Argo National Report 2020 – Finland

1. Status of implementation

The Finnish Argo program is run by the Finnish Meteorological Institute (FMI). Since 2010 FMI has deployed altogether 12 floats in the Nordic Seas, including two on Barents sea 2018 and 2020. In addition of oceanic operations, 23 floats (starting 2012) have also been deployed into the shallow and low salinity Baltic Sea. Six of the Baltic float deployments have bio-optical sensor suite.

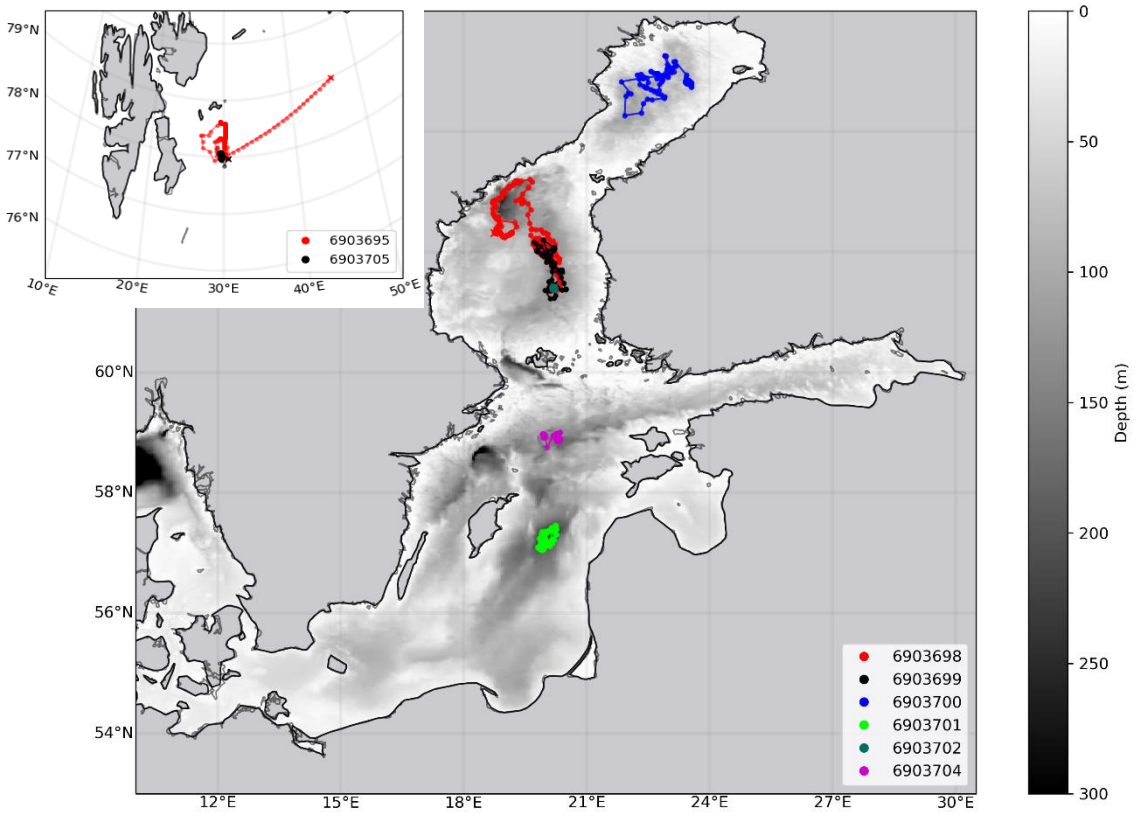

Figure 1, Routes of FMI Argo floats which operated in the Baltic Sea in 2019-2020. Upper left inset shows the trajections of the Barents Sea floats. The dot indicates the deployment location. Cross indicates the recovery point or latest measurement for each Argo float.

In 2020 FMI deployed total of 3 floats in 2020. One Apex float (6903704) was deployed in new area on the Baltic Proper. One Arvor-C float (6903702) was deployed to the Bothnian Sea. One Apex float (903705) was deployed on Barents Sea as continuation of our experiments with the ice avoidance, and extensions towards high latitudes.

2. Present level and future prospects for national funding for Argo including summary of human resources devoted to Argo

FMI has committed to purchase and deploy three floats in a year, at minimum. Our main geographical operation area is the Baltic Sea. Currently we are further developing the operation of

Argo floats in shallow, and ice-covered seas. First experiments with ice-avoidance on the Baltic Sea has been performed during winter 2015-1016. 2018 one float (6802026) has been successfully under ice on Bay of Bothnia. In summer 2019 another float (6903700) was deployed in same area. A float deployed on Barents Sea in autumn 2018 (6903695) has spent successfully two winters under ice, and another (6903705) was deployed on Barents Sea autumn 2020. Its ice avoidance algorithm was activated at the beginning of December 2020.

3. Summary of deployment plans

FMI plans to deploy total of 3 floats in 2021. One floats will be deployed on Gotland Deep, one to replace the current float (6903701). One will be deployed on Bothnian Sea, and one on Bay of Bothnia.

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

Argo data sets gathered from Baltic Sea are used for validating the operational and research circulation models, studies in hydrography and currents. Operating Argo floats in the Baltic Sea has been a research on the limits of usability of Argos in shallow seas. On this work three papers and one doctoral thesis were published on 2018-2019. (Haavisto et al. 2018, Roiha et al. 2018 and Siiriä et al. 2018, Roiha 2019) Ongoing research is done on assimilating Argo data in the operational Baltic Sea circulation models for enhancing their forecasting skills, further developing the operations in both shallow, and icy conditions, as well as quality control of the Baltic Sea Argo data.

5. Issues that your country wishes to be considered and resolved by the Argo Steering Team regarding the international operation of Argo

Finland considers that more resources should be allocated for the environmental monitoring of the Arctic Ocean. The Euro-Argo could coordinate developments and deployments of ice-tethered Argos.

6. CTD data uploaded to CCHDO

No data uploaded.

7. Bibliography

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8. Effects of COVID-19

COVID-19 situation has forced part of cruises to be rescheduled or cancelled which had caused challenges for deployment planning. So far, the challenges have been manageable however.

9. RBR CTD piloting and deployment plans

Within the Euro Argo Rise project two deployments with RBR sensors are planned for 2021. The results obtained from these are used to determine FMI further plans.