsed two research projects since November 2013: A joint project between Korea and Sweden “Towards an improved heat budget for the floating glaciers in Antarctica”, and another multi-national project titled “The compact-Polar Optical Deployment System (C-

PODS)”. More details on these and other endorsed projects are available from the SOOS website at www.soos.aq/index.php/science/endorsed-programmes.

2.4 Sponsorship Prospectus

SOOS needs to increase its sponsorship base, not only for direct funding of the IPO, but also in-kind support (e.g., of personnel and experience), and short-term funding of activities (e.g., workshops) or products. SOOS also needs a mechanism by which it can acknowledge institutes, organisations or programmes who are contributing with in-field efforts that they themselves identify as direct contributions to SOOS (e.g., SOCOM).

In early 2014, SOOS was contacted by David Carlson, Chief editor of Earth System Science Data journal. David was interested in contributing his own time to help further SOOS in whatever way required. Due to his extensive experience in developing processes and avenues for sponsorship and support (through his previous position as International Polar Year Executive Director), David is now helping SOOS to develop a Sponsorship Prospectus that will highlight the rationale for supporting SOOS, clearly articulate the benefits, and encompass a multitude of support structures available to institutes and organisations. Since agreeing to help produce this product, David has been offered the WCRP Director position. It is yet to be discussed how his new position may effect his capacity to provide support for this product development.

3. MANAGEMENT, GOVERNANCE AND FUNDING

3.1 IPO Support and Sponsorship

IPO Hosting

The International Project Office (IPO) is hosted and sponsored by IMAS UTas. This hosting includes Executive Officer salary, office on-site costs, and an annual contribution to office running costs.

Hosting of the IPO is contracted until mid-2016.

IPO Sponsorship

The IPO relies on annual sponsorship to provide the financial support for all office costs and IPO activities.

In 2013-2014, the following organisations sponsored the IPO (\$AUD):

Australian Antarctic Division (AAD)	\$15,000 (for the financial year 2013/2014)
Antarctica NZ/NZ Antarctic Research Institute	\$9,300 (for the 2014 calendar year)
IMAS	\$15,000 (for the 2014 calendar year)

NOTE: The AAD has been severely affected by government funding cuts and it is unclear whether they will be able to support the IPO for the 2014/2015 financial year.

In-Kind Support for IPO

SOOS receives in-kind support for various activities/services.

The Australian Integrated Marine Observing System (IMOS) has provided in-kind office support (e.g., printing, fax, general office supplies) since 2011.

A number of organisations contributed in-kind sponsorship for the first time in 2013/2014:

- Tasmanian Partnership for Advanced Computing (TPAC) agreed to provide 1.5 wks/year website programming support
- Department of Economic Development, Tourism and the Arts, Tasmanian Government provided 3 months administration/workshop organisation support (Dec – Mar)
- The University of Gothenburg is providing support for 5% of Anna Wåhlin's time to be dedicated to SOOS for the duration of her appointment as Co-Chair.
- NSF has recently agreed to provide up to 1-months programming and IT support for the SOOS website and other activities, coordinated through Steve Diggs (SOOS SSC member) at the CLIVAR and Carbon Hydrographic Data Office (CCHDO, USA)

The SOOS IPO is working continuously to increase support for the IPO. Discussions are taking place as outlined below:

- IMOS may soon also provide in-kind Finance Officer support to take care of all finance administration duties for the IPO.

Although in-kind support is very useful to the IPO, it is imperative that we have continuation and if possible, growth in the existing levels of direct financial support. To this end, the IPO is developing the Sponsorship Prospectus (as outlined above under Other Activities). All information on sponsorship is available at www.soos.aq/index.php/about-us/sponsors.

3.2 Additional Sources of Funding

SOOS has sourced additional funding to cover the production costs of a number of key products that would either take a considerable length of time for the SOOS IPO to produce, or would simply not get produced.

SCOR has been the major supporter of these products.

Metadata Portal Cookbook (Product funded by SCAR/SCOR)

Due to the significant level of support provided by the Chinese hosts, the 2013 SOOS SSC meeting did not use all the funds allocated to it by SCAR and SCOR. The remaining funds (3000 USD) have been redirected to support production of the SOOS Metadata Cookbook – an instructions booklet that provides detailed information to data providers on how to contribute to the Metadata Portal (which is hosted by NASA GCMD). SOOS IPO has identified an experience data manager (Dave Connell, AAD Aus) who will develop the cookbook. Steve Diggs (SOOS DM Chair) is currently working to identify requirements for this cookbook and to communicate these to Dave. Dave will be providing a quote for the work to SOOS IPO and SCOR, and following approval of this he will start development of the cookbook.

National Capabilities and Activities (Product funded by SCOR)

As outlined above in section 1.5.

Standardised Methodologies (Product funded by SCOR)

As outlined above in section 1.7.

Report of Southern Ocean Satellite Data Requirements

Outlined above in section 1.3. SOOS is in discussion with SCAR as potential contributors of funds for delivery of this report. The SOOS IPO will cover any remaining costs from the IPO budget.

3.3 International Project Office Budget

The insert below shows the closed 2013 budget and working 2014 budget for the SOOS IPO. Note, most of the budgeted 2014 expenditure is expected to be realised late in 2014.

2013/2014 SOOS BUDGET		BUDGET 2013	BUDGET 2014	ACTUAL 2013	ACTUAL 2014	2013 Variance to Budget	2014 Variance to Budget
Prior Year Carry Forward				48,096	63,652		
INCOME							
SOOS IPO INCOME							
ANZ/NZARI		-	9,229	-	9,229	-	(0.5)
AAD (On financial year basis, shows 2012/2013, 2013/2014, 2014/2015)	15,000	15,000		30,000	-	15,000.0	(15,000.0)
IMAS	15,000	15,000		15,000	15,000	-	-
SOOS WORKSHOP/MEETING SPONSORSHIP							
SOOS Under Ice Workshop (CSIRO-supported)	-	-		(5,610)	-	(5,609.6)	-
DMSC Meeting (AODC JF-supported)	-	-		10,000	-	10,000.0	-
COMNAP workshop funds (COMNAP)	5,000	-		4,819	-	(181.0)	-
SOOS PRODUCT SPONSORSHIP							
SCOR: National Capabilities and Standardised Methodologies	-	-		-	10,000	-	10,000.0
SCAR/SCOR: SOOS Metadata Portal Cookbook	-	-		-	3,000	-	3,000.0
TOTAL INCOME	35,000.0	39,229.0		54,209.5	37,228.5	19,209.5	(2,000.5)
EXPENDITURE							
IPO RUNNING COSTS							
GENERAL OFFICE		4,200	3,800	2,307	6,166	1,893.1	(2,366.0)
PRODUCTS/COMMUNICATION							
General	11,100	18,600		4,879	1,445	6,221.0	17,155.0
Sponsorship package design	-	4,000		-	-	-	4,000.0
Website	6,615	3,715		9,246	54	(2,631.2)	3,661.0
CASUAL SALARIES							
Communication Activities	-	5,000		1,571	1,445	(1,571.1)	3,555.0
Satellite Data coordination activities	-	5,000		-	-	-	5,000.0
Website Data visualisation activities	-	2,000		-	-	-	2,000.0
TOTAL COSTS	21,915	42,115		18,003	9,110	3,912	33,005
WORKSHOPS AND TRAVEL							
2013 SOOS Workshops and Travel (Annual Combined)							
SUB-TOTAL	22,500	-		20,651	2,316	1,849.0	(2,316.0)
Upcoming SOOS-Supported Meetings / Workshops							
SOOS Air-Sea Flux Workshop	-	10,000		-	-	-	10,000.0
SOOS Data Management Sub-Committee	-	10,000		-	-	-	10,000.0
SOOS SSC Meeting (Norway)	-	10,000		-	-	-	10,000.0
SOOS Biology Town Hall (NZ)	-	500		-	-	-	500.0
SUB-TOTAL	-	30,500		-	-	-	30,500
2014 Executive Officer Meeting Attendance							
AMOS (Hobart)	-	-		-	518	-	(518.0)
Ocean Sciences	-	5,000		-	2,501	-	2,499.0
FRISP	-	3,000		-	-	-	3,000.0
SCAR OSM	-	3,000		-	-	-	3,000.0
SCAR Delegates Meeting	-	1,000		-	-	-	1,000
SUB-TOTAL	-	12,000		-	3,019	-	8,981
TOTAL COSTS	22,500	42,500		20,651	5,335	1,849	37,165
TOTAL EXPENDITURE	44,415	84,615		38,654	14,445	5,761	70,170
EXPECTED CARRY OVER FROM 2014 to 2015			16,266				

3.4 IPO Office Staff Changes

Since 2011, the SOOS IPO has been located at the main University of Tasmania campus with IMOS. At the end of 2013, the SOOS IPO moved to the newly built IMAS building on Hobart's waterfront. SOOS is now co-located with IMAS staff and students, IMOS, and the ACE CRC.

In 2013, the IPO hired a communications officer on a casual basis for 4 hours a week, to take care of day-to-day communications activities and to undertake activities such as the website update. Unfortunately, the person hired was ineffective and is therefore no longer employed by SOOS. The IPO is presently considering whether to hire someone else to cover these activities.

3.5 Annual Reports to Sponsors

As part of its hosting by IMAS, SOOS provides monthly written reports to IMAS, and also meets monthly with the IMAS Deputy Director, to report on activities and discuss plans. These reports are not available online but can be made available by request. Although frequent, the written reports are brief and the in-person meetings are very useful in ensuring SOOS remains visible and relevant to IMAS.

A SOOS report to SCAR is being prepared and will be presented by the Executive Officer at the upcoming SCAR Delegates Meeting in August 2014.

3.6 Scientific Steering Committee Membership

Changes to SOOS Executive Committee

From 2011 - Dec 2013, SOOS was led by two Co-Chairs; a physical science co-chair Mike Meredith (BAS, UK) and a biological sciences co-chair Oscar Schofield (Rutgers, USA). In January 2014, Mike Meredith stepped down from co-chair position due to new work commitments (he remains an SSC member). Anna Wåhlin (Gothenburg University, Sweden) was elected by the SSC (and approved by SCAR and SCOR) to replace Mike Meredith as physical sciences co-chair.

During this process it became apparent that we needed greater continuity in leadership. It was agreed that a Physical Sciences Vice Chair and Biological Sciences Vice Chair would also be elected. The Vice Chairs would also be represented on the Executive Committee and would automatically become the next Co-Chairs. Sebastiaan Swart (CSIR, South Africa) and Andrew Constable (AAD, Australia) were voted in as the Physical and Biological Vice Chairs, respectively. Their appointment was approved by SCAR and SCOR.

Changes to existing SOOS SSC membership

SOOS is presently led by an SSC of 16 international members (representing 10 different countries), nearly all of whom are founding members. SSC membership is for a maximum of 2 x 3-year terms, with the second term being on invitation from the Executive Committee, SCOR and SCAR. Because nearly all existing members started at the same time, the second term of inaugural members will vary, in order to stagger the off-rotation of members and prevent mass exodus in 2017. In April 2014, existing SSC members were asked to elect how many years they would like their second term to be (0 – 3). The structure below is presently being considered for approval by SCOR/SCAR.

Table 1: Dark blue represents current year, 1 = first term, 2 = second term. Names in italics are the new SSC members presently being considered for approval by SCAR and SCOR.

Name	Country	2012	2013	2014	2015	2016	2017
Bronte Tilbrook	Australia	1	1	1			
Steve Rintoul	Australia	1	1	1			
Angelika Brandt	Germany	1	1	1	2		
Alberto Naveira Garabato	UK	1	1	1	2	2	
Jiping Liu	China	1	1	1	2	2	
Steve Ackley	USA	1	1	1	2	2	
Parli Venkateswaran Bhaskar	India	1	1	1	2	2	2
Dan Costa	USA	1	1	1	2	2	2
Michael Meredith	UK	1	1	1	2	2	2
Anna Wåhlin (Co-Chair)	Sweden	1	1	1	2	2	2
Oscar Schofield (Co-Chair)	USA	1	1	1	2	2	2
Mauricio Mata	Brazil	1	1	1	2	2	2
Sebastiaan Swart (VC)	S. Africa	1	1	1	2	2	2
Steve Diggs	USA			1	1	1	
Andrew Constable (VC)	Australia			1	1	1	
<i>Matthew Mazloff</i>	USA				1	1	1
<i>Jean-Baptiste Sallee</i>	France				1	1	1
<i>SangHoon Lee</i>	Korea				1	1	1
<i>Mike Williams</i>	NZ				1	1	1

Call for nomination of new SSC members

In early 2014, SOOS announced a call for nominations for new SSC members. Specifically, we were interested in nominations from those with expertise in a) Ocean-Ice sheet interactions, b) Cyberinfrastructure and C) Data Assimilation. New positions could potentially be made on the committee to incorporate this expertise.

In addition to this we selected new members to replace existing members who will rotate off at the end of this year.

We received 16 nominations from 9 countries. New members will not begin their official term on the committee until the beginning of 2015, however they will be invited to attend the June 2014 SSC meeting if they wish (at their own expense). Following the usual procedure, SCOR and SCAR have been asked to approved the new nominees (listed below):

Matthew Mazloff (Scripps, USA)
 Jean-Baptiste Sallee (CNRS, France)
 Mike Williams (NIWA, NZ)
 SangHoon Lee (KOPRI, Korea)

4. PLANNED FUTURE ACTIVITIES

[NOTE: SOOS annual activities are generally defined at the annual SSC meetings. Therefore, many of the future activities will be decided at the upcoming meeting in June.]

4.1 SOOS Scientific Steering Committee Meeting

The 2014 SOOS SSC meeting will be held in Tromsø, Norway (18-20 June), hosted by the Norwegian Polar Institute. The majority of the meeting will be focussed on planning and development of the SOOS Implementation Plan, reporting of national and scientific activities, discussions on sponsorship and funding, and clarification of SOOS governance and the roles of the Executive Officer and SSC members.

The minutes from this meeting will be available online by the end of August (see www.soos.aq/index.php/about-us/ssc/meeting-minutes). Ed Urban will be attending this meeting for SCOR.

SCOR and SCAR are providing funds to support the travel of SSC members to this meeting. Initial estimates of the cost for this meeting were underestimated mainly due to a large national event being held in Tromsø at the same time as the meeting, which has significantly increased accommodation and within-Norway flight costs. Because of this, the SOOS IPO will be contributing between 5000 – 10 000 AUD towards the meeting.

4.2 Implementation Plan

The most important activity planned for the 2014/2015 year is the development and publication of the SOOS Implementation Plan. Much of the details of this plan will be scoped during the upcoming SOOS SSC meeting (Norway, June 2014). The report will be made available in its entirety as a pdf, or also as separate activities and timelines on the SOOS website. The activities identified in the Implementation Plan will form the basis of the large majority of actions for 2014/2015.

4.3 SOOS Activities alongside SCAR Open Science Meeting

The SOOS Executive Officer and a number of SSC members will be attending the SCAR Open Science Meeting.

SOOS Biology Town Hall

SOOS SSC members will be hosting a lunch-time information session or Town Hall, to inform SCAR participants of the recent and upcoming activities in the SOOS Biology Theme. In particular, we will outline the process and outcomes of the SOOS eEOV workshop and highlight some of the candidate eEOVs.

SOOS Scientific Session

SOOS is convening a scientific session titled “Observing Antarctica and the Southern Ocean”. This session is being convened by the Executive Officer, SangHoon Lee (KOPRI), and Craig Cary (Terrestrial expert, NZ). Twelve oral and 10 posters have been accepted for this session.

SOOS Data Management Sub-Committee Meeting

A number of SOOS DMSC members are involved in SCAR data management activities, and therefore it is opportune for SOOS to hold a DMSC alongside the SCAR meeting. This meeting (29-30th August) will be hosted and sponsored by NIWA (through Mike Williams) and will be attended by 10 of the DMSC members. The SOOS IPO has budgeted 10 000 AUD to support attendees to travel to this meeting.

4.4 Products and Activities

Many of the activities and products outlined in section 1 will continue to develop during 2014/2015. Updates on all activities will be provided on the website.

5. IMPORTANCE OF SCOR SUPPORT

SCOR has been the most significant supporter of SOOS activities over the last year. This support is not only financial, but also through the unfaltering guidance and advice provided by the SCOR Executive Director.

SOOS would like to acknowledge and thank SCOR for this continued support. It is fundamental to our success.

SOOS also acknowledges the support provided by SCOR for the annual Scientific Steering Committee meeting, and requests that this support is continued for 2015. Continuation of the support for the SSC meeting will ensure participation by all SSC members, which is imperative for planning and implementation of SOOS objectives. SCAR also provides support for the annual SOOS SSC meeting and continuation of this support for 2015 will be requested at the upcoming SCAR Delegates meeting in August 2014. The location and timing of the 2015 SSC meeting is not yet decided, but due to issues with the 2014 SSC meeting and an increase in SSC member numbers, the budget will be one of the main considerations in determining the location of the next meeting.

6. ACRONYMS

AAD: Australian Antarctic Division
ACE CRC: Antarctic Climate and Ecosystems Cooperative Research Centre
APECS: Association of Polar Early Career Scientists
ATCM: Antarctic Treaty Consultative Meeting
BOM: Bureau of Meteorology
CCAMLR: Commission for the Conservation of Antarctic Marine Living Resources
CCHDO: CLIVAR and Carbon Hydrographic Data Office
COMNAP: Council of Managers of National Antarctic Programs
CSIRO: Commonwealth Scientific and Industrial Research Organisation
DMSC: Data Management Sub-Committee
DOOS: Deep Ocean Observing Strategy
FSU: Florida State University
GEO BON: Group on Earth Observations Biodiversity Observation Network
GEOMAR: Helmholtz Centre for Ocean Research
GOOS: Global Ocean Observing system
IAATO: International Association of Antarctic Tourist Operators
ICSU: International Council for Science
IndiSeas: Indicators for the Seas
IMAS UTas: Institute for Marine and Antarctic Studies, University of Tasmania
IMBER: Integrated Marine Biogeochemistry and Ecosystem Research
IMOS: Australian Integrated Marine Observing System
IOCCG: International Ocean Colour Coordination Group
IOCCP: International Ocean Carbon Coordination Project
JAMSTEC: Japan Agency for Marine-Earth Science and Technology
KOPRI: Korean Polar Research Institute
NOC: National Oceanographic Institute
NSF: United States National Science Foundation
ODIP: Ocean Data Interoperability Platform
OOPC: Oceans Observations Panel for Climate
Palmer LTER: Palmer Station Long-Term Ecological Research
POGO: Partnership for Observation of the Global Oceans
SCAR: Scientific Committee on Antarctic Research
SOCOM: Southern Ocean Carbon Observations and Modeling
SOLAS: Surface Ocean-Lower Atmosphere Studies
TPAC: Tasmanian Partnership for Advanced Computing
US AMLR: United States Antarctic Marine Living Resources
WCRP CLIVAR: World Climate Research Programme Climate Variability and Predictability
WCRP CliC: World Climate Research Programme Climate and Cryosphere
WHOI: Woods Hole Oceanographic Institute
WMO PSTG: World Meteorological Association's Polar Space Task Group