



What can ARGO's tell us on the processes in Baltic Sea?

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Finnish Meteorological Institute has been testing ARGO floats in the Baltic Sea as a mean for collecting data from the sea areas that are not easily reachable by research vessels or remote sensing. The observational data for Baltic Sea off-shore areas is very sparse and new observational methods are needed to fill the gaps in our knowledge and collect new data for different purposes, such as, operational activities, modelling and ocean science.

The ARGO floats have been used successfully in the deep oceans. However, applying the ARGO floats in Baltic Sea is not straight forward, as the conditions differ greatly: the water is brackish, some areas are heavily trafficked and the northern parts freeze during the winter. In addition, the mean depth is only 54 metres, which is only a fraction of depths where ARGO floats have commonly been used.

FMI has deployed three ARGO floats in Baltic Sea for different missions. The first ARGO was deployed in 2012 with normal diving algorithm, which checks the pressure hourly. The second float was modified by Aalto University so that the algorithm checks the pressure every 15 minutes. The first float was deployed in the Bothnian Sea in May 2013 and it measured over 200 profiles during its half year mission. The float with faster pressure detection was deployed in the Bothnian Sea in May 2013, and during its 4 month mission it measured successfully over 120 profiles. Another, longer test is ongoing on Eastern Gotland basin, where another ARGO float was deployed at Aug 2013, and still measures at Jan 2014. This one differs from earlier experiments as it has additional oxygen and scattering meters, also the area of measurements is deeper (200+ meters). The missions so far indicate, that with proper control and monitoring, ARGO's can be operated, and can measure long series of profiles. In addition to the actual measurements, the movement of ARGO floats gives possibilities to analyse currents in deeper areas of Baltic, and help determining correlations between currents and bathymetry, for example.

In this presentation we present and analyse the results from these experiments and discuss further possibilities of ARGO's in Baltic Sea.