



## Argo-Poland National Report 2018

Waldemar Walczowski, Małgorzata Merchel  
IO PAN, Sopot, Poland, 01.03.2019 r.

### 1. The status of implementation.

In 2018 Poland deployed 5 floats from the board of *r/v Oceania*. Three Argo floats (WMO 3902102, 3902103, 3902105) were deployed in the Arctic (Nordic Seas) at the end of June 2018 (Fig.1). All instruments are the ARVOR floats with Iridium transmission system. The parking depth was set at 200 dbars (WMO 3902105) and 1000 dbars (WMO 3902102, 3902103). The profiling depth was set at 2000 dbars in all floats. They all have cycles of 10 days. Every float was operated for the whole of 2018 and has sent 20 complete sets of hydrographic data by the end of the year.

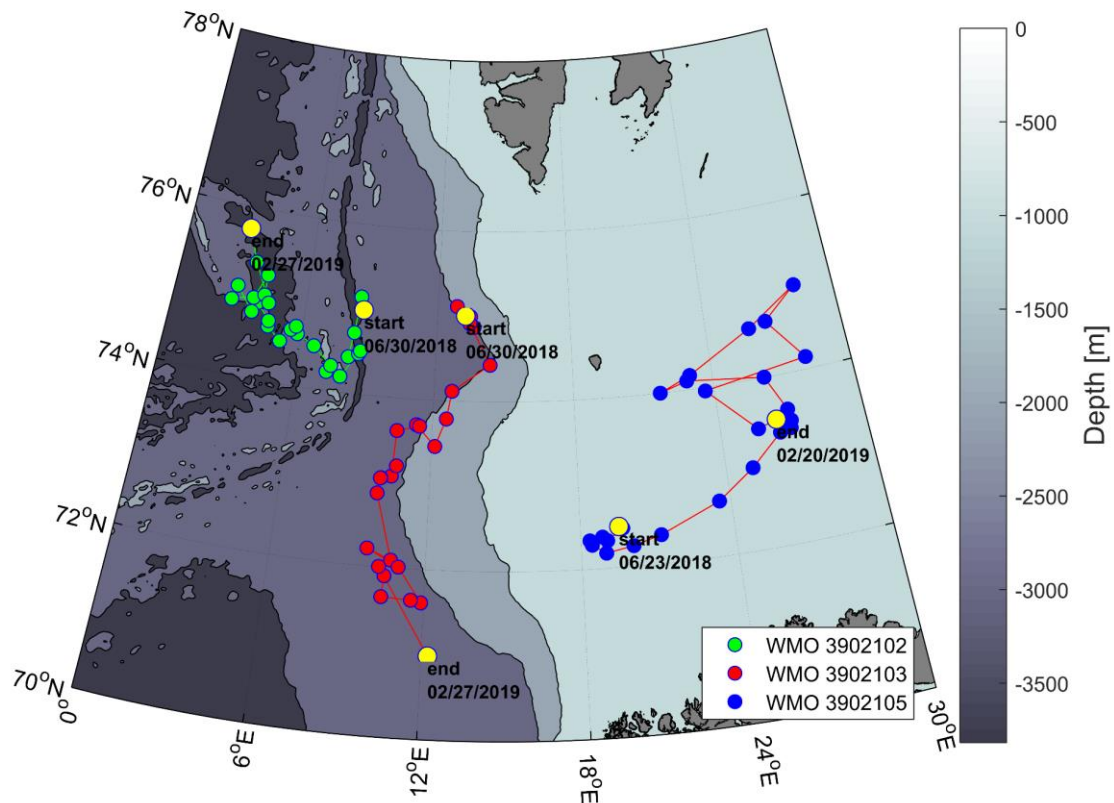


Fig. 1. Positions deployment and trajectories of three Argo floats deployed in the Nordic Seas by Argo Poland program in June 2018.

Two Argo floats were deployed in the Baltic Sea (WMO 3902101 – 06/02/2018, WMO 3902104 – 31/05/2018) (Figs. 2, 3). One Baltic float (WMO 3902104) (Fig. 4) was recovered and redeployed in September 2018 (with new WMO 3902106). All instruments are the ARVOR floats with Iridium transmission system. The parking depth was set at 100 dbars (WMO 3902101), 80 dbars (WMO 3902104) and 80 dbars (WMO 3902106). The profiling depth was set at 200 dbars in all floats. They all have cycles of 2 days. In 2018 the floats sent 168 – WMO 3902101, 85 – WMO 3902104 and 52 – WMO 3902106 complete data sets, respectively.

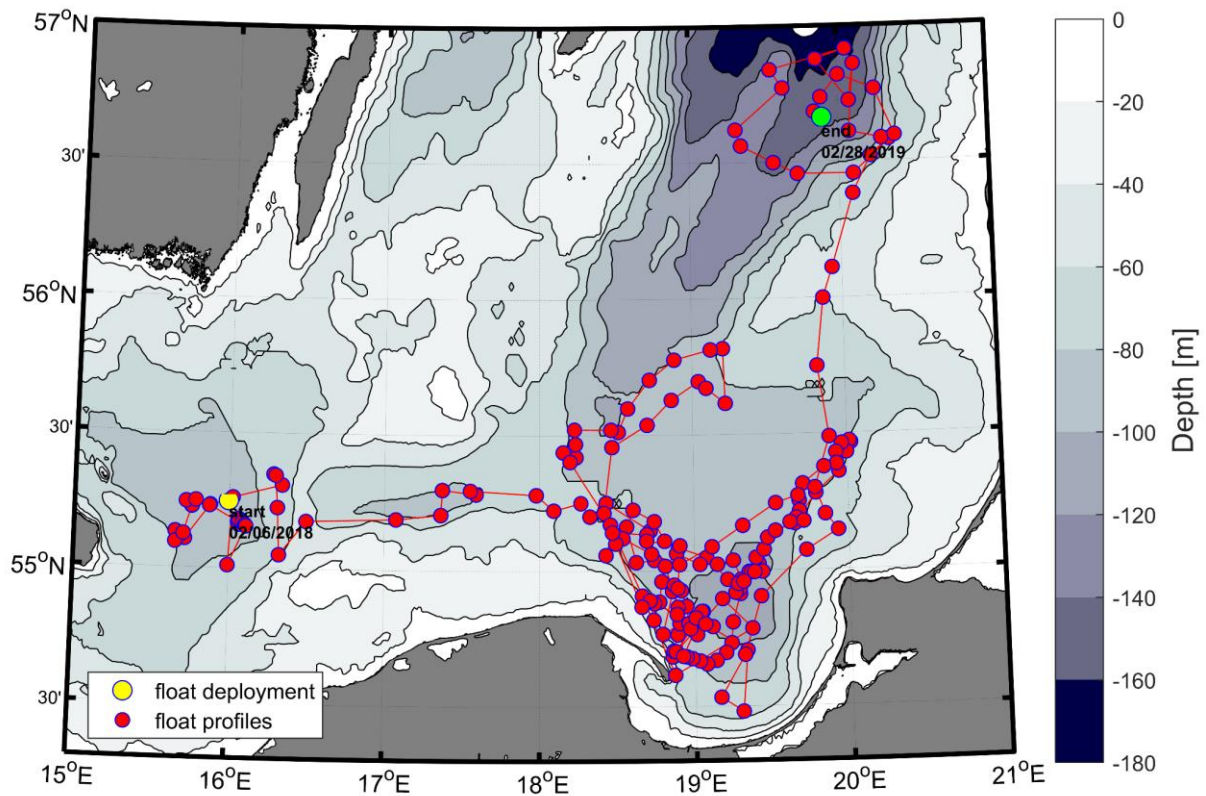


Figure 2. Surface position of Argo float deployed in the Baltic Sea in February 2018.

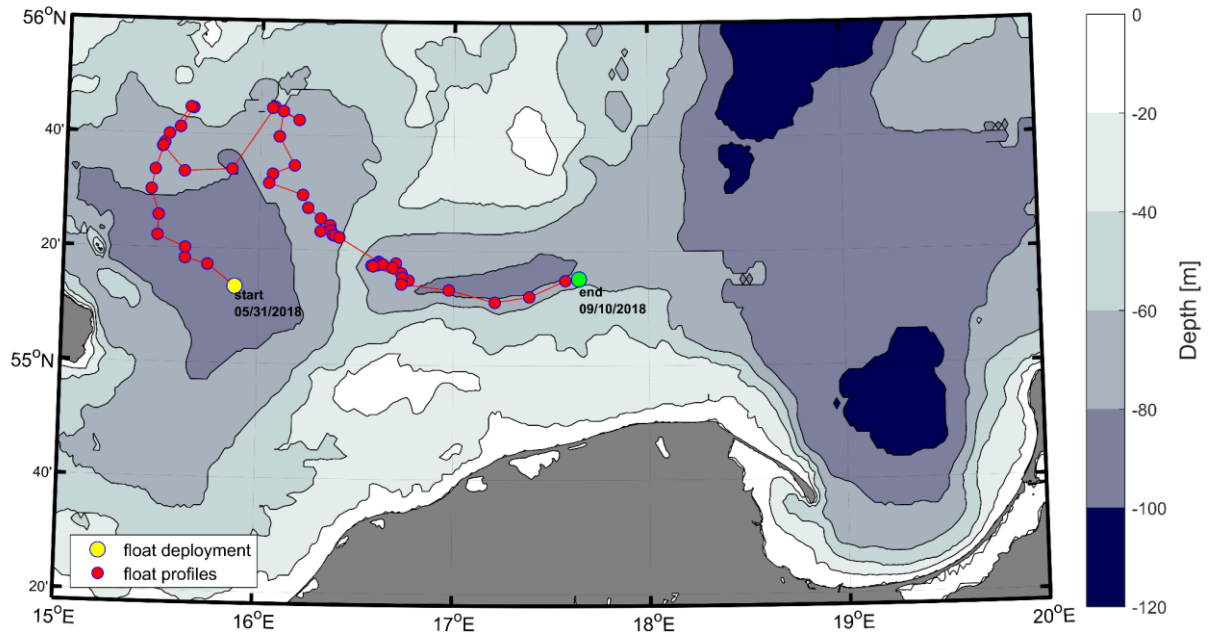


Figure 3. Surface position of Argo float deployed in the Baltic Sea in May 2018.

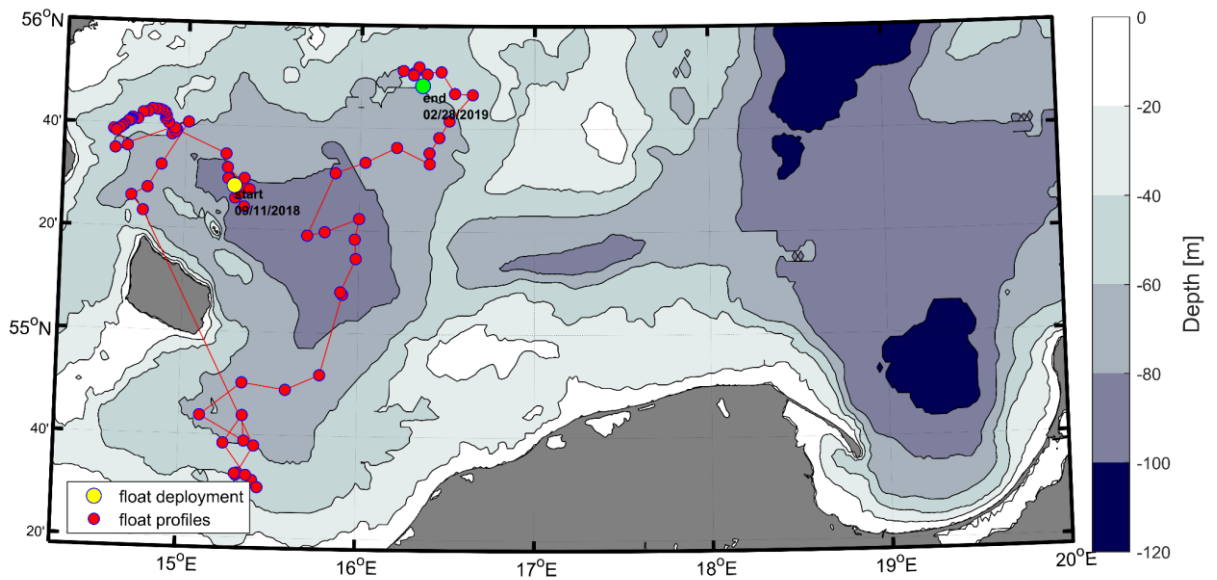


Figure 4. Surface position of Argo float redeployed in the Baltic Sea in September 2018.

The Polish floats were deployed under the Argo Poland program, which is Polish contribution to the Euro Argo ERIC infrastructure. The data from floats is provided to the Ifremer Argo Center and processed in the Center. All data is available online. All floats were deployed by Institute of Oceanology Polish Academy of Sciences (IOPAN) from the board of the Institute research vessel 'Oceania'. There were no technical problems with floats.

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

The Argo Poland program is financed by the Ministry of Sciences and Higher Education, grant DIR/WK/2016/12. The current financing allows us to buy 2-3 floats/year, launching, covering costs of the data transmission. Additionally, we have funds for conducting innovative works. The grant covers part of the IOPAN employees' work, in total approx. 7 man-months. We also support PhD students.

This level of funding is guaranteed until 2020.

*3. Summary of deployment plans.*

Poland is going to continue deployment of 2 floats in the Nordic Seas region during the yearly expedition of R/V Oceania, AREX. Additionally, we are going to deploy 1 Argo float at the Baltic Sea in 2019 and 2020. In 2019 we plan the deployment of the BGC float at the Baltic Sea.

*4. Summary of national research and operational uses of Argo data as well as contributions to Argo Regional Centers. Please also include any links to national program Argo web pages to update links on the AST and AIC websites.*

The Argo data were used in the Ilona Goszczko PhD dissertation (Water mass transformation in the region influenced by the West Spitsbergen Current) defended in 2018. Data from the Arctic are also used in the dissertation written by PhD student Malgorzata Merchel. The Baltic Argo data are used (together with the synoptic data from *r/v Oceania* cruises) for investigating the North Sea water inflows to the Baltic Sea and transports of this water mass in the Southern Baltic. After 2 years of using floats at the Baltic Sea, Argo data is an important source of information about the deep-water dynamics. Significant part is dissolved oxygen data - two floats are equipped with oxygen sensors. The paper about oxygen conditions at the Baltic sea utilizing Argo data has been submitted. Both, Arctic data and Baltic Sea data are provided to Ifremer Argo Data Center.

Baltic Argo data are also provided to the SatBaltic system:

<http://www.satbaltyk.pl/en/>

Additional IOPAN contribution are CTD/O<sub>2</sub> profiles from the launching, synoptic data from the Nordic Seas. At the Baltic Sea, during synoptic cruises (4 times per year) we make CTD/O<sub>2</sub> profiles in the region of the last Argo float data transmission.

The Argo Poland webpage:

<https://www.iopan.pl/hydrodynamics/po/Argo/argo.html>

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

We have no suggestion at the moment.

*6. CTD data*

In 2018 three Polish floats were deployed during IOPAN Arctic cruise AREX, when 160 CTD profiles have been done. Two floats were launched in the Baltic Sea, and one Baltic float was recovered and redeployed (with new WMO number) during the Baltic cruises. The CTD stations were also performed just before the floats deployment. IOPAN can provide the data from this six stations to compare it with Argo floats.

Rest of the data from the Nordic Seas will be available via IOPAS database. Contact point: Waldemar Walczowski, [walczows@iopan.pl](mailto:walczows@iopan.pl).

*7. The Argo bibliography*

There is PhD thesis using the Argo data in progress.

We also submitted two research articles:

1. Rak D., Walczowski W., Dzierzbicka-Glowacka L., Shchuka S., Dissolved oxygen variability (2013-2018) in the Southern Baltic Sea and its impact on the Baltic cod, Continental Shelf Research, 2019.