



First measurements with Argo floats in the Southern Baltic Sea

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The Argo programme is one of the most important elements of the ocean observing system. Currently almost 4000 Argo floats profile global oceans and deliver real time data. Originally Argo floats were developed for open ocean observations. Therefore a standard float can dive up to 2000 m and deep Argo floats are under development. However in the last years the shallow shelf seas become also interesting for Argo users.

Institute of Oceanology Polish Academy of Sciences (IOPAN) participates in the Euro-Argo research infrastructure, the European contribution to Argo system. A legal and governance framework (Euro-Argo ERIC) was set up in May 2014. For a few years IOPAN has deployed floats mostly in the Nordic Seas and the European Arctic region. In the end of 2016 the first Polish Argo float was deployed in the Southern Baltic Sea. Building on the successful experience with Argo floats deployed by the Finnish oceanographers in the Bothnian Sea and Gotland Basin, the IOPAN float was launched in the Bornholm Deep during the fall cruise of IOPAN research vessel Oceania. The standard APEX float equipped with 2-way Iridium communication was used and different modes of operation, required for the specific conditions in the shallow and low saline Baltic Sea, were tested. Settings for the Baltic float are different than for the oceanic mode and were frequently changed during the mission to find the optimum solution. Changing the float parking depth during the mission allows for the limited control of the float drift direction. Results of a high resolution numerical forecast model for the Baltic Sea proved to be a valuable tool for determining the parking depth of the float in the different flow regimes. Trajectory and drift velocity of the Argo float deployed in the Southern Baltic depended strongly on the atmospheric forcing (in particular wind speed and direction), what was clearly manifested during the 'Axel' storm passing over the deployment area in January 2017.

The first deployment showed clearly that Argo floats can be a useful tool for the Baltic Sea monitoring as the important element of a more complex, multidisciplinary observing system.