

Project information

Keywords

sea ice, Kongsfjorden, Storfjorden, fjord habitats, in situ, remote sensing

Project title

Mapping Sea Ice

Year

2018

Project leader

Sebastian Gerland

Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)

79 N, 12,5 E; 77,9 N, 18,25 E

Participants

NPI: Sebastian Gerland (PI), Dmitry Divine, Mats A. Granskog, Mikhail Itkin, Christian Lydersen, Olga Pavlova, Stein Tronstad, Jean Negrel

MET.NO: Nick Hughes, Signe Aaboe, Keguang Wang

Norut: Stian A. Solbø, Rune Storvold, Agnar Sivertsen

UiT: Torbjørn Eltoft, Camilla Brekke, Anthony Doulgeris, Yitayew Temesgen Gebrie, Malin Johansson

UNIS: Janne Søreide, Magnus Andreassen

Flagship

Fjord and Coast

Funding Source

Fram Centre flagship Fjord and coast.

Longterm monitoring of Arctic sea ice, Norwegian Polar Institute.

CIRFA SFI, UiT and partners, Research Council of Norway.

RESICE project, Arktis 2030, Norut and partners, KLD/UD.

Summary of Results

In the framework of the project, Arctic fieldwork was conducted in Kongsfjorden and Storfjorden (Svalbard) in spring 2018. New results about mapping the fast ice edge with different methods were published in the *Annals of Glaciology* (peer reviewed, Negrel et al. 2018). Another publication on changes of sea ice in Kongsfjorden is in press (Pavolva et al. 2018), and one more publication about the same topic but with different methods is in preparation (Johansson et al.).

One open seminar was arranged in October 2018 (following seminars in 2016 and 2017). Results from the project are also summarized in an article soon to be submitted to Fram forum. Posts related to the project work and seminar have been published on social media (@oceanseaicenpi).

Master and PhD-students involved in the project

MSc student Magnus Andreassen, UNIS.

For the Management

Improved and new methods for mapping status and changes of sea ice in Arctic fjords is essential for environmental management. The project investigated use of a combination of in situ, airborne and remote sensing observations, and results were and are published and communicated in the project. Results were also communicated to members of the environmental management community at the open seminar in October 2018.

Published Results/Planned Publications

Negrel, J., Gerland, S., Doulgeris, A.P., Lauknes, T.R., and Rouyet, L. (2018): On the potential of hand-held GPS tracking of fjord ice features for remote-sensing validation. *Annals of Glaciology*. DOI: 10.1017/aog.2017.35.

Pavlova, O., S. Gerland and H. Hop (in press): Changes in sea-ice extent and thickness in Kongsfjorden, Svalbard (2003-2016). In Hop, H., Wiencke, C. (eds.): *The ecosystem of Kongsfjorden, Svalbard. Advances in Polar Ecology, Vol. 2*, Springer Verlag.

Johansson, M. et al. (in prep.): Sea ice coverage in Kongsfjorden from 1992 until 2018 observed by synthetic aperture radar satellite images. Planned for submission to *Annals of Glaciology* in spring 2019.

Communicated Results

Open seminars conducted in 2016, 2017 and 2018.

Social media posts on twitter and instagram (@oceanseaicenpi)

Fram forum 2019 article to be submitted in December 2018.

Interdisciplinary Cooperation

The project included interdisciplinary collaboration between sea ice scientists focusing at in situ observations (NPI), airborne autonomous observations (Norut), satellite remote sensing (UiT, MET, NPI), and ecosystem scientists (UNIS, NPI).

Budget in accordance to results

The budget 2018 is used completely. The project resulted in several publications, it gave support to fieldwork and data processing, it supported interdisciplinary work, and it helped us arranging several open seminars.

Could results from the project be subject for any commercial utilization

Yes

If Yes

Results of this project help indirectly for better and faster assessments of sea ice in coastal regions. This has potential of being useful for navigation in such waters in respect to efficiency and safety.

Conclusions

The project Mapping Sea Ice was running over three years and created new knowledge, and interdisciplinary collaboration between Fram Centre partners. This is a good basis for developing follow up work focusing different interesting and promising directions, that could be identified throughout the project, in order to provide better tools for environmental management of Arctic coastal regions.