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Agenda Item:

Person Responsible:

**XXXIV SCAR Delegates Meeting
Kuala Lumpur, Malaysia, 29-30 August 2016**

The Southern Ocean Observing System (SOOS; www.soos.aq)

Executive Summary

Title: The Southern Ocean Observing System (SOOS)

Authors: Louise Newman (Executive Officer), Anna Wåhlin (Phys Sciences Co-Chair), Oscar Schofield (Bio Sciences Co-Chair), Sebastiaan Swart (Phys Sciences Vice Chair), Andrew Constable (Bio Sciences Vice Chair)

Important Issues or Factors:

- 1) SOOS Progress and 5-Year Implementation Plan was externally reviewed
- 2) SOOS has developed 7 implementation working groups
- 3) An updated and restructured website was released
- 4) SOOS held its 5th Scientific Steering Committee meeting, 4th Data Management Sub-Committee meeting, and a joint SOOS-SOCCOM scientific workshop
- 5) SOOS sponsors continued their support for the IPO
- 6) IMAS-UTas funding of the Executive Officer will end in August 2016. The Australian Research Council's Special Research Initiative for Antarctic Gateway Partnership (Project ID SR140300001), which currently funds the SOOS Data Officer, has agreed to support both the Executive Officer and Data Officer until mid-2018.

Recommendations/Actions and Justification:

Jointly with SCOR, SCAR has provided financial support for the annual SSC meeting since 2011. This support is greatly appreciated by SOOS and is imperative to ensure participation of all international SSC members. SOOS requests that the SCAR support is continued for the 2017 SSC meeting (location TBA, likely EU).

SOOS also invites the SCAR Executive Director to attend the 2017 meeting.

Budget Implications:

SOOS requests 10,000 USD to support SSC members to attend the 2017 SSC meeting. SCAR is asked to support the SCAR Director to attend out of the central SCAR budget, not the 10,000 USD requested for SSC participation.

The Southern Ocean Observing System

The Southern Ocean Observing System (SOOS) is a joint initiative of the Scientific Committee on Antarctic Research (SCAR) and the Scientific Committee on Oceanic Research (SCOR), and endorsed by the Partnership for Observations of the Global Ocean (POGO), and the Climate Variability and Predictability (CLIVAR) and Climate and Cryosphere (CliC) projects of the World Climate Research Programme (WCRP).

SOOS was launched in 2011 with the mission to facilitate the collection and delivery of essential observations on dynamics and change of Southern Ocean systems to all international stakeholders, through design, advocacy, and implementation of cost-effective observing and data delivery systems.

A) SOOS Activities and Milestones from May 2015 to May 2016

In 2015/2016, SCAR and SCOR facilitated an international review of SOOS progress and the new 5-Year Implementation Plan. SOOS has provided a response to the review comments, and will also be making significant changes to the 5-Year Implementation Plan as a result of the review. The updated plan will be made available in July 2016, and will be presented to SCAR Delegates at the 2016 meeting.

All milestones and activities herein are reported against SOOS' six key objectives as defined in the [interim Strategic Plan](#).

Milestones

Objective 1: Facilitate the design of a comprehensive and multi-disciplinary observing system for the Southern Ocean:

- Publication on ecosystem Essential Ocean Variables (eEOVs) for the Southern Ocean (<http://soos.ag/resources/recent?view=product&pid=38>)
- Outreach with the global ocean observing community on Southern Ocean EOVs
- Coordination of Southern Ocean contribution to the Global Ocean Observing System (GOOS) Biology Panel's survey of sustained biological monitoring towards identification of global eEOVs
- Discussion of OOPC-GCOS-GOOS EOVS specification sheets for Southern Ocean requirements

Objective 2: Advocate and guide the development of new observation technologies

- Implementation of a new Endorsement Category that supports technological research and development of observing techniques, platforms and sensors
- Development of a working group to drive observations under ice ([OASIIS](#)) with a core focus on use of new advances in ice-capable technologies

Objective 3: Compile and encourage use of existing international standards and methodologies, and facilitate the development of new standards where required

- Organisation of a [workshop](#) for the SOOS-endorsed [NECKLACE project](#)

- Development of Regional and Capability WGs that contribute to Objective 3

Objective 4: Unify and enhance current observation efforts and leverage further resources across disciplines, and between nations and programmes

Regional Working Groups (RWG):

- West Antarctic Peninsula Working Group ([WAP WG](#)): Has preliminary SOOS approval and is building membership. An information session will be held at the SCAR 2016 OSC, and a proposal has been submitted to the Royal Society (UK) for a focused WAP WG workshop.
- Southern Ocean Indian Sector WG ([SOIS WG](#)): This WG has preliminary approval and is currently building membership. An information session will be held at the SCAR 2016 OSC.

Capability Working Groups (CWG):

- Southern Ocean Air-Sea Fluxes ([SO-FLUX](#)): This WG was officially approved at the 2016 SSC meeting. A meeting was held alongside Ocean Science Meeting to discuss key requirements for the pilot study. A [workshop report](#) was published in EOS.
- Censusing Animal Populations from Space ([CAPS](#)): CAPS was officially approved by SOOS in Oct 2015 and is developing a detailed action plan. A [workshop](#) is planned alongside SCAR OSC.
- Ecosystem Essential Ocean Variables ([eEOVs](#)): This WG has preliminary approval and is currently building membership. An information session will be held at the SCAR 2016 OSC, a [community paper](#) has been published, and a community presentation was given (IMOS Planning, March 2016)
- POGO's Observing and Understanding the Ocean below Antarctic Sea Ice and Ice Shelves WG ([OASIIS](#)): SOOS facilitated a successful proposal to Partnership for Observation of the Global Ocean (POGO) for support of a working group that focused on implementation of the 2014 SOOS international strategy for observations under ice ([Seeing Below the Ice](#)).

Task Teams (TT):

- Southern Ocean Satellite Data Task Team ([Satellite TT](#)): A community report has been accepted in *Antarctic Science*, pending revision. It will be made freely available once published.
- Field Projects Database ([Here](#)): This product has had a number of challenges and progress has been hindered by a strong reliance on in-kind donation of time/resources. SOOS is currently reassessing the best way to progress with delivery of this important product.

Key Products:

- Field Projects Database (see above)

- Satellite Data Report (see above)
- National Capabilities ([Here](#)): Currently available on the SOOS website, and will soon be provided in a more user-friendly format.

Meetings/Workshops:

Since May 2015, SOOS has presented or been represented at 22 meetings/workshops. In addition, SOOS has held the following workshops:

- Implementation of a Southern Ocean Observing System ([more info](#); June 2015, Aus)
- Assessing the State of the Climate of the Southern Ocean ([more info](#); June 2015, Aus)
- Southern Ocean Air-Sea Fluxes ([more info](#); Oct 2015, Italy)
- SOOS Executive Committee meeting (May 2016, Scripps, USA)
- Joint SOOS-SOCCOM [Workshop](#) (May 2016, Scripps, USA)
- 2016 SOOS Scientific Steering Committee [meeting](#) (May 2016, Scripps, USA)
- 2016 SOOS Data Management Sub-Committee [meeting](#) (May 2016, Scripps, USA)

Objective 5: Facilitate linking of sustained long-term observations to provide a system of enhanced data discovery and delivery, utilising existing data centres and programmatic efforts combined with, as needed, purpose-built data management and storage systems

- Establishment and initial population of [SOOS Metadata portal](#) (NASA GCMD), support for community use of portal, driving national data centre connections to GCMD
- Community consultation on and design of [Field Projects Database](#) (see Obj 4)
- Initiation of efforts towards a Southern Ocean mooring data repository (with OceanSITES) and NECKLACE data management
- Involvement in SCADM (Canada, Oct 2015), Polar Data Forum (Canada, Oct 2015), and Ocean Sciences (USA, Feb 2016)

Objective 6: Provide services to communicate, coordinate, advocate and facilitate SOOS objectives and activities

- New SOOS website launched (www.soos.aq)
- SOOS network grown from 40 to 46 [Affiliated Organisations](#), 3 successful [endorsed projects](#), and a new [national representative](#) from Japan.
- 2015 SOOS Scientific Steering Committee meeting (June 2015, Aus, Minutes available [here](#)). 2016 SSC meeting minutes will be posted on the website in July 2016.
- 2015 SOOS Data Management Sub-Committee meeting (June 2015, Aus, Minutes available [here](#)). 2016 DMSC meeting minutes will be posted on the website in July 2016.
- Inaugural Southern Ocean chapter in BAMS ([State of Climate 2014](#)), and recently submitted, 2015 Southern Ocean chapter for BAMS State of Climate 2015.
- 3 [Workshop Reports](#), 2 [newsletter issues](#), 4 [publications](#),
- Development of the SOOS Report Series for white papers, position statements, and community reports. These are published in the [SOOS Collection](#) in Zenodo, ensuring they are citable and openly accessible. [Three reports](#) were published in 2015.

- Agreement by all existing [IPO sponsors](#) for continuation of existing level of sponsorship for 2016
- The Institute for Marine and Antarctic Studies at the University of Tasmania (IMAS-UTas) funding of the Executive Officer will end in August 2016. Through the University of Tasmania, the Australian Research Council's Special Research Initiative for [Antarctic Gateway Partnership](#) (Project ID SR140300001), which currently funds the SOOS Data Officer, has agreed to support both the Executive Officer and Data Officer until mid-2018. The IPO office will continue to be located at IMAS-UTas, with on-costs for this hosting to be supported by IMAS.

B) Planned Activities for April 2016 - Onwards

Implementation activities in 2016-2017 will focus on achieving the objectives and deliverables outlined in the SOOS 5-year Implementation Plan. Specific activities already planned for this period include:

- 1) SOOS involvement in or organisation of the following meetings;
 - SCAR OSC SOOS Session, Delegates meeting, 2 x topical Town Hall meetings (Aug 2016, Malaysia)
 - SCADM Meeting (Aug 2016, Malaysia)
 - CLIVAR Open Science Conference (Sept 2016, Qingdao, China)
 - CLIVAR-CliC-SCAR Southern Ocean Region Panel (Sept 2016, Qingdao, China)
 - SCOR Executive Committee Meeting (Sept 2016, Sopot, Poland)
 - International workshop on [NECKLACE](#) standards and data (Network for the Collection of Knowledge on Melt of Antarctic Ice Shelves)(Oct 2016, Sweden)
 - Implementing an Under Ice Observing System (TBC, AWI Germany)
- 2) Revision and finalisation of the 5-Year Implementation Plan
- 3) Publication of a data vision for SOOS
- 4) Delivery of Key Products and Working Group milestones
- 5) Development of a Funding Strategy to support SOOS implementation

For further and more detailed information see www.soos.aq or contact the SOOS Executive Officer Louise Newman newman@soos.aq.

C) Sponsorship

SOOS thanks the following sponsors for their support over the last few years, and for their continued assistance into 2016/2017:

- 1) SCAR
- 2) SCOR

- 3) IMAS-Gateway, University of Tasmania,
- 4) Australian Antarctic Division
- 5) Antarctica New Zealand
- 6) University of Gothenburg
- 7) Integrated Marine Observing System
- 8) Tasmania Partnership for Advanced Computing
- 9) NASA Global Change Master Directory
- 10) NSF - CLIVAR and Carbon Hydrographic Data Office

SOOS also acknowledges the support provided to our SSC and DMSC members by their institutions.

D) Issues/Challenges

SOOS is at a point of significant growth and activity and existing IPO resources are insufficient to support this growth. The SOOS IPO needs to enhance capability, particularly with regard to communication activities. The communication effort required to support the *existing* network is an 80% position and this is currently not being met by IPO staff. In 2016/2017, the IPO will need to prioritise efforts further and it is likely that more aspects of the communication strategy will need to be put aside. An additional limitation to SOOS growth is our dependence on voluntary and in-kind efforts. It is hoped that the development of a funding strategy for SOOS will clarify options to address these issues. SOOS is seeking additional partners to support the hosting of the IPO.

E) Recommendations/Expected Outcomes

The annual SOOS SSC meeting is core to the strategic planning of SOOS implementation. The support that SOOS receives from SCAR and SCOR is vital for ensuring participation from all committee members. SOOS requests that this support be continued for the 2017 SSC meeting.

SOOS also invites the SCAR Executive Director to attend our 2017 SSC meeting, likely to be held in the EU in May/June (location to be confirmed). SOOS has gained valuable input from the involvement of the SCOR Executive Director at four of the five SSC meetings thus far, and would similarly value participation of the SCAR Executive Director.