



International
Science Council

SCAR Sub-Group

SG

Person Responsible: Louise Newman

SOOS

SCAR Delegates Report 2020

Southern Ocean Observing System (SOOS) 2018-2020 Report

Summary

Report Authors

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Summary of activities from 2018-20

Please provide highlights of your groups progress since the SCAR Delegates meeting in 2018, covering major activities/achievements, upcoming activities and key challenges faced.

In the last 2 years, SOOS has:

- Published 16 scientific publications, including broad SOOS-community paper for the OceanObs19 conference
- Delivered 10 community newsletters, including general SOOS and SOOS WG newsletters
- Provided 13 reports to stakeholders, including SCAR, SCOR, ATCM, CCAMLR, GOOS
- Held 17 international SOOS workshops/meetings, including 2 Scientific Steering Committee meetings (sponsored by SCAR and SCOR)
- Supported 38 representations at international meetings
- Endorsed 9 successful field programs
- Developed a new online database of subscribers, products, and events, that is interlinked with and delivers into the project management, website content, and reporting of SOOS
- Grown in membership from 325 to 594
- Delivered a new website

SOOS: 2018-2020 Report, cont.

- Hired a part-time Science and Communications Officer (Alyce Hancock): only possible through the new multi-year sponsoring agreements and the continuation of existing sponsorship
- Maintained existing sponsorship from Antarctica New Zealand (2012 – current); State Oceanic Administration of China (2017 – current), as well as all SOOS in-kind sponsors <http://soos.aq/about-us/sponsors>
- Changed core sponsors from Australian Research Council's Antarctic Gateway Partnership, to a combined SOOS Sponsoring Partnership of University of Tasmania Institute for Marine and Antarctic Studies (UTAS-IMAS), CSIRO and the Tasmanian State Government Department of State Growth
- Thanked the University of Gothenburg for 3 years of sponsorship of the SOOS Project Office
- Developed new partnership with Swedish Polar Research Secretariat for 3 years collaborative agreement
- Initiated discussions with India and South Africa for new sponsorship arrangements
- Development of new Equity, Diversity and Inclusion Advisory Group
- Maintained the delivery of SOOSmap, through EMODnet Physics, including new data layers Saildrone, PANGAEA CTDs, and ASPeCt sea-ice chlorophyll; resulting in use metrics of over 8000 global visits per month and 1500 data downloads per month.
- Maintained population and delivery of DueSouth (Database of Upcoming Expeditions to the Southern Ocean), including an agreement with CCAMLR for the inclusion of Fisheries voyages, and development of an MoU with IAATO for inclusion of tourism expeditions.
- Brokered an agreement with the European Polar Board for hosting of DueSouth, following the end of hosting by the Australian Antarctic Data Centre.
- Supported 5 Regional Working Groups (RWGs); 5 Capability Working Groups and 4 Task Teams in delivery of their objectives
- Run international nominations to the SOOS Scientific Steering Committee resulting in 3 new members
- Changed leadership in the Executive Committee: thanking Andrew Constable and Sebastiaan Swart for their terms as Co-Chairs, and welcoming ex-Vice Chairs Eileen Hofmann and Mike Williams as new Co-Chairs, as well as welcoming ex-RWG Co-Chair Sian Henley to the EXCOM as the new Vice Chair (second Vice Chair to be elected in 2021 to ensure staggered terms).
- Continued the monitoring and recording of deliverables and actions required for achieving the objectives of the 2016-2020 Implementation Plan
- Development of Southern Ocean regional contribution to the UN Decade for Ocean Sciences
- Continued delivery of SOOS governance and oversight, through one in-person and 10 virtual EXCOM meetings; and one in-person and 1 virtual Scientific Steering Committee meetings

More details on the above actions and specific outcomes and outputs from the 10 SOOS working groups or 3 task teams can be found in the SOOS annual reports online at <http://soos.aq/about-us/annual-reports>

SOOS: 2018-2020 Report, cont.

Upcoming activities for SOOS in early 2021 include finalisation of the new Science and Implementation Plan (2021-2025); delivery of the 5-Year Progress Report of milestones and achievements from the 2016-2020 Implementation Plan; coordination of SOOS role in the UN Decade of Ocean Science; development of a more strategic engagement strategy

Specific challenges for SOOS previously focused on a lack of capacity for the International Project Office to properly support the activities of the working groups and committees, as well as engagement with other communities. The growth in sponsorship, and importantly the multi-year sponsorship agreements have enabled SOOS to be more strategic with the use of our funding and hiring the Science and Communications Officer (currently only 60%) has fundamentally changed our ability to deliver the Implementation Plan in 2020.

2020 has come with its own set of unique challenges, with the lack of in-person engagement and the over-subscription of replacement zoom meetings being the greatest challenges. The 2020 virtual SSC meeting was an enormous amount of work both prior, during and post-meeting, with 4 meetings, each run twice across two time zones. This has resulted in two sets of minutes and decisions that need additional integration and approval. It was successful but not efficient. The long-term impact on the observing system and data collection remains to be seen. The long-term impact on future funding for the hosting of the SOOS office in Hobart (beyond 2022) also is not yet clear.

Summary Budget 2019 to 2022

	2019	2020	2021	2022
	Spent	Allocated	Request	Request
(US\$)	10, 000	10, 000	10, 000	10, 000

Progress to date

Sub-group Outcomes Summary

(Summarize the above and in each case provide your sub-group name in left hand column to assist Science Group COs in compiling their reports)

Sub-group	Activity/Outcome/Benefit/Achievement
SOOS	Secure new SOOS sponsoring partnership (2020-2022)
SOOS	Maintaining and developing new SOOS sponsorships
SOOS	Airtable Online Database
SOOS	New SOOS website
SOOS	Development of Observing System Design Capability Working Group, Fluxes Mooring Task Team, eEOV Task Team and Polar AUV Task Team
SOOS	Continuation of SOOS Regional Working Groups (5), Capability Working Groups (5) and Task Teams (4, 2 currently still active)
SOOS	SOOSmap (https://www.soosmap.aq/)
SOOS	DueSouth (https://data.aad.gov.au/duesouth/)
SOOS	Science and Communications Officer
SOOS	Scientific papers (16)
SOOS	Community newsletters (10)
SOOS	Reports to stakeholders (13)
SOOS	International workshops and meetings (17)
SOOS	Representation at international meetings (38)
SOOS	Endorsement of field programs (9)
SOOS	Growth in membership (325-594)
SOOS	Rotation of SOOS Executive Committee
SOOS	Recruitment of new SOOS Scientific Steering Committee members (3)
SOOS	Completion of SOOS 2016-2020 Implementation Plan and development of the 2021-2025 Plan

Sub-group Cash Flow

(From previous Delegates meeting to date)

Sub-group	Allocation	Amount spent		
		2018	2019	2020
SOOS	10, 000 USD	10, 000		
SOOS	10, 000 USD		10,000	
SOOS	10, 000 USD			10,000

Future plans

Planned activities in 2020 to 2022

Sub-group	Planned activity
SOOS	Develop and finalise SOOS Science and Implementation Plan (2021-2025)*
SOOS	SOOS 5-Year Progress Report (2015 – 2020)
SOOS	Maintaining and developing new SOOS sponsorships
SOOS	Secure new SOOS sponsoring partnership (beyond 2022)
SOOS	Development of a strategic and realistic engagement strategy
SOOS	UN Decade of Ocean Science Southern Ocean contribution
SOOS	Deliver outcomes/outputs as defined in the 2021-2025 Science and Implementation Plan

*All activities for SOOS over the next 2 years are defined in the 2021-2025 Science and Implementation Plan. For more specific detail than is listed here, please refer to the SIP when it is released (expected date of Feb 2021)

Planned use of funds for 2020 to 2022

Note – SOOS plans to continue to use SCAR funds to support our in-person annual meetings where possible. Modifications to these plans will be communicated to the SCAR Secretariat pending COVID restrictions at the time of the meeting.

Year (YYYY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
2022	SOOS SSC Meeting – travel support for SSC	10,000	Louise Newman	newman@soos.aq
2021	SOOS SSC Meeting – travel support for SSC and EXCOM Meeting, to be run both virtually and in-person if possible. Hosted by the European Polar Board in the Netherlands	10,000	Louise Newman	newman@soos.aq
2020	Video conferencing support and equipment; Facilitation of DueSouth “help required” forum in collaboration with European Polar Board and SCAR HASS group; design and printing costs of Science and Implementation Plan, and 5-year Report	10,000	Louise Newman	newman@soos.aq
Total		30,000		

Any additional detail on funds usage and desired results/outcomes

SCAR funds will be used to support the SOOS Scientific Steering Committee (SSC) members and Regional Working Group leads to attend the annual SSC meetings. As with previous years, this would be a joint sponsorship with the Scientific Committee of Oceanic Research (SCOR).

The 2021 meeting (to be hosted by the European Polar Board, Netherlands) will be held in conjunction with a UN Decade of Ocean Science Southern Ocean Workshop. The SCAR funds will be used to support participation of up to 21 SOOS SSC representatives from 17 different nations (Australia, Argentina, Brazil, China, Chile, Italy, South Korea, USA, Turkey, France, Germany, South Africa, UK, Japan, Norway, Sweden, New Zealand), including up to 4 Early Career Researchers.

The desired result of using the SCAR funds for the SOOS SSC meeting are to ensure full representation of committee and working group members, ensuring diversity in expertise, geographic representation, career stage and gender.

The meeting is currently planned for Sept 2021 and due to COVID is likely to be a combination of in-person for those who can travel, and virtual for those who cannot.

Percentage of the budget to be used for support of early-career researchers

Agreement at present is that funds are to be used for SOOS SSC and Regional Working Group (RWG) Chairs, which are by definition usually well-established leaders in their community. Further, ECRs brought on to our SSC become mid-career during their 6-year term in SOOS. In 2019, the SSC had no ECRs (but 3 mid-career) and the RWG Chairs included 1 ECR (and 3 mid-career). In 2020, the SSC had 1 ECR (4 mid-career), and 2 ECR (2 mid-career) as RWG Chairs. Importantly, over the last 2 years, SOOS has worked to ensure that each of the SOOS WGs has an APECS representative in their leadership groups.

2020:

Due to COVID, the SCAR funds were not used for SSC meeting attendance.

2021 – 2022:

The use of the funds by individual SSC members varies from year-to-year depending on their ability to obtain other funding in support of their SSC meeting participation. We cannot, at this stage, predict which SSC members will be requesting support for the 2021/2022 meetings.

Percentage of the budget to be used for support of scientists from countries with developing Antarctic programmes

In 2019, the SSC and RWG Chairs had 3 members from developing programs. In 2020, the SSC and RWG Chairs have 5 members from developing programs (Argentina, Brazil, Chile, South Africa, Turkey).

2020:

Due to COVID, the SCAR funds were not used for SSC meeting attendance.

2020 and 2021:

The use of the funds by individual SSC members varies from year-to-year depending on their ability to obtain other funding in support of their SSC meeting participation. We cannot, at this stage, predict which SSC members will be requesting support for the 2021/2021 meetings.

Membership

Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
EXCOM Co-chair	Eileen	Hofmann	Old Dominion University	US	hofmann@ccpo.odu.edu	2018	2023
EXCOM Co-chair	Mike	Williams	NIWA	New Zealand	Mike.williams@niwa.co.nz	2021	2022
EXCOM Vice chair	Sian	Henley	University of Edinburgh	UK	s.f.henley@ed.ac.uk	2020	2024
Executive Officer (IPO)	Louise	Newman	SOOS IPO	Australia	newman@soos.aq	2011	-
SSC	Andrew	Meijers	BAS	UK		2018	2024
SSC	Burcu	Ozsoy	Istanbul Technical University	Turkey		2017	2023
SSC	Dake	Chen	SOA	China		2017	2023
SSC	Delphine	Lannuzel	IMAS, UTAS	Australia		2020	2026
SSC	Irene	Schloss	Instituto Antártico Argentino	Argentina		2018	2024
SSC	Jean-baptiste	Sallee	CNRS, IPSL	France		2015	2021
SSC*	Jilda	Caccavo	AWI, Berlin Centre for Genomics in Biodiversity Research, Leibniz Institute for Zoo and Wildlife Research	Germany		2020	2026
SSC	Luciano	Pezzi	INPE	Brazil		2020	2026

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SSC	Matthew	Mazloff	Scripps	US		2015	2021
SSC	Sarah	Fawcett	University of Cape Town	South Africa		2018	2024
Data Officer (IPO)	Pip	Bricher	SOOS IPO	Australia	data@soos.aq	2015	-
*Science and Communications Officer (IPO)	Alyce	Hancock	SOOS IPO	Australia	hancock@soos.aq	2019	-

*Please identify early-career researchers with * in first column*

Other members

The table below lists the Leadership Members of each SOOS working group. In addition to these names, SOOS has a broader community subscription base of 594 people.

First Name	Last Name	Affiliation	Country	Email
Benjamin	Pfeil	University of Bergen	Norway	
Petra	Ten Hoopen	BAS	UK	
Bastien	Queste	University of Gothenburg	Sweden	
Patricia	Yager	University of Georgia	US	
Elizabeth	Shadwick	CSIRO	Australia	
Tsuneo	Odate	ROIS	Japan	
Kate	Hendry	University of Bristol	UK	
Juan	Höfer	IDEAL, PUCV	Chile	
Oscar	Schofield	Rutgers University	US	
Markus	Janout	AWI	Germany	
Sebastien	Moreau	NPI	Norway	
Laura	de Steur	NPI	Norway	
Walker	Smith	VIMS, SJTU	US, China	
Paola	Rivaro	University of Genova	Italy	
Mark	Hindell	IMAS, UTAS	Australia	
Peter	Fretwell	BAS	UK	
Flore	Samaran	ENSTA Bretagne	France	
Kate	Stafford	University of Washington	US	
Esmee	Van Wijk	CSIRO	Australia	
Richard	Coleman	IMAS, UTAS	Australia	
Sebastiaan	Swart	University of Gothenburg	Sweden	
Sarah	Gille	Scripps	US	
Guy	Williams	UTAS	Australia	
Anna	Wählin	University of Gothenburg	Sweden	
Karen	Heywood	University of East Anglia	UK	
Won Sang	Lee	KOPRI	South Korea	
Andrew	Constable	UTAS	Australia	
Alex	Kozyr	NCEI, NOAA	US	
Anton	Van de Putte	ODIS, GCMD, biodiversity.aq, IRNSB	Belgium	
Antonio	Novellino	ETT Solutions	Italy	
Becky	Macneil	Antarctica New Zealand	New Zealand	
Benedicte	Pasquer	IMOS	Australia	
Elanor	Miller	CCAMLR	Australia	
Florence	Fetterer	NSIDC	US	

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Janine	Felder	AWI	Germany	
Jie	Zhang	PRIC	China	
Joana	Beja de Almeida e Silva	OBIS, EMODnet, VLIZ	Belgium	
Johnathan	Kool	AAD	Australia	
Kenneth	Casey	NCEI	US	
Lizong	Wu	PRIC	China	
Marco	Alba	ETT Solutions	Italy	
Mathieu	Belbéoch	WMO	France	
Matt	Donnelly	NOC, BODC	UK	
Melissa	Zweng	NCEI	US	
Michael	Morahan	NASA	US	
Patrick	Gorringe	SMHI	Sweden	
Povl	Abrahamsen	BAS	UK	
Scott	Ritz	NASA	US	
Sebastien	Mancini	IMOS, AODN	Australia	
Simona	Longo	CNR	Italy	
Stefanie	Schumacher	AWI	Germany	
Steve	Diggs	Scripps	US	
Taco	De Bruin	OBIS, GCMD, EMODnet, NOIZ	Netherlands	
Alexander	Brearely	BAS	UK	
Azwianewi	Makhado	Dept of Env., Forestry, Fisheries	South Africa	
Cédric	Cotté	IPSL	France	
Clive	McMahon	SIMS	Australia	
Craig	Stevens	NIWA	New Zealand	
Eric	Schulz	BOM	Australia	
Jenson	George	NCPOR	India	
Jianfeng	He	PRIC	China	
Jisoo	Park	KOPRI	South Korea	
Jiuxin	Shi	OUC	China	
*Marcel	du Plessis	University of Gothenburg	Sweden	
*Mia	Wege	University of Pretoria	South Africa	
*Michelle	LaRue	University of Minnesota, University of Canterbury	US, New Zealand	
*Minkyung	Kim	ETH	Switzerland	
Pierpaolo	Falco	University of Naples Parthenope	Italy	
Sarat	Chandra Tripathy	NCPOR	India	
*Svenja	Halfter	IMAS, UTAS	Australia	
Tae-Wan	Kim	KOPRI	South Korea	
Will	Hobbs	IMAS, UTAS	Australia	
*Yoshihiro	Nakayama	Hokkaido University	Japan	
Zhaomin	Wang	Hohai University	China	
Alberto	Naviera Garabato	University of Southampton	UK	
Anilkumar	Narayana Pillai	NCPOR	India	
Bruno	Delille	Universite de Liege	Belgium	
Giorgio	Budillon	University of Naples Parthenope	Italy	
Kit	Kovacs	NPI	Norway	
Mauricio	Mata	FURG	Brazil	
Parli	Bhaskar	NCPOR	India	
Piotr	Kukliński	Polish Academy of Sciences	Poland	
Takeshi	Tamura	NIPR	Japan	
Thomas	Dahlgren	NORCE, University of Gothenburg	Sweden	

Please identify early-career researchers with * in first column

Additional information (optional)

Please add any more detail here that you wish, on your subgroup activities, papers published, etc.

Notable Papers

(Five to ten most notable papers – see the example below, which includes a brief statement (shaded) indicating the link to the group)

1. Newman L, Heil P, Trebilco R, Katsumata K, Constable A, van Wijk E, Assmann K, Beja J, Bricher P, Coleman R, Costa D, Diggs S, Farneti R, Fawcett S, Gille ST, Hendry KR, Henley S, Hofmann E, Maksym T, Mazloff M, Meijers A, Meredith MM, Moreau S, Ozsoy B, Robertson R, Schloss I, Schofield O, Shi J, Sikes E, Smith IJ, Swart S, Wahlin A, Williams G, Williams MJM, Herraiz-Borreguero L, Kern S, Lieser J, Massom RA, Melbourne-Thomas J, Miloslavich P and Spreen G (2019) Delivering Sustained, Coordinated, and Integrated Observations of the Southern Ocean for Global Impact. *Front. Mar. Sci.* 6:433. DOI: 10.3389/fmars.2019.00433

This paper presents a community statement on the major scientific and observational progress of the last decade, and importantly, an assessment of key priorities for the coming decade, toward achieving the SOOS vision and delivering essential data to all end-users. Delivered as a product of all SOOS members and the CLIVAR-CLiC-SCAR Southern Ocean Regional Panel (SORP)

2. Swart S, Gille ST, Delille B, Josey S, Mazloff M, Newman L, Thompson AF, Thomson W, Ward B, du Plessis MD, Kent EC, Girton J, Gregor L, Heil P, Juder P, Pezzi LP, de Souza RB, Tamsitt V, Weller RA and Zappa CJ (2019) Constraining Southern Ocean Air-Sea-Ice Fluxes Through Enhanced Observations. *Front. Mar. Sci.* 6:42. DOI: 10.3389/fmars.2019.00421

This paper highlights Southern Ocean-specific observational gaps, scales and challenges in estimating air-sea-fluxes, summarizes key focus areas for future flux research, and offers recommendations for improving estimates of fluxes. Delivered as a product of the SOOS Southern Ocean Fluxes (SOFLUX) working group

3. Tanhua T, Pouliquen S, Hausman J, O'Brien K, Bricher P, de Bruin T, Buck JJH, Burger EF, Carval T, Casey KS, Diggs S, Giorgetti A, Glaves H, Harscoat V, Kinkade D, Muelbert JH, Novellino A, Pfeil B, Pulsifer PL, Van de Putte A, Robinson E, Schaap D, Smirnov A, Smith N, Snowden D, Spears T, Stall S, Tacoma M, Thijsse P, Tronstad S, Vandenberghe T, Wengren M, Wyborn L and Zhao Z (2019) Ocean FAIR Data Services. *Front. Mar. Sci.* 6:440. DOI: 10.3389/fmars.2019.00440

This paper outlines principles to make ocean data findable, accessible, interoperable and reusable (FAIR). Delivered as a product of the SOOS Data Management Sub-Committee

4. Wei, Y., Gille, S.T., Mazloff, M.R., Tamsitt, V., Swart, S., Chen, D., and Newman, L. (2020). Optimizing mooring placement to constrain Southern Ocean air-sea fluxes. *J. Atmos. Oceanic Technol.* DOI: 10.1175/JTECH-D-19-0203.1.

This study proposes criteria that can be used to determine mooring siting to obtain best estimates of net air-sea heat flux. Delivered as a product of a joint effort between the SOOS Southern Ocean Fluxes (SOFLUX) working group and the SOOS Observing System Design (OSD) working group

5. Meijers, A. J., B. Sallée, A. Grey, K. Johnson, K. Arrigo, S. Swart, B. King, and M. Mazloff, 2018: Southern Ocean [in "State of the Climate in 2018"]. *Bull. Amer. Meteor. Soc.* 100 (9): S181–S185. DOI: 10.1175/2019BAMSStateoftheClimate.1

Bulletin of the American Meteorological Society "State of the Climate in 2018" report including an overview of the State of Climate of the Southern Ocean 2018 written by the SOOS community, included as a sub-section of the Antarctic chapter.

6. Queste, B.Y., Abrahamsen, M.D., du Plessis, M.D., Gille, S.T., Gregor, L., Mazloff, M.R., Narayanan, A., Roquet, F., and Swart, S. (2019). Southern Ocean [in "State of the Climate in 2019"]. *Bull. Amer. Meteor. Soc.* 101 (8): S307–S312. DOI: 10.1175/BAMS-D-20-0090.

Bulletin of the American Meteorological Society "State of the Climate in 2019" report including an overview of the State of Climate of the Southern Ocean 2019 written by the SOOS community, included as a sub-section of the Antarctic chapter.

7. Henley, S.F., Schofield, O.M., Hendry, K.R., Schloss, I.R., Steinberg, D.K., Moffat, C., Peck, L.S., Costa, D.P., Bakker, D.C.E., Hughes, C., Rozema, P.D., Ducklow, H.W., Abele, D., Stefels, J., Van Leeuwe, M.A., Brussaard, C.P.D., Buma, A.G.J., Kohut, J., Sahade, R., Friedlaender, A.S., Stammerjohn, S.E., Venables, H.J., and Meredith, M.P. (2019). Variability and change in the west Antarctic Peninsula marine system: Research priorities and opportunities. *Progress in Oceanography*. 173: 208–237. DOI: 10.1016/j.pocean.2019.03.003

This study summarises the current state of knowledge regarding the key mechanisms and interactions regulating the physical, biogeochemical and biological processes at work, the ways in which the shelf environment is changing, and the ecosystem response to the changes underway. It also outlines the overarching cross-disciplinary priorities for future research. Delivered as a product of the SOOS West Antarctic Peninsula/Scotia Arc working group <http://soos.aq/activities/rwg/wapsa>

8. Wege, M., Salas, L., and LaRue, M. Citizen science and habitat modelling facilitates conservation planning for crabeater seals in the Weddell Sea. *Diversity and Distributions*. 00: 1–14. DOI: 10.1111/ddi13120

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This study combines satellite impacts and citizen science to model habitat suitability for crabeater seals (*Lobodon carcinophaga*) throughout the Weddell Sea. Delivered as a product of the SOOS Censusing Animal Populations from Space (CAPS) working group <http://soos.aq/activities/cwg/caps>

9. Miller, B.S., Calderan, S., Miller, E.J., Sirovic, A., Stafford, K.M., Bell, E., and Double, M.C.(2020) A passive acoustic survey for marine mammals conducted during the 2019 Antarctic voyage on Euphausiids and Nutrient Recycling in Cetacean Hotspots (ENRICH). Acoustics 2019 Conference Proceedings.

This study presents the results of a passive acoustic survey for marine mammals collected during the 2019 Euphausiids and Nutrient Recycling in Cetacean Hotspots (ENRICH) Antarctic voyage. Delivered as a product of the SOOS Blue and Fin Whale Acoustic Trends working group <http://soos.aq/activities/cwg/at>

10. LaRue MA, Ainley, DG, Pennycook J, Stamatiou K, Salas L, Nur N, Stammerjohn S and Barrington L (2019) Engaging 'the crowd' in remote sensing to learn about habitat affinity of the Weddell sea in Antarctica. Remote Sensing in Ecology and Conservation. 6 (1): 70-78. DOI: 10.1002/rse2.124

This study uses citizen science to determine the location of seals in VHR images from November 2010 and 2011, covering the entirety of available fast ice around Antarctica. Delivered as a product of the SOOS Censusing Animal Populations from Space (CAPS) working group <http://soos.aq/activities/cwg/caps>

Direct support from outside organisations received for your activities

(Numbered list with values indicated if direct cash support. Please restrict in-kind support to substantive in-kind support only)

Sponsor	Activity	Amount/Type
SCAR	1 st Workshop of the Amundsen Bellingshausen Sea RWG (Incheon, South Korea, May 2019)	All these meetings were hosted by KOPRI in Korea. The SCAR funds were used for the travel of SOOS SSC members to the annual SSC meeting, and their attendance at all of these aligned events. SCAR was therefore a sponsor of all of these events
	SOOS Scientific Steering Committee Meeting (Incheon, South Korea, May 2019)	
	SOOS Data Management Sub-Committee Meeting (Incheon, South Korea, May 2019)	
	Southern Ocean Data Hackathon (Incheon, South Korea, May 2019)	
	SOOS Executive Committee Meeting (Incheon, South Korea, May 2019)	
	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop
SCOR	1 st Workshop of the Amundsen Bellingshausen Sea RWG (Incheon, South Korea, May 2019)	All these meetings were hosted by KOPRI in Korea. The SCOR funds were used for the travel of SOOS SSC members to the annual SSC meeting, and
	SOOS Scientific Steering Committee Meeting (Incheon, South Korea, May 2019)	
	SOOS Data Management Sub-Committee Meeting (Incheon, South Korea, May 2019)	

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	Southern Ocean Data Hackathon (Incheon, South Korea, May 2019)	their attendance at all of these aligned events.
	SOOS Executive Committee Meeting (Incheon, South Korea, May 2019)	SCAR was therefore a sponsor of all of these events
	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop
ARC Antarctic Gateway Partnership	International Project Office Core Sponsor (2019)	Hosting of the office, salaries and operational funds
	1 st Workshop of the Amundsen Bellingshausen Sea RWG (Incheon, South Korea, May 2019)	Support for Meeting – IPO travel support + participants travel
	SOOS Scientific Steering Committee Meeting (Incheon, South Korea, May 2019)	
	SOOS Data Management Sub-Committee Meeting (Incheon, South Korea, May 2019)	
	Southern Ocean Data Hackathon (Incheon, South Korea, May 2019)	
	SOOS Executive Committee Meeting (Incheon, South Korea, May 2019)	
University of Tasmania	International Project Office Core Sponsor (2020-2022)	Hosting of the office, salaries and operational funds
CSIRO	International Project Office Core Sponsor (2020-2022)	Salaries and operational funds
Tasmanian State Government	International Project Office Core Sponsor (2020-2022)	Salaries and operational funds
Antarctica New Zealand	Core Sponsor (2012-2020)	Core SOOS Operational Sponsorship
Swedish Polar Research Secretariat	SOOS-SPRS Collaborative Partnership for development of Swedish Southern Ocean network (2020-2022)	Collaborative partnership
University of Gothenburg	Core Sponsor (2019)	Core SOOS Operational Sponsorship
State Oceanic Administration, China	Office support person	In-kind
EMODnet	Development, maintenance and hosting of SOOSmap product for SOOS	In-kind
Australian Antarctic Division Data Centre	Development and hosting of DueSouth	In-kind
Tasmanian Partnership for Advanced Commuting (TPAC)	SOOS Website Support	In-kind
COMNAP	Delivery of information for DueSouth Expeditions	In-kind
Old Dominion University	SOOS EXCOM Host Institute	In-kind support for SOOS EXCOM member
	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop
National Institute of Water and Atmospheric Research (NIWA)	SOOS EXCOM Host Institute	In-kind support for SOOS EXCOM member
University of Edinburgh	SOOS EXCOM Host Institute	In-kind support for SOOS EXCOM member
Norwegian Polar	Workshop on the development of the SOOS	Hosting of Workshop

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Institute	RWG Weddell Sea-Dronning Maud Land (Tromso, Norway, Jan 2019)	
Alfred Wegener Institute	Workshop on the development of the SOOS RWG Weddell Sea-Dronning Maud Land (Tromso, Norway, Jan 2019)	Support for Workshop
Korean Polar Research Institute	1 st Workshop of the Amundsen Bellingshausen Sea RWG (Incheon, South Korea, May 2019)	Full hosts to a week of SOOS meetings and workshops
	SOOS Scientific Steering Committee Meeting (Incheon, South Korea, May 2019)	
	SOOS Data Management Sub-Committee Meeting (Incheon, South Korea, May 2019)	
	Southern Ocean Data Hackathon (Incheon, South Korea, May 2019)	
	SOOS Executive Committee Meeting (Incheon, South Korea, May 2019)	
SCAR Data Management Committee (SCADM)	Polar Data Forum (Davos, Switzerland, June 2018)	Support for Meeting
Arctic Data Committee	Polar Data Forum (Davos, Switzerland, June 2018)	Support for Meeting
Finnish Met. Institute	Polar Data Forum (Davos, Switzerland, June 2018)	Support for Meeting
World Data Service	Polar Data Forum (Davos, Switzerland, June 2018)	Support for Meeting
Royal Netherlands Institute for Sea Research	Polar Data Forum (Davos, Switzerland, June 2018)	Support for Meeting
Saildrone	SOFLUX Ocean Sciences Town Hall (San Diego, USA, Feb. 2020)	Support for Meeting
Biodiversity.aq	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop
Integrated Climate and Ecosystem Dynamics (ICED)	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop
Royal Netherlands Institute for Sea Research (NIOZ)	UN Ocean Decade Southern Ocean 1st Workshop (San Diego, USA, Feb. 2020)	Support for Workshop

Major collaborations your Science Group has with other SCAR groups and with organisations/groups beyond SCAR

(Numbered list of substantive collaborations)

Within SCAR

1. SCADM – Strong collaboration on efforts of mutual interest; collaboration on SOOSmap, DueSouth and development of the Federated Data Search Tool and related working group POLDER.
2. Southern Ocean Regional Panel (SORP) – joint membership; representation at respective meetings; one SORP member in SOOS SSC and working group leadership; joint delivery of the 2019 OceanObs19 publication and presentation at the conference; collaboration on the Southern Ocean community comment into the UN Decade for Ocean Science Implementation Plan draft; input into SOOS Science Plan

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3. BEPSII – Jointly supported effort for delivery of sea-ice chlorophyll data into SOOSmap; 2 members from BEPSII in SOOS SSC and working group leadership; input into SOOS Science Plan
4. Quantarctica - engagement in development of tools
5. ICED – co-involvement in MEASO; three ICED members in SOOS SSC and working group leadership; collaboration on the Southern Ocean community comment into the UN Decade for Ocean Science Implementation Plan draft and development of Decade program and workshop; input into SOOS Science Plan
6. ASPeCt – Burcu Ozsoy as co-representative; collaboration on DueSouth; collaboration on the Southern Ocean community comment into the UN Decade for Ocean Science Implementation Plan draft; collaborative meetings between Chairs and SOOS IPO; input into SOOS Science Plan
7. AntEco – representatives attending SOOS Regional Working Group workshops; co-involvement in MEASO
8. FRISP – Endorsement and significant data management support of key FRISP program “NECKLACE”; three FRISP members in SOOS SSC and working group leadership
9. AnT-ERA – representatives attending SOOS Regional Working Group workshops; co-involvement in MEASO
10. SO-CPR – support for delivery of CPR data through SOOSmap
11. EGBAMM – one member from EGBAMM in SOOS SSC and working group leadership
12. EG-ABI – one EG-ABI member in SOOS SSC and working group leadership
13. Remote Sensing of Birds and Mammals - three in SOOS SSC and working group leadership and strong collaboration between SOOS Censusing Animal Populations in Space (CAPS) Capability Working Group and SCAR Remote Sensing of Birds and Mammals group including joint workshops
14. IBCSO – one member from IBCSO in SOOS SSC and working group leadership
15. INSTANT – one member from INSTANT in SOOS SSC and working group leadership; input into SOOS Science Plan
16. Life Sciences Group – two members from the SCAR Life Science Group in SOOS SSC and working group leadership
17. Ant-ICON - input into SOOS Science Plan
18. Ant-CLIMnow - input into SOOS Science Plan

Outside SCAR

1. Scientific Committee of Oceanic Research (SCOR) - governing body; represented at SOOS annual SSC meetings; official annual report; regular email reporting/engagement
 - a. SCOR Working Group, Developing an Observing Air-Sea Interactions Strategy (OASIS) – strong collaboration and overlap between SCOR OASIS working group and SOOS SOFLUX working group including Sebastiaan Swart as co-chair of both working groups; input into SOOS Science Plan
 - b. SCOR Working Group, Analysing ocean turbulence observations to quantify mixing (ATOMIX) – two working group leadership member in ATOMIX; input into SOOS Science Plan

SOOS: 2018-2020 Report, cont.

- c. SCOR Working Group, Measuring Essential Climate Variables in Sea Ice (ECV-Ice) – one SOOS leadership member in ECV-Ice; input into SOOS Science Plan
2. CCAMLR - involvement in SC-CAMLR; annual report; contribution to CCAMLR MPA; regular meetings with CCAMLR Secretariat
3. Partnership for Observation of the Global Oceans (POGO) - joint OASIS working group and delivery of fact sheet; discussions on special issue publication of SOOS science and implementation plan
4. Global Ocean Observing System - attendance at GOOS Regional Alliances meetings; contribution to GOOS reporting on stakeholders; contribution to GOOS survey on ocean observing resources; collaboration with GOOS Bio Panel;
5. COMNAP - support for development and entries into DueSouth; connection with COMNAP secretariat
6. IAATO – Development of MoU for IAATO contribution to DueSouth; collaboration on the Southern Ocean community comment into the UN Decade for Ocean Science Implementation Plan draft
7. European Polar Board – Development of service level agreement for hosting of DueSouth (2020 onwards); collaboration for 2021 planned UN Decade workshops and hosting of 2021 SOOS SSC; Joint support for EU-funded, SOOS-endorsed SO-CHIC program
8. IMOS - quarterly meetings; support for IPO; involvement in annual planning meetings
9. WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology in-situ Observing Programmes Support Centre (JCOMMOPS) - regular engagement with JCOMMOPS team for delivery of DueSouth and SOOSmap
10. Southern Ocean Carbon and Climate Observation and Modelling (SOCCOM) - updates to community; collaboration on SOOSMap data layers
11. European Marine Observation and Data Network (EMODnet) - Collaboration on delivery, maintenance and growth of SOOSmap
12. Arctic Data Committee - joint development of Federated Data Search Tool working group POLDER (with SCADM)
13. Association of Polar Early Career Scientists (APECS) – appointment of ECR/APECS Representative positions in each SOOS working group
14. Swedish Polar Research Secretariat (SPRS) – three-year sponsoring partnership; Swedish-SOOS Southern Ocean Network
15. Swedish Maritime Robotics Centre (SMaRC) – involvement in the Swedish SOOS network
16. All Atlantic Ocean Research Alliance (AANCHOR): coordinated SOOS involvement and engagement in the program
17. OceanObs19: Significant engagement to deliver community publications and representatives at the conference; post-conference engagement where invited
18. Ocean Best Practice (OBP): Strong SOOS involvement and engagement in OBP annual meeting and working groups

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19. Global Ocean Acidification-Observing Network (GOA-ON): Discussion and planning for Southern Ocean Regional Hub in GOA-ON
20. Animal Borne Ocean Sensor Network (AniBOS): SOOS involvement in planning meeting and engagement in proposal for new GOOS network
21. Antarctic Regional Climate Centre (AntRCC–WMO): SOOS IPO involvement in planning meetings and discussions
22. Antarctic Treaty Consultative Meeting and Committee of Environmental Protection (ATCM-CEP): Submitted annual reports; attended 2019 meeting
23. Seabed 2030: Information exchange and alignment of priorities
24. Surface Ocean Lower Atmosphere Study (SOLAS): Engagement in annual SOLAS SSC and planning of collaborative activities
25. Marine Ecosystem Assessment for the Southern Ocean (MEASO): development of ecosystem Essential Ocean Variable Task Team as contribution to MEASO; management of PEW Charitable Trusts grants and finances for MEASO product delivery
26. OceanSITES: Engagement in annual meetings and presentation of SOFLUX-OSD publication
27. Asia Oceania Geosciences Society (AOGS): Organisation of conference session and presentation on the SOOS OceanObs publication
28. COP25: Engagement in Earth Observation Day
29. NASA GCMD: Maintenance of SOOS metadata portal; development of new portal and testing of new search functionalities
30. Chinese National Arctic and Antarctic Data Center: Collaborative effort to ensure international access to Chinese CTD data
31. CCHDO: Collaborative efforts in ensuring access to Chinese CTD data
32. PANGAEA: Collaborative effort to deliver all PANGAEA CTD data holdings through EMODnet and into SOOSmap
33. International Ice Chart Working Group: Engagement in meetings
34. International Association for the Physical Sciences of the Oceans (IAPSO): Support for development of new Ice Shelf modelling working group
35. IASC: Engaged in data management discussions
36. EuroGOOS: Collaborative efforts in data management
37. GLODAP: Discussions for delivery of GLODAP data through SOOSmap
38. SOCAT: Discussions for delivery of SOCAT data through SOOSmap
39. Southern Ocean Argo: Joint project on Southern Ocean Argo data and publication
40. Intergovernmental Oceanographic Commission (IOC): UN Decade discussions
41. International Oceanographic and Information Data Exchange (IODE): UN Decade planning discussions
42. Biodiversity.aq: UN Decade planning and discussions
43. Tasmanian Polar Network: SOOS membership and involvement in meetings
44. Affiliated Institutes - Maintained the SOOS network of Affiliated Institutes (currently 47) – which is a network that acknowledges the role that institutes play in supporting the collection, management and delivery of observations and scientific knowledge of importance to the SOOS mission

Outreach, communication and capacity-building activities

Brief highlights of any activities undertaken since the SCAR Delegates meeting in 2018.

SOOS has undertaken many communication, outreach and capacity building activities over the last two years. Details are available in our annual reports (<http://soos.aq/about-us/annual-reports>). Briefly listed below are some of the key mechanisms we have used to achieve these:

1. SOOS Update – SOOS community newsletter (nearly 600 subscribers)
2. New Website www.soos.aq
3. Representation at community conferences and Meetings
4. Publications, presentations, posters and reports (see Resources database on website)
5. Engagement with APECS to ensure ECR involvement in all SOOS working group activities

SCAR fellowship reviewers

As part of SCAR's Capacity Building efforts, such as the Fellowships and Visiting Scholar Awards, we are looking for people from all the SCAR groups to form a 'review panel' so if applications in your field are submitted we have people to contact to help assess relevant applications. Please list one or more people (name and email address) from your group who would be willing to serve as reviewers for the next few years, along with 1-3 keywords on their principal expertise.

First Name	Last Name	Email	Principal Expertise
Sarah	Fawcett	sarah.fawcett@uct.ac.za	Biogeochemistry, Biology – phytoplankton
Jilda	Caccavo	ergo@jildacaccavo.com	Biology, Human Impacts, Trace Chemistry
Juan	Hofer	juanhofer@gmail.com	Plankton, ecosystem functioning, biological oceanography