Argo-Poland National Report 2016

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1. The status of implementation

The Polish Argo Program is carried out by the Institute of Oceanology Polish Academy of Sciences (IOPAS). Since 2009 IOPAS has deployed twelve Argo floats in the Nordic Seas and one float in the Baltic Sea: two in June 2009 and 2010, one in July 2012, two in July 2014, three in 2015.

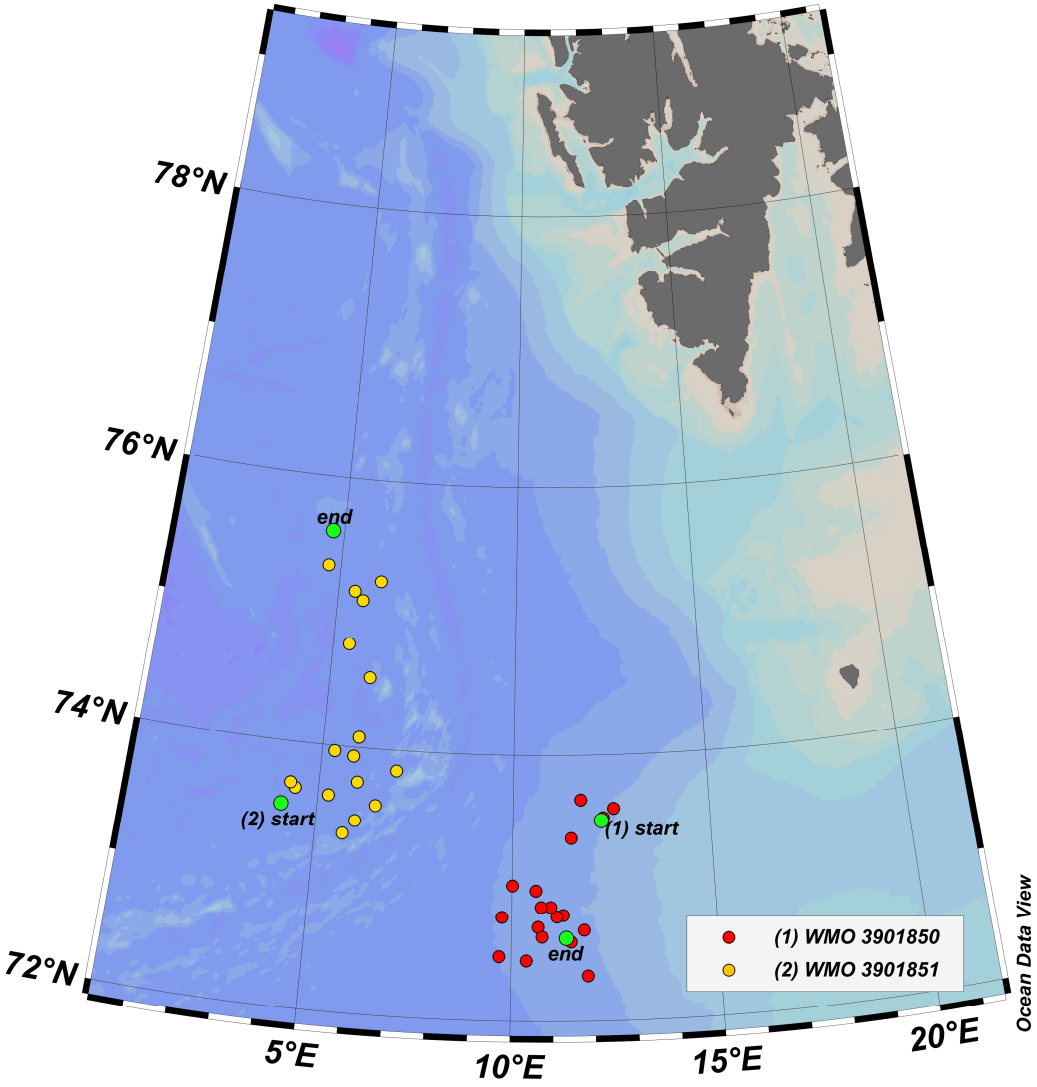

Figure 1. Surface position of two Argo floats deployed in the Norwegian and Greenland Seas in June 2016

Two Argo floats (WMO 3901850, 3901851) were deployed in the Norwegian and Greenland Seas from the board of *r/v Oceania* at the end of June 2016 (Fig.1). All instruments are the ARVOR-I floats with Iridium transmission system. Both floats were deployed under the EU MOCCA Project. The parking depth was set at 1000 dbars and profiling depth at 2000 dbars. They all have cycles of 10 days. Fortunately, there were no technical problems with the two instruments. Every float was operated for the whole 2016 and have sent 19 complete sets of hydrographic data by the end of year.

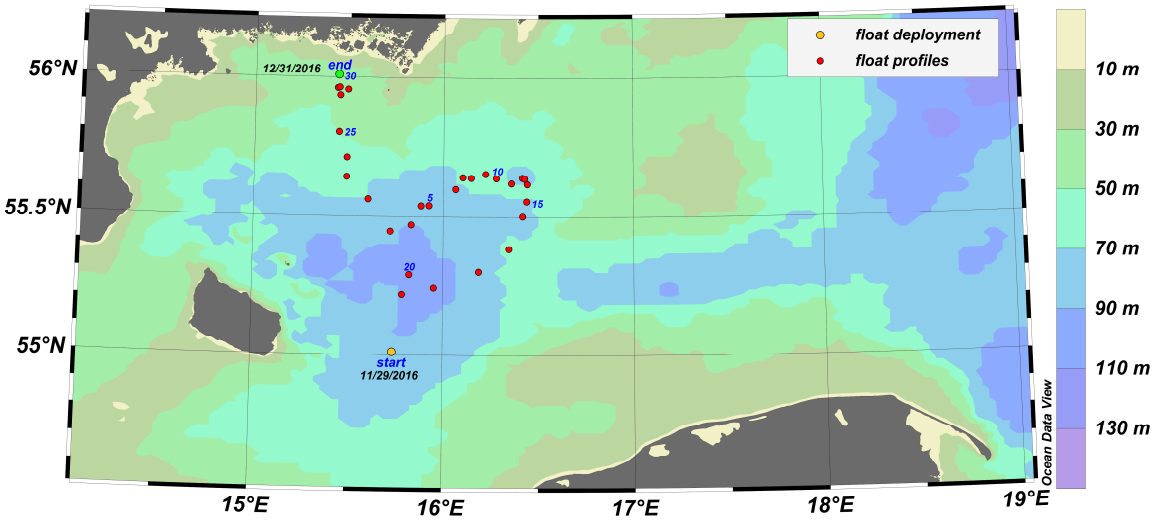

Figure 2. Surface position of Argo float deployed in the Baltic Sea in November 2016

The first Polish Argo float in the Baltic Sea was deployed from the board of *r/v Oceania* at the end of November 2016 (Fig. 2). The instrument is the APEX float with Iridium transmission system. The parking depth was set at 50 dbars and profiling depth at 100 dbars. It had cycles of 2 days for the first week and then cycles of 1 day. By the end of 2016 year the float has sent 30 sets of data. Some technical problems were encountered with that instrument. The float did not come down below pycnocline because it was not ballast properly. Poland, after Finland is the second country, which deploy Argo floats in the Baltic Sea.

Three floats deployed in September 2015 (WMO 6902038, 6902039, 6902040) was also active during almost the whole 2016 year. Unfortunately, one of the instrument stopped transmission of the data on the 14th December 2016, probably due to drifting to close to the shore. The other two are still active. During their whole operating time, the floats have been sent respectively WMO 6902038 - 92, WMO 6902039 - 92, WMO 6902040 - 89 sets of hydrographic data.

2. Present level of and future prospects for national funding for Argo

The present level of the Polish national funding allow for purchase and deployment of two Arctic floats per year and one Baltic Sea float per one-two years (depending on price). There are some funds for coordination, technician works and PhD student. Travel, deployment, technical maintenance is covered. This level of funds is secured to 2020. At the Baltic Sea the data buoy in the region of planned deployments will be moored.

3. Summary of deployment plans

Poland committed to launching three Argo floats per year. In 2017 we plan to deploy 3 floats: two in the Nordic Seas region during the IOPAS Arctic cruise and one in the Baltic Sea during the IOPAS Baltic cruise. All of the floats will be launched from the board of *r/v Oceania*.

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

IOPAS has been carried the scientific program aimed at investigation of the Atlantic Water inflow into the Arctic Ocean and climatic aspect of this process for over 20 years. Every summer expedition of IOPAS research vessel 'Oceania' to the Nordic Seas and Arctic Ocean is organized. Polish Argo floats are usually deployed during these cruises. The data obtained from the Argo floats support this research, in particular those concerning the advection of the warm Atlantic Water through the Nordic Seas and changes of Atlantic water properties. The Argo results are compared with data from standard *in situ* measurements, used in calculation of the signal propagation velocities, currents pathways. The Argo measurements complement the lack of data in winter season.
We also use Argo floats to investigate hydrography and dynamics of the Baltic Sea.
The Argo Poland program's website is regularly updated by IO PAS:

http://www.iopan.gda.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 2016 two Polish floats were deployed during IOPAS Arctic cruise AREX, when 270 CTD profiles have been done including the stations performed just before the floats deployment (Fig 3). IOPAS can provide this two stations CTD data to compare it with Argo floats. The Ago floats were deployed at section 'H', station H11, φ 73° 30.447' N, λ 012° 14.115E E, station H15, φ 73° 31.657' N, λ 004° 02.423 E.
Rest of the data (270 stations) from the Nordic Seas will be available via IOPAS database. Contact point: Waldemar Walczowski, walczows@iopan.pl.

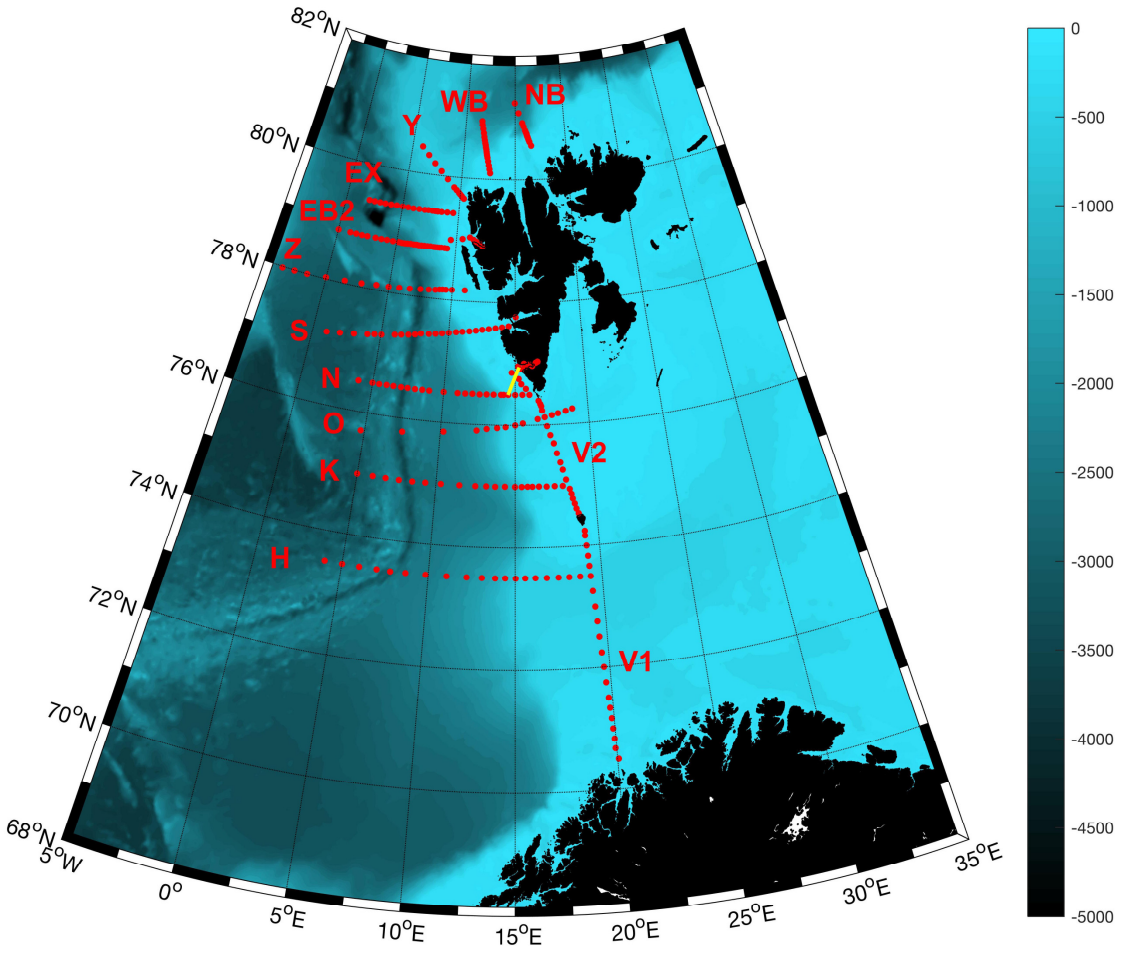

Figure 3. Location of CTD stations measured during the open ocean part of AREX 2016 (June 21- July 24, 2016) cruise of r/v Oceania.

7. The Argo bibliography

There is PhD thesis using the Argo data in progress. There were no published scientific articles in the past year.