

SCAR Sub-Group Report 2022-23

SCAR Executive Committee Meeting 2023, Trieste, Italy,
15-16 September 2023

It is essential that SCAR Action and Expert groups complete and submit this form, which will be used to create their report. Details will be shared with parent groups and incorporated into the main Science Group or SC-HASS report submitted for the Executive Committee meeting in September 2023.

Failure to submit a report may result in funding being withdrawn and the group terminated.

We recommend that you have the required information with you before starting this form. However, you will have the option to save the form and continue your submission later. Please note that you do not need to create a Jotform account. If you click on the last option, "Skip create an account", you can then choose to receive an email or copy the link provided.

Sub-Group Details

SCAR Sub-Group Name*

Antarctic Sea ice Processes and Climate

Parent Group*

Physical Sciences

Person Responsible*

Marilyn Raphael

Email*

raphael@geog.ucla.edu

Required Information

Include information since the last report submitted to the SCAR Delegates Meeting in 2022.

Group Narrative Report *

2023- ASPeCt held a one day workshop on June 4th, 2023 as a pre-meeting of the IGS Sea-Ice Symposium in Bremerhaven, Germany. This was our first in-person meeting post-COVID and was very well attended. As is customary, we were updated on the progress of our national programs and we updated the community on ASPeCt-led initiatives, as well as those that were led by other groups closely aligned with ASPeCt. About one dozen presentations were made and there were discussions on urgent topics, e.g., the recent sea ice extent minima. We held a joint session with the Arctic Sea-Ice Working Group [ASWIG] to discuss matters of common interest such as standardization of observations and the establishment of WMO's Global Cryosphere Watch's CryoNet stations.

2023- One important outcome of the workshop was an ASPeCt-led press release "Polar scientists call for urgent action in view of rapid Arctic and Antarctic change" which was released by the WMO on 16 June 2023, and picked up widely by organisations (including SCAR) and the media.

2020-2023- ASPeCt Immediate Past Chair, Steve Ackley, led a weekly online seminar series on Antarctic Sea Ice and Southern Ocean including numerous ASPeCt scientists. This series was instrumental in keeping ASPeCt scientists engaged despite the restrictions imposed during the pandemic and continues in that role even as the pandemic restrictions have eased.

Community Activities*

ASPeCt used its funding to support the attendance and participation of a diverse group of

six early career researchers (ECRs) at the annual workshop and the IGS conference in Bremerhaven in June, 2023. These ECRs are also supported within the research network that exists within ASPeCt.

ASPeCt has a mailing list of more than 70 members. This mailing list is housed at the Los Alamos Lab and administered by Dr Elizabeth Hunke as well as the ASPeCt leadership. The mailing list is used frequently to inform the group, to foster discussion about ASPeCt activities and to collect information about the results of ASPeCt-related activities. The mailing list is diverse in terms of gender and nationality and continues to grow.

Outline Work Plan, 2023-24*

Some ongoing ASPeCt initiatives:

ASPeCt is continuing an information gathering exercise aimed at developing a community-owned pipeline from observational methods → protocols → meta data (→ data). This includes standardization of observation protocols and development of best practices. First outcomes were discussed at the ASPeCt workshop in June 2023. The work continues.

Continued enlistment of cruises going into the sea ice zone using DUE SOUTH as a tool to access information on upcoming cruises

Continuing development of the ASPeCt ship-based observation system and database for sea ice measurements taken by remote vessels (airborne and under ice), ship-based instruments and surface-based instruments and sampling.

ASPeCt plans to hold its next workshop in 2024. The location is not yet set and may be virtual.

ASPeCt members convene sessions at regular science conferences and ASPeCt leverages members' attendance to hold sub-group meetings to ensure that progress is made on ASPeCt goals. ASPeCt members also attend meetings of groups with which it would like to form closer ties. We will continue to do this for the remainder of 2023 and in 2024.

Budget

What plans are there for the use of group funds?

2023

Amount (in USD)*

5000

Purpose*

Fund ECR travel and participation in ASPeCt- related meetings, e.g the AGU Fall meeting. Fund the development of the community-owned pipeline from observational methods to data, and standardization of observation protocols and best practices.

2024

Amount (in USD)*

5000

Purpose*

Fund ECR travel and participation in ASPeCt- related workshops, e.g., sea-ice relevant CliC workshops.

Key Information*

No changes in leadership or budget expected.

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 of 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 name a minimum of two people from your group who would be willing to serve as fellowship reviewers for the next few years, along with 1-3 keywords on their principal expertise.***

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First Name	Last Name	Email	Principal Expertise
Sharon	Stammerjohn	sharon.stammerjohn@colorado.edu	Sea ice, oceanography
Will	Hobbs	will.hobbs@utas.edu.au	sea ice, oceanography

Petra	Heil	petra.heil@utas.edu.au	sea ice, atmosphere, oceanography, Earth science,
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Optional Additional Information

Outreach, communication and capacity-building activities

ASPeCt members convene sessions at regular science conferences and ASPeCt leverages members' attendance to hold sub-group meetings to ensure that progress is made on ASPeCt goals. ASPeCt members also attend meetings of groups with which it would like to form closer ties. ASPeCt prioritises the participation of ECRs in these meetings. An overall benefit of these meetings is the fostering of community and alignment of common ASPeCt-related goals which together ensure scientific progress.

In the lead-up to the June 2023 ASPeCt meeting, Drs Raphael and Heil (ASPeCt Exec) have worked hard to bring new participants to the 2023 meeting and to entrain them into the ASPeCt community. About 15 new members have signed up to ASPeCt during the weeks before and after the June 2023 ASPeCt meeting.

Updates for your group's SCAR web page

No updates at the moment - we have an EDI statement in Draft but it is not yet ready for posting.

BUT

We wish to rejuvenate the SCAR-hosted ASPeCt WWW page and would welcome a contact person with their email, whom we can approach in due course

Notable Papers

List the group's three most notable papers, if applicable, and give a brief statement for each indicating the link to the group. Please follow the format of the given example below:

Moore, K.A., Smythe, P.H. & Hui, C.W., et al. 2017. Remote sensing using remotely piloted aircraft systems in Antarctica. *Frontiers in Remote Sensing* 62,

102-136.

This work provides a comprehensive overview of developments in remote sensing based on RPAS in the Antarctic region. It was the outcome of the AG-Remote Sensing's meeting in Kuala Lumpur, October 2016.

Fierro-Arcos, D., Corney, S., Meyer, A., Hayashida, H., Kiss, A.E., and Heil, P., 2023. Analysis of ecologically relevant sea ice and ocean variables for the Southern Ocean using a high-resolution model to inform ecosystem studies, *Progress in Oceanography*, 215, 103049, doi:10.1016/j.pocean.2023.103049.

This paper is a detailed first investigation of a coupled ocean-sea ice model for the analysis of how changes in the physical environment are linked to alterations in the structure and functioning of entire ecosystems, and provides an outlook on how ecological disruptions are expected to occur.

Saenz, B., McKee, D., Doney, S., Martinson, D., and Stammerjohn, S., 2023. Influence of seasonally varying sea-ice concentration and subsurface ocean heat on sea-ice thickness and sea-ice seasonality for a 'warm-shelf' region in Antarctica. *Journal of Glaciology*, 1-17. doi:10.1017/jog.2023.36

This paper - based on a modelling study - describes how surface, subsurface, and sea-ice modulation of ocean-atmosphere heat transfer underscore the importance of representing the interaction between sea-ice concentration and upper ocean variability in climate projections.

Fraser, A.D., Wongpan, P., and many others, 2023/ Antarctic Landfast Sea Ice: A review of its physical, biogeochemistry and ecological, *Reviews of Geophysics*, doi:10.1029/2022rg000770.

This review presents a synthesis of current knowledge of the physical, biogeochemical and biological aspects of fast ice, based on the sub-domains of: fast ice growth, properties and seasonality; remote-sensing and distribution; interactions with the atmosphere and the ocean; biogeochemical interactions; its role in primary production; and fast ice as a habitat for grazers.

Other information for publicity purposes

The Antarctic Sea-ice Processes and Climate (ASPeCt) Expert Group works to improve our understanding of the Antarctic sea ice zone through focussed and ongoing field programmes, remote sensing and numerical modelling, and to communicate important changes around sea ice within the wider Earth system to the broader community. -- At a time of dramatic decline of Antarctic sea ice, the shortfall in our understanding of (Antarctic) sea-ice processes as well as of its detailed role within the climate system and the ecosystem functions it provides limits our effort to anticipate its response to a significantly changing Earth system, to identify tipping points and to predict future change.

Any other information or issues you would like to raise

ASPeCt will need to work closer with a range of groups to facilitate timely progress, i.e., improved underway observing systems by partnering with WMO's Global Cryosphere Watch; roll-out of ice-mounted observing stations; or modelling collaborations with the WCRP.