

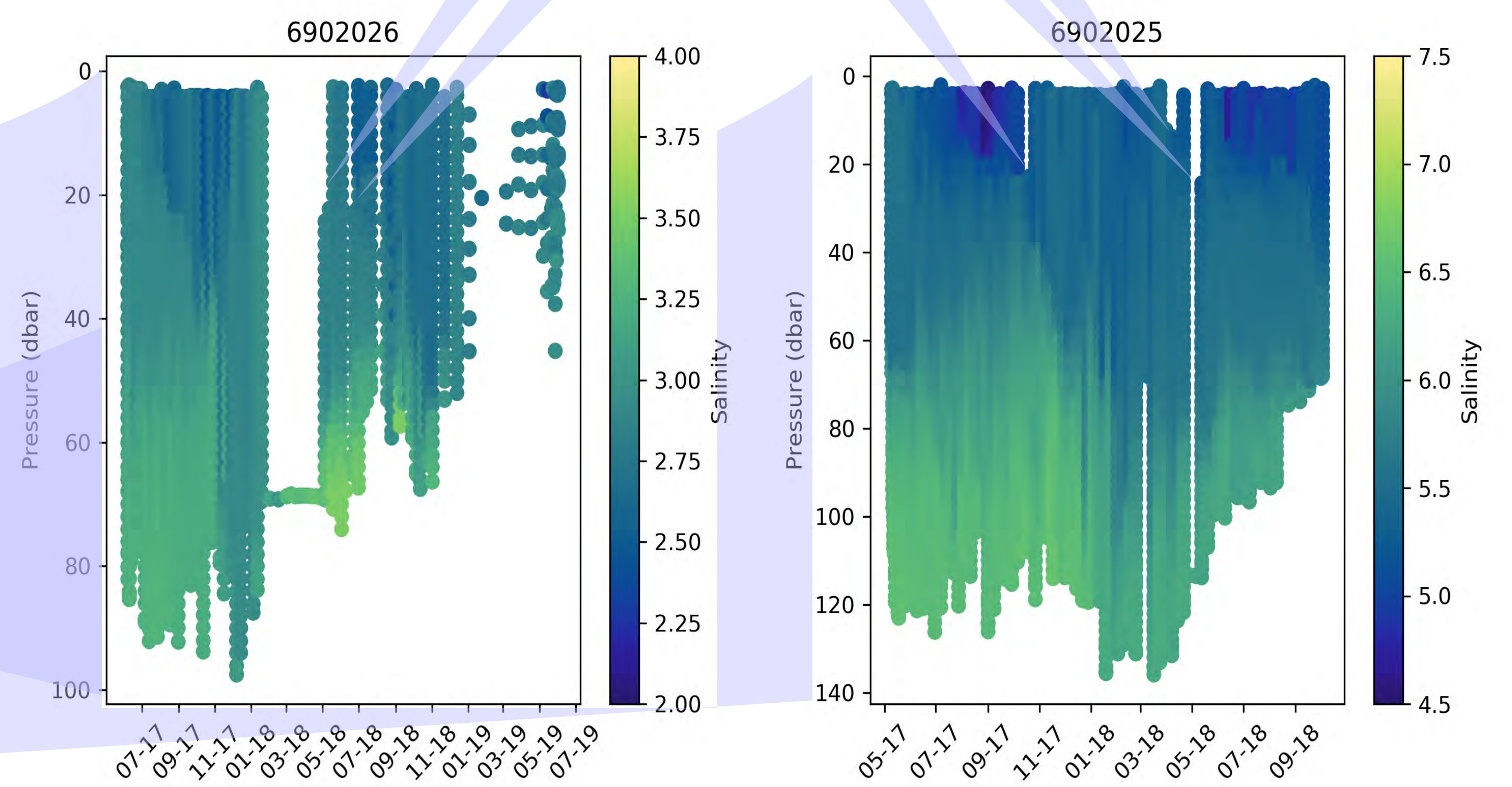
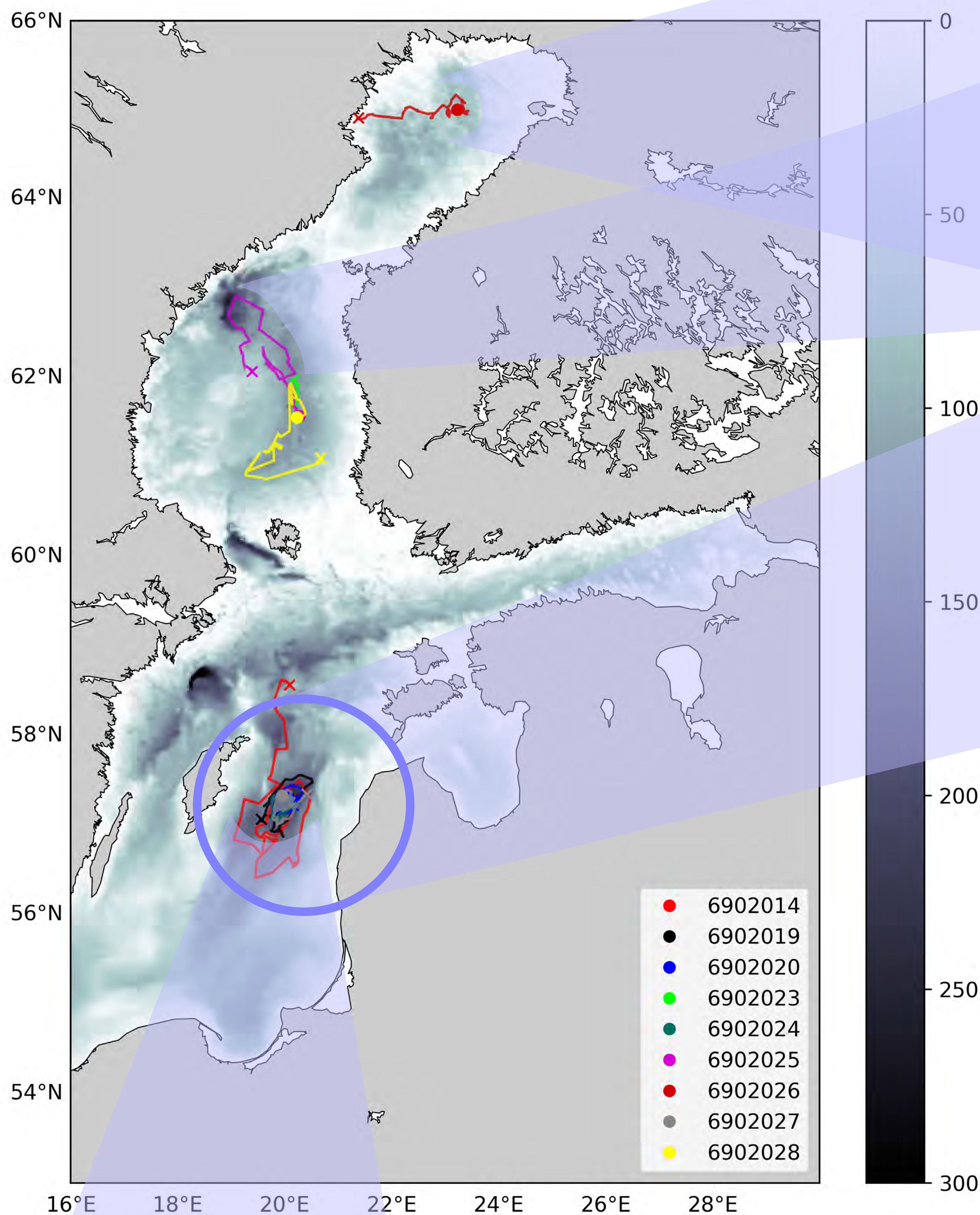
Adapting Argo floats to the Baltic Sea: lessons learned

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Baltic Sea presents unique challenges and opportunities for Argo operations. The shallow brackish water, relatively small area and strong haloclines all add to the challenge on how the floats can be operated. As FMI has been operating the Argo floats in the northern Baltic Sea since 2012. Most of these challenges have been overcome, and the experimentation is turning into operational infrastructure.

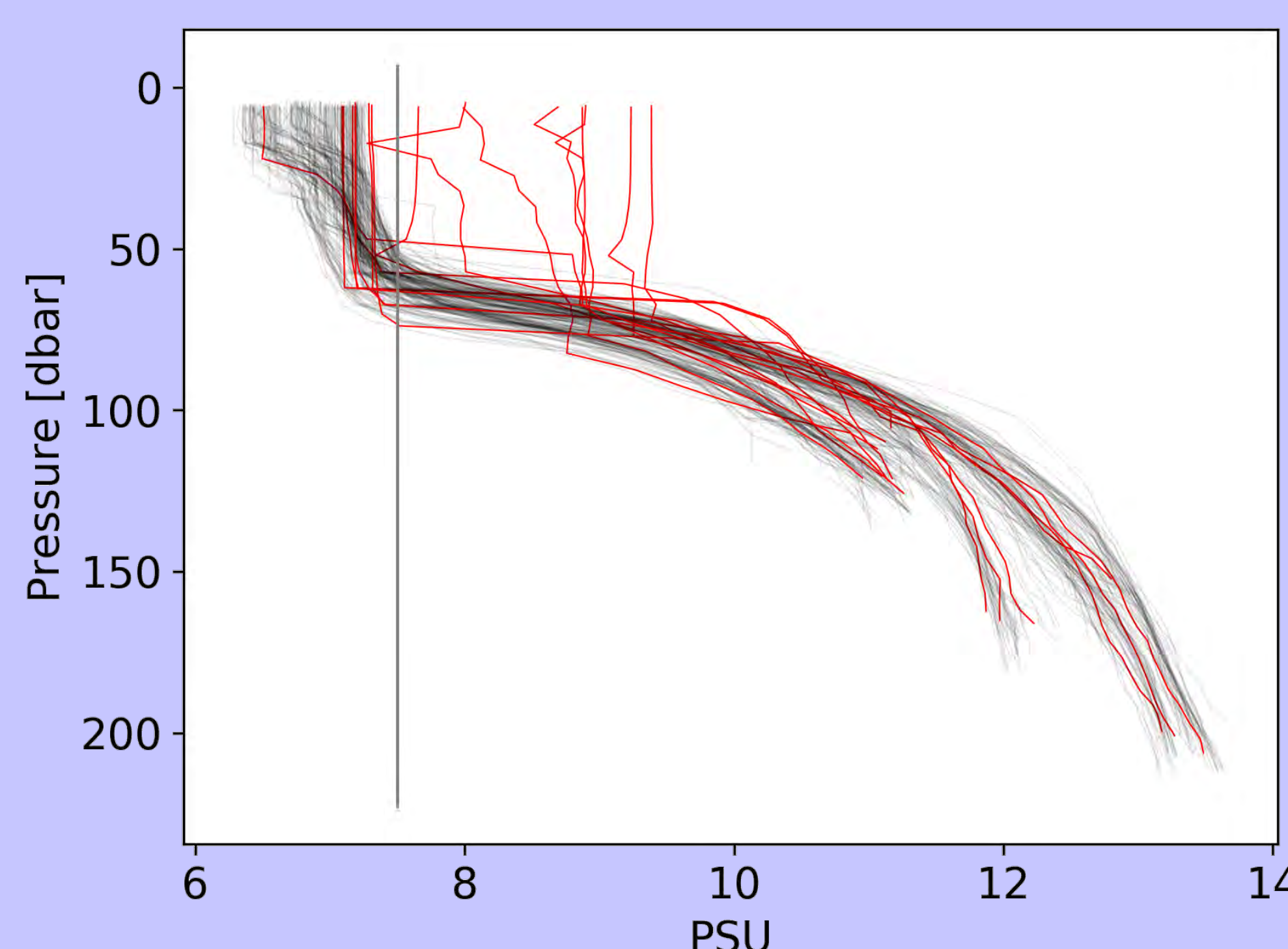
Ice Avoidance Algorithm (ISA) prevents the float from surfacing, when the surrounding temperature indicate the float might be under ice. Here tested limits were between +0.2 °C and +0.5°C



By constant monitoring, and adjusting the diving depth and frequency, the float's movement can (often) be restricted to desired area. Too deep dives risk getting stuck on bottom, while too shallow dives can let the float escape.

Further developments will include developing more automatic controlling of the Argo floats, improving the quality-control of the data and defining good practices of under-ice activities. Baltic Sea works as a good test-bed for the Arctic and Antarctic. All these challenges are being addressed on the E-ARISE project.

Salinity values vary a lot in Baltic Sea. Thus, the quality control of the Argo data needs specific algorithms, different to large oceans. Here salinity profiles from the indicated floats. Gray ones as expected, red ones marked as faulty.



More info:

Haavisto N, Tuomi L, Roiha P, Siiriä SM, Alenius P, Purokoski T. 2018. Argo floats as a novel part of the monitoring the hydrography of the Bothnian Sea. *Frontiers in Marine Science*. 5:324.

Roiha P, Siiriä SM, Haavisto N, Alenius P, Westerlund A, Purokoski T. 2018. Estimating currents from Argo trajectories in the Bothnian Sea, Baltic Sea. *Frontiers in Marine Science*. 5:308

Siiriä S, Roiha P, Tuomi L, Purokoski T, Haavisto N, Alenius P. 2018. "Applying area-locked, shallow water argo floats in baltic sea monitoring. *Journal of Operational Oceanography*. 0(0):1-15

<https://www.euro-argo.eu/EU-Projects/Euro-Argo-RISE-2019-2022>



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