

## INTAROS Annual Report 2020

### Integrated Arctic Observation System (INTAROS)



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#### 1. Selected highlights

##### 1.a. Selected scientific highlights since last report

*Last report was submitted to Brest SSC meeting, June 2019. Each highlight needs to be VERY short, bullet points, with a link to publication if applicable.*

Deployment Cruise - Coordinated Arctic Acoustic Thermometry Experiment (Eurasian Basin) was carried out with the Norwegian icebreaker KV Svalbard. August 2019. KV Svalbard reached the North Pole during August 21 2019.

Community-based observing networks in Greenland, Svalbard and Russia have been strengthened and links between community-based observing and international databases explored. The PISUNA network in Greenland was awarded the Nordic Council Environment Prize, generating very wide media coverage.

##### 1.b. Publications since last report

*Please add all publications since last report to the table below (see notes for details on "Class" and "Activity" fields).*

<b>Publication with DOI</b>	<b>Class 1, 2, 3</b>	<b>Activity*</b>
Lee, C.M. et al. 2019. A Framework for the Development, Design and Implementation of a Sustained Arctic Ocean Observing System. <i>Frontiers in Marine Science</i> 6. 10.3389/fmars.2019.00451	3	
Goeckede M, Kwon MJ, Kittler F, Heimann M, Zimov N, Zimov S. 2019. Negative feedback processes following drainage slow down permafrost degradation. <i>Global Change Biology</i> , 25, 3254-3266. doi: 10.1111/gcb.14744	3	

Ottersen G and Melbourne-Thomas J (2019) Time to look forward to adapt to ocean warming. Proceedings of the National Academy of Sciences, 116, 18157-18158. doi: <a href="https://doi.org/10.1073/pnas.1912639116">https://doi.org/10.1073/pnas.1912639116</a>	3	
Møller EF and Nielsen TG. 2019. Borealization of Arctic zooplankton-smaller and less fat zooplankton species in Disko Bay, Western Greenland. Limnology And Oceanography. doi: 10.1002/lno.11380	3	
Larsen J, Mohn C, Pastor A, Maar M. 2020. A versatile marine modelling tool applied to arctic, temperate and tropical waters. Plos One, 15. doi: 10.1371/journal.pone.0231193	3	
Durant JM, Molinero JC, Ottersen G, Reygondeau G, Stige LC, Langangen O. 2019. Contrasting effects of rising temperatures on trophic interactions in marine ecosystems. Scientific Reports, 9. doi: 10.1038/s41598-019-51607-w	3	
Bridier G, Meziane T, Grall J, Chauvaud L, Sejr MK, Menneteau S, Olivier F. 2019. Coastal waters freshening and extreme seasonality affect organic matter sources, quality, and transfers in a High Arctic fjord (Young Sound, Greenland). Mar Ecol Prog Ser 610:15-31. doi: 10.3354/meps12857	3	
Krause, J.W., Schulz, I.K., Rowe, K.A. <i>et al.</i> 2019. Silicic acid limitation drives bloom termination and potential carbon sequestration in an Arctic bloom. <i>Sci Rep</i> 9, 8149. <a href="https://doi.org/10.1038/s41598-019-44587-4">https://doi.org/10.1038/s41598-019-44587-4</a>	3	

*\*If appropriate, please list the IMBeR activity through / by / from / during which the publication arose*

\*\*\*\***Notes on publications**\*\*\*\*

Publications are logged in the IMBeR Zotero library which is publicly accessible online - [https://www.zotero.org/groups/2448334/imber\\_library\\_2/library](https://www.zotero.org/groups/2448334/imber_library_2/library)

[Due to space limitations, publications from 1999-2017 are in a separate Zotero library - [https://www.zotero.org/groups/38770/imber\\_library\\_1/library](https://www.zotero.org/groups/38770/imber_library_1/library)]

Publications are categorised by “Class” and linked to “Activities”:

**Class 1 publications** are specifically generated through/by/from/during **IMBeR activities** - for example, arising from IMBIZOs and IMBeR conferences such as the IMBeR open science meeting and the IMBeR CJK symposia and from the activities of the working groups, regional programmes and the SPIS scoping teams.

**Class 2 publications** are on topics relevant to the IMBeR Science Plan that benefitted from some interaction with IMBeR or **IMBeR activities**, for example by IMBeR symposium attendees, past and present SSC members, working group, regional programme and endorsed project members, or national contacts.

**Class 3 publications** are on topics relevant to the IMBeR Science Plan but for which there is no direct link to or benefit from an IMBeR activity. These might include publications by SSC members, working group, regional programme or endorsed project members or members of the IMBeR international community that were written as part of the normal scientific activity of the authors and would have occurred irrespective of IMBeR's existence. You can report Class 3 publications, but they will no longer be logged in the IMBeR database.

[See <https://drive.google.com/open?id=1OQWn41KJvQ-LyWJlkiYnc5qZ2luNQOrg> or <https://pan.ecnu.edu.cn/p/DTrpUb4QiFAYoQ4> for further information on "What is an IMBeR publication?".]

**Why list 'Class' and 'Activity'?** This helps us to declare authentically which publications IMBeR has helped to generate, and it makes it easier for us to demonstrate the value of the Regional Programmes, the Working Groups, the Endorsed Projects, and IMBeR in general, and it helps us to justify support for IMBeR activities when we can list tangible outputs.

### 1.c. Events, Meetings, and Workshops

*List all international and national events, meetings and workshops. Describe the level of participation: e.g. chairing session/workshop, organising meeting. Include Endorsed Project meetings and workshops.*

*Format: Title of event. Date. Location. Description of participation. Any other pertinent details.*

OceanObs 19. Hawaii September 15-20 2019. Participation from INTAROS included co-leader Hanne Sagen and WP leader Agnieszka Beszczynska-Möller.

MARIS (Multi-Parameters Arctic Environmental Observations and Information Services, China)-INTAROS meeting. Bergen-Norway 31/10-1/11-2019.

INTAROS general Assembly. IOPAN, Sopot, Poland. January 8-10 2020. 55 participants.

INTAROS 7<sup>th</sup> Steering committee meeting. IOPAN, Sopot, Poland. January 10 2020. 15 participants.

INTAROS Ocean and Sea Ice Workshop. Bergen, Norway April 23-24 2020 (participation mainly per video)

INTAROS Ecology/Fishery workshop. Bergen, Norway and Århus, Denmark April 27-28 2020 (communication per video)

INTAROS EGU Special Session I - Arctic observations: data collection, management, and user engagement. Online event. May 7 2020. Convener Stein Sandven, INTAROS leader.

INTAROS EGU Special Session II - Trans-disciplinary aspects of researching Arctic change. May 8 2020. Three co-convenors from INTAROS.

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## 2. International collaboration and links

There are many activities both in Europe and on other continents of relevance to monitoring and observations in the Arctic. A key objective of INTAROS is to collaborate and build synergies with these to ensure complementarity and to ensure that the project learns from and advances on existing achievements. In particular INTAROS is working closely with the Arctic Council's Sustaining Arctic Observing Networks (SAON), the Global Earth Observations (GEO) Cold Region Initiative (CRI) and programmes such as COPERNICUS, which is establishing a European capacity for Earth Observation and Monitoring as well as the Japanese led Arctic Challenge for Sustainability (ArCS) project and a number of United States and Canadian programmes.

This list is not exhaustive but gives a flavour of some of the relevant projects and initiatives with which INTAROS is collaborating:

<https://www.eu-polarnet.eu/>

<https://applicat.eu/> Advanced prediction in polar regions and beyond

Blue Action Arctic Impact on Weather and Climate <http://blueaction.eu/index.php?id=3498>

<https://eu-interact.org/> International Network for Terrestrial Research and Monitoring in the Arctic  
NUNATARYUK, ARICE and more

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## 3. Input to management, policy and governance

*Add anything that in line with the IMBeR Grand Challenge III: Improving and achieving sustainable ocean governance*

Report on "Extension of ecosystem management" delivered and internally approved" May 20 2020.  
This report provides advice to Arctic marine ecosystem management.

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## 4. Education and outreach

Research school: Observing and modelling the Arctic Environment. September 2019. St Petersburg, Russia. Organised by NIERSC, Russian branch of INTAROS lead partner NERSC. 50 participants over 6 days.

Short-term scientific exchanges and training of 2-6 weeks for PhD students and early-stage researchers will be organized by the project. Project partners will provide details of laboratory projects, or ship-based activities where they can offer training and these will be announced widely.

Exhibition "Sound in the sea" (in Norwegian). Research Days 19-21 September 2019.

Videos from cruises:

Deep down in the Arctic OBS Expedition 2019. Ocean bottom seismographs.

[https://www.youtube.com/watch?time\\_continue=2&v=U6ch88KY9Dk&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=2&v=U6ch88KY9Dk&feature=emb_logo)

SnowAPP field campaign 2019. Study of snow properties and snow evolution.

[https://www.youtube.com/watch?time\\_continue=1&v=Mgcm7DghUEo&feature=emb\\_logo](https://www.youtube.com/watch?time_continue=1&v=Mgcm7DghUEo&feature=emb_logo)