

# Polar oceans and sea ice

Implementation strategy update 2023

# Implementation Team

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BEPSII



New initiatives/activities

# Cice2Clouds

- Meeting in Sept after OSC – group is working on synthesis papers on primary aerosols, sulfur cycle, nitrogen cycle, and tutorial paper on ocean-ice-snow-atmosphere interactions
- Next meeting – 9-10 Sept 2023 Grenoble, ahead of H2020 CRiceS meeting

Regarding item 2, in the summer 2022 we deployed as part of the NASA-Funded MISST (Multi-sensor Improved Sea Surface Temperature) project two Saildrones into the Pacific Sector of the Arctic Ocean, the Chukchi and Beaufort Seas to collect near-surface oceanic and atmospheric data. This was the third of three such deployments, with the others being in 2019 and 2021. Papers from the 2019 deployment are beginning to be published:

- Jia, C., Minnett, P.J., Szczodrak, M., & Izaguirre, M. (2023). High Latitude Sea Surface Skin Temperatures Derived From Saildrone Infrared Measurements. *IEEE Transactions on Geoscience and Remote Sensing* 61, 1-14. [10.1109/TGRS.2022.323151](https://doi.org/10.1109/TGRS.2022.323151)
- Jia, C., Minnett, P.J., & Luo, B. (2023). Significant Diurnal Warming Events Observed by Saildrone at High Latitudes. *Journal of Geophysical Research: Oceans* 128, e2022JC019368. <https://doi.org/10.1029/2022JC019368>
- Jia, C., & Minnett, P.J. (2023). Ocean Warm Skin Signals Observed by Saildrone at High Latitudes. *Geophysical Research Letters* 50, e2022GL102384. <https://doi.org/10.1029/2022GL102384>

2023 plans are to work-up more of the data and use them to improve the algorithms to derive SST from infrared satellite radiometers.

# BEPSII

- April 2023 sea ice school
- Annual meeting in March 2023 in La Jolla, USA

Working on:



- 1. multiple data collation/synthesis projects for sea-ice biogeochemistry data.
- 2. The Ice Algae Model Intercomparison Project IAMIP2 is evaluating/comparing first coordinated runs
- 3. Antarctic position analysis is being finalized

BEPSII 2024 will be an online meeting which will focus on the development of a revised/updated science plan with the intention to feed into the SOLAS science plan for polar oceans and sea-ice

Exciting results

- MOSAiC papers are coming out hot and fast
- Shout out to Anoop and co Nature Geosciences paper showing Hg emissions changed significantly during the last warming event in the Holocene, which suggests that Hg emissions increase in a warming climate driven by sea-ice changes and bromine chemistry

## **Arctic mercury flux increased through the Last Glacial Termination with a warming climate**

[Delia Segato](#), [Alfonso Saiz-Lopez](#) , [Anoop Sharad Mahajan](#), [Feiyue Wang](#), [Juan Pablo Corella](#), [Carlos Alberto Cuevas](#), [Tobias Erhardt](#), [Camilla Marie Jensen](#), [Chantal Zeppenfeld](#), [Helle Astrid Kjær](#), [Clara Turetta](#), [Warren Raymond Lee Cairns](#), [Carlo Barbante](#) & [Andrea Spolaor](#) 

[Nature Geoscience](#) (2023) | [Cite this article](#)



- Indian Antarctic program has a new atmospheric laboratory to measure ocean-emitted compounds

COMMENTARY | APRIL 06 2023

## Untangling the influence of Antarctic and Southern Ocean life on clouds

**Collections:** Knowledge Domain: Atmospheric Science

Marc D. Mallet , Ruhi S. Humphries, Sonya L. Fiddes, Simon P. Alexander, Katye Altieri, H el ene Angot, N. Anilkumar, Thorsten Bartels-Rausch, Jessie Creamean, Manuel Dall'Osto, Aur elien Dommergue, Markus Frey, Silvia Henning, Delphine Lannuzel, R emy Lapere, Gerald G. Mace, Anoop S. Mahajan, Greg M. McFarquhar, Klaus M. Meiners, Branka Miljevic, Ilka Peeken, Alain Protat, Julia Schmale, Nadja Steiner, Karine Sellegri, Rafel Sim o, Jennie L. Thomas, Megan D. Willis, V. Holly L. Winton, Matthew T. Woodhouse

# POLAR CHANGE

- Led by Manuel Dall'Osto – successful campaign to the Weddell Sea finished in April this year with focus of entire ship on atmospheric observations, in-situ experiments, etc. lots of solar participation