

National report of Norway (2019)



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1. The status of implementation

Argo Norway (NorArgo, <http://www.norargo.no>) is the Norwegian contribution to the Euro-Argo European research infrastructure (ERIC) and to the global Argo programme. The main focus area for Argo Norway is the Nordic Seas (Greenland, Iceland and Norwegian Sea).

Floats deployed and their performance

In 2019, Norway deployed 14 Argo floats (6 core Arvor floats, 3 BGC-Provor floats, 2 Deep Arvor floats, and 3 equivalent APEX floats). The deployment locations and drift are shown in Fig. 1. All 14 floats have so far performed well with exception of one APEX (APF11) float. This float got communication (IRIDIUM) problem after about 6 months, and now data transmitting occurs irregular.

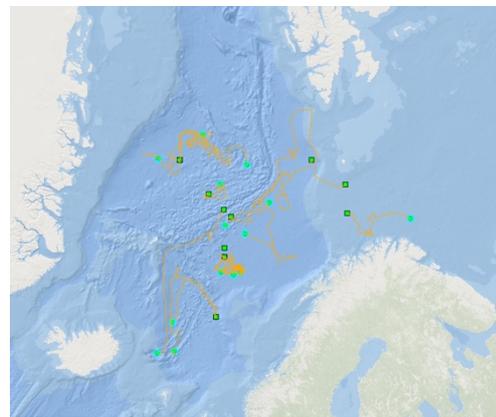


Figure 1. Locations of deployed Argo floats in 2018.

Technical problems encountered and solved

One APEX (APF11) float got communication (IRIDIUM) problems after about 6 months, and data transmitting occurs irregular. This is not solved, and we plan to recover the float this spring.

Status of contributions to Argo data management and delayed mode quality control process

Regarding data management and delayed mode quality control, Argo Germany have done the delayed mode quality control for all floats in the Nordic Seas including our floats. We have provided with expertise regarding the DMQC when we have been asked (e.g., for difficult floats). However, we plan to take over the DMQC of our new floats.

2. Present level of and future prospects for national funding

The funding has been a combination of self-financed (i.e. funded by Institute of Marine Research) and funding from the Norwegian Research Council (NRC, Ministry of Education and Research) during 2012-2015.

For 2018-2023 we have received funding from the NRC for an extension of the national Argo infrastructure project. Within this project we will purchase and deploy approximately 13 floats per year including core, bio, bgc and deep floats. The infrastructure will have approximately 36 person months per year.

3. Summary of deployment plans

In 2020, mainly in April/May, we plan to deploy 15 floats including: 3 BGC-floats (PROVOR), 5 Bio-floats (all BGC-sensors except nitrate and pH sensors, APEX), 4 Deep-floats (Arvor), and 3 core floats (Arvor). These floats will be deployed in the Nordic Seas. Figure 2 shows the planned deployments.

For the years 2021-2022 we plan to deploy about 13 floats each year, including 4-5 core, 3-4 bio, 2-3 bgc and 1-3 deep floats. The deployment areas will be similar as in 2020.

Variables / Sensors	Core	Bio	BGC	Deep
Press, temp., salinity	X	X	X	X
Oxygen		X	X	X
Chlorophyll-Fluor.		X	X	
Particle conc. (backsc.)		X	X	
Irradiance, PAR		X	X	
pH			X	
Nitrate			X	

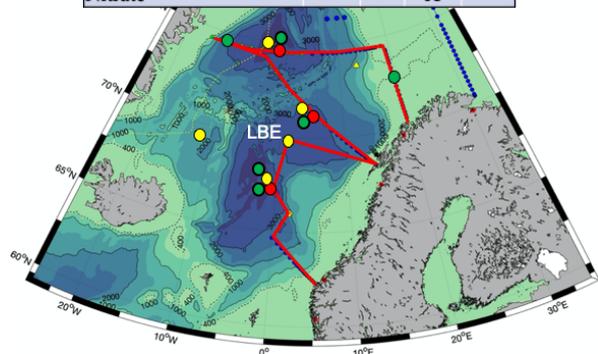


Figure 2. Planned Argo deployments for 2020.

4. Summary of national research and operational uses of Argo data

Argo Norway focuses on both research topics and marine climate monitoring of the Nordic Seas. There is an increasing interest in using Argo data in Norway, and two climate centres are now using the data operationally in climate models. For instance, the operational TOPAZ4 modeling system assimilates Argo data into the ocean model to provide forecast product for the Nordic Seas and Arctic Ocean under the EUs Copernicus Marine Environment Monitoring Services (CMEMS, <http://marine.copernicus.eu/>).

The present scientific topics are mainly within the Nordic Seas (Norwegian, Iceland and Greenland Seas) and include:

- Studies of the deep ocean circulation in the Nordic Seas. These studies have so far brought new insights in the circulation of the Nordic Seas.
- Water mass changes and also in relation with biological activities. This topic is also one of the reasons that we have included bio/bgc sensors on the Argo floats.
- Studies that involve changes in the mixed layer.

Link to Argo Norway (NorArgo): <https://norargo.hi.no>

5. Issues we wish to be considered and resolved

Estimates of available battery/energy capacity during the mission would be nice.

6. Improving the quality and quantity of CTD cruise data

All our ship CTD-data are sent regular to the ICES, EUs CMEMS, and World Ocean Database.

7. The Argo bibliography

No new articles to add that are not included in the Argo bibliography.