Argo floats at the Southern Baltic Sea

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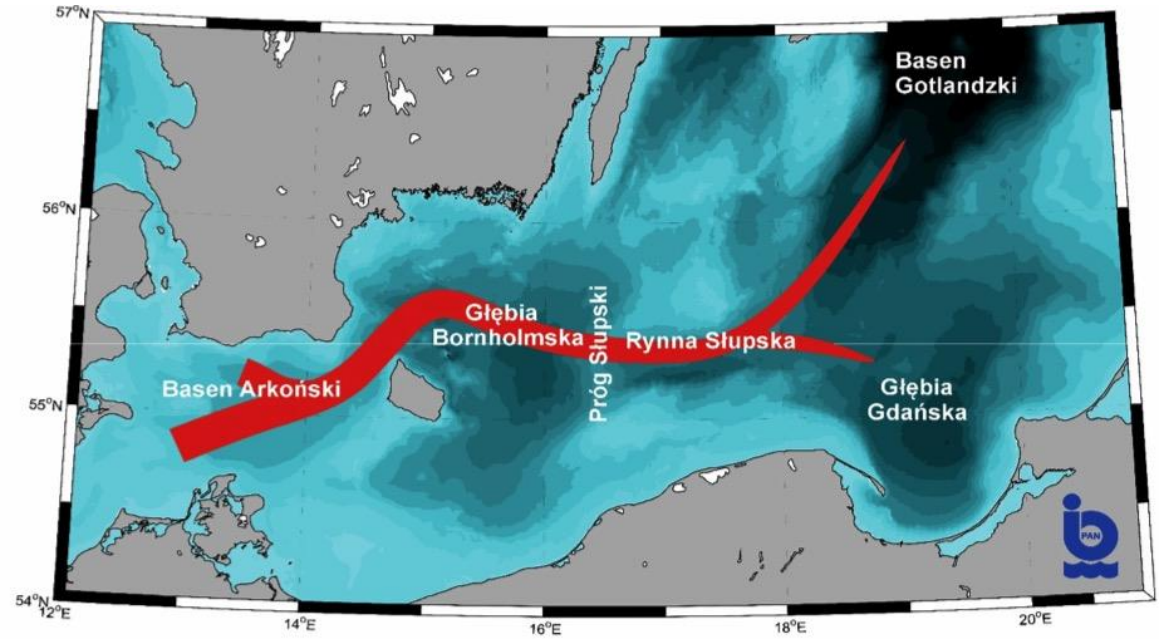
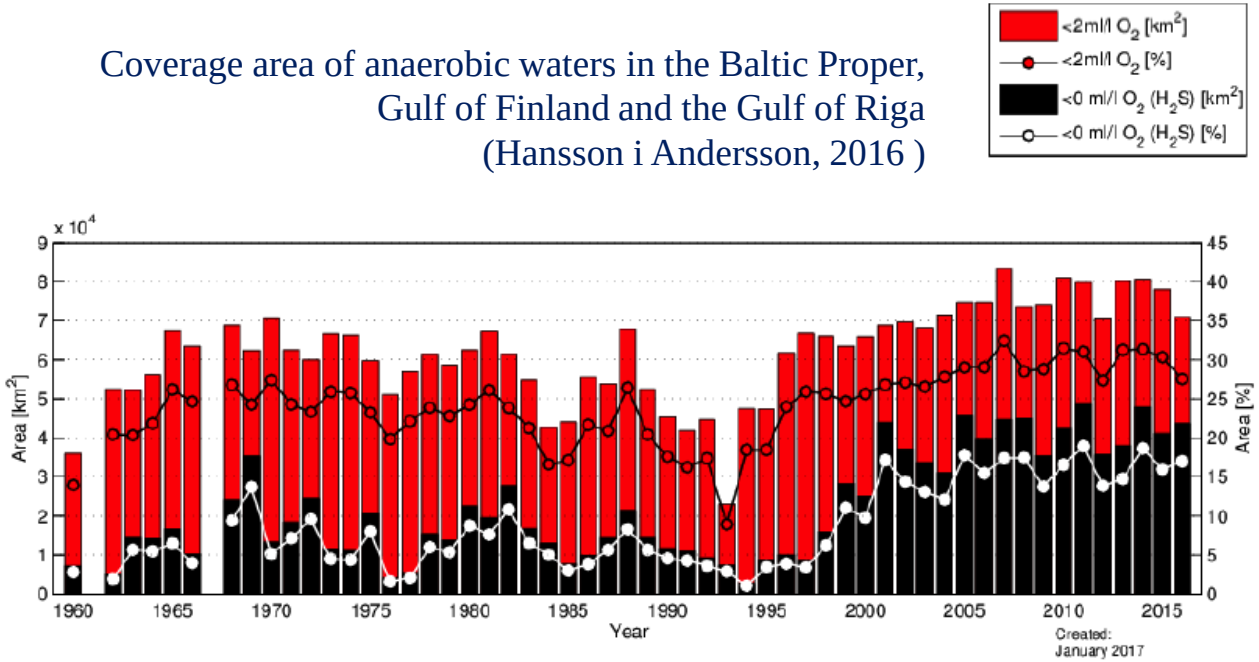
Motivation



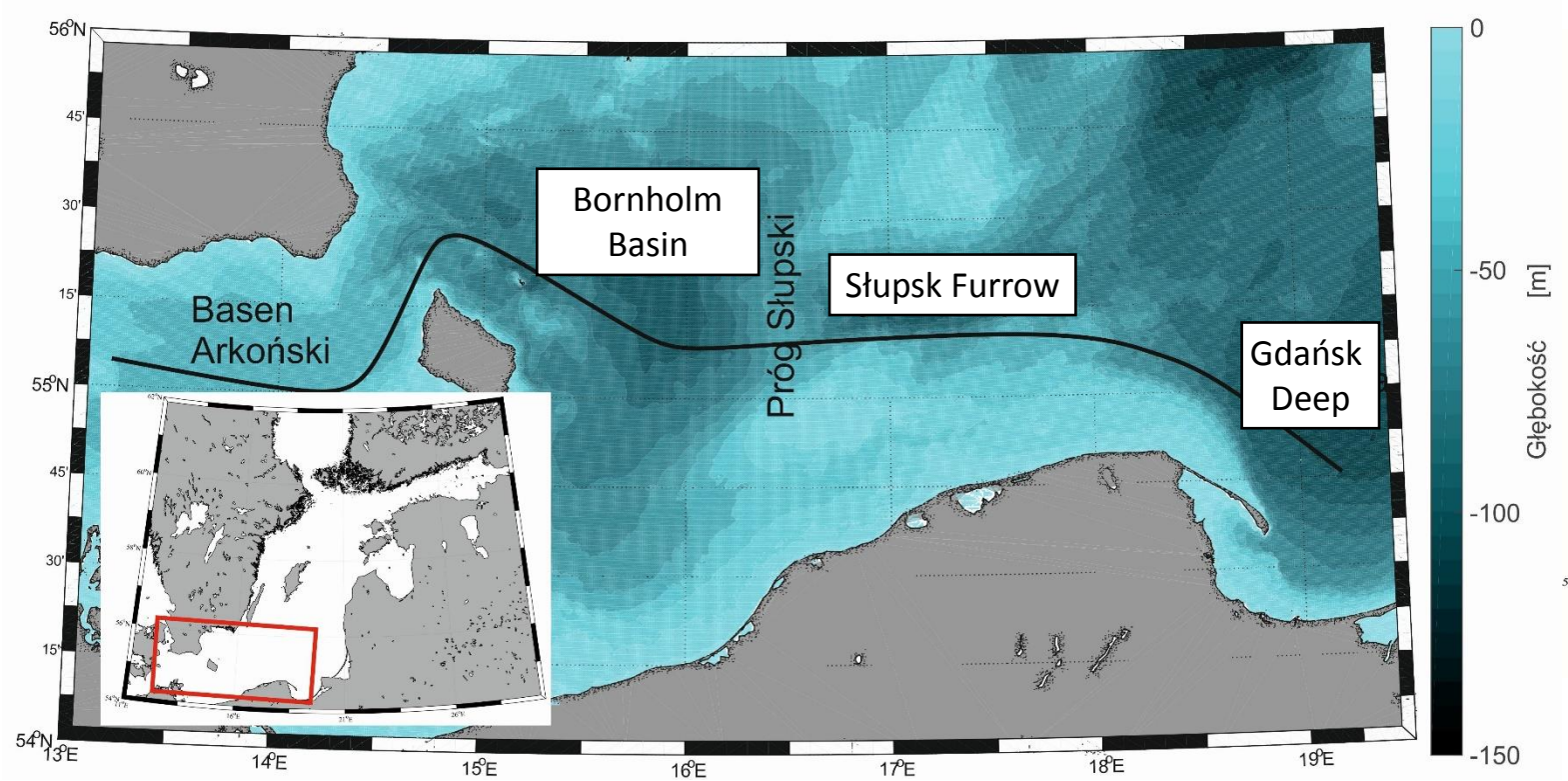
Coverage area of anaerobic waters in the Baltic Proper, Gulf of Finland and the Gulf of Riga (Hansson i Andersson, 2016)

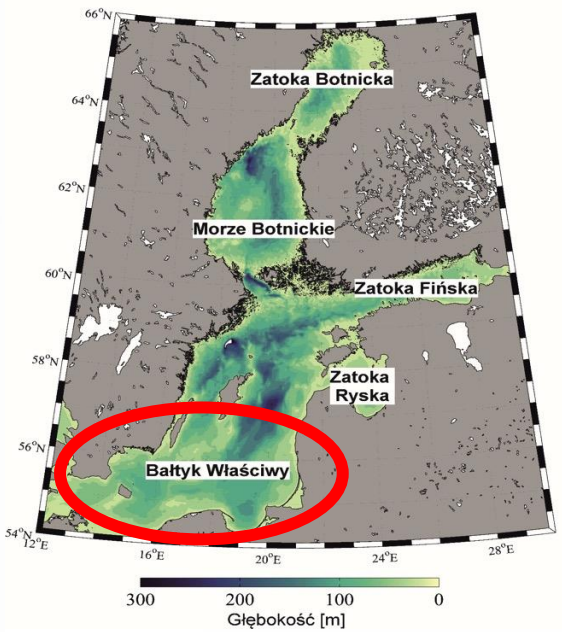


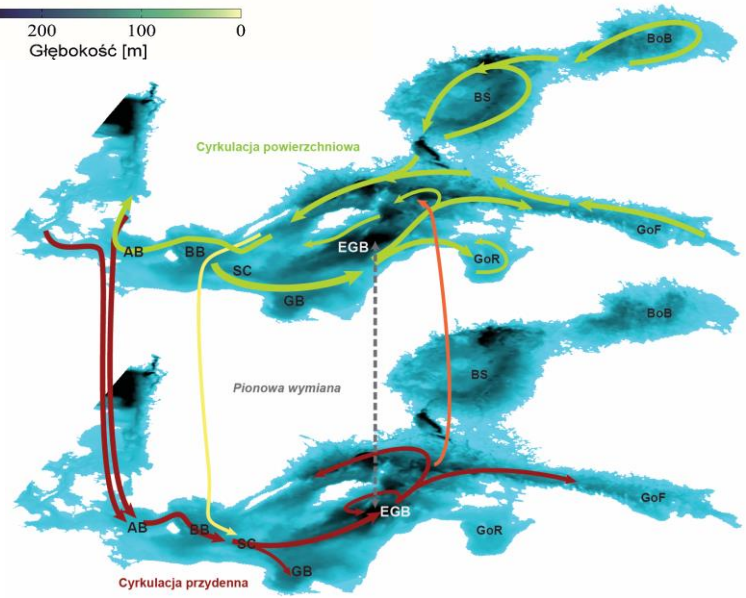
Barotropic inflows:

- arise due to the difference in sea levels outside and inside the Baltic Sea
- bring large volumes of water (about 200 km^3) and a large mass of salt (about 2 Gt)
- are rich in oxygen
- pass through Sund and Belts
- occur mainly in autumn and winter

The research area - Baltic Proper





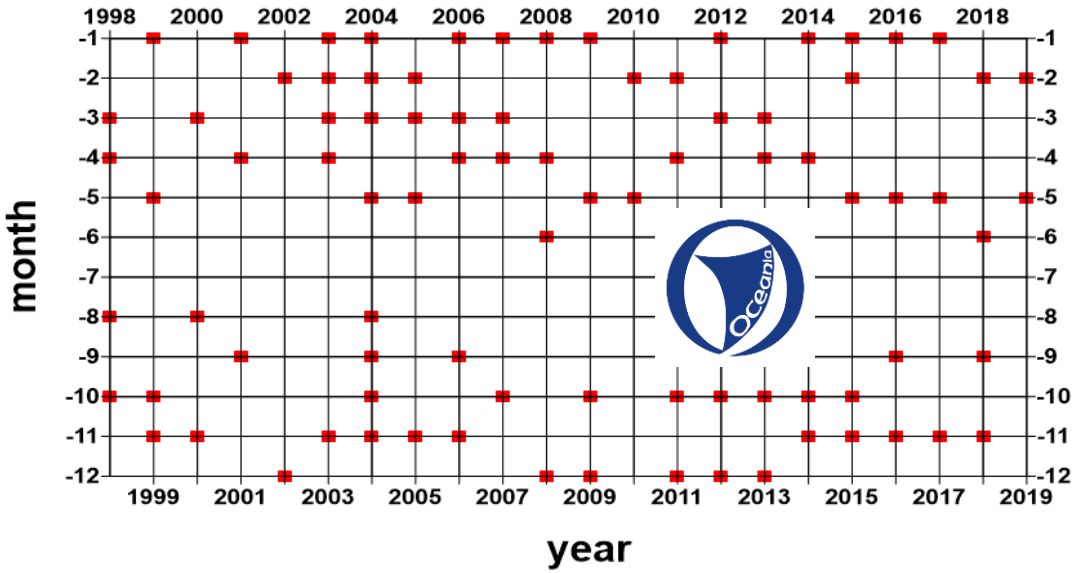


- **Bornholm Basin (BB) –** the region of accumulation of dense and salt inflow waters, originated from the North Sea
- **Słupsk Furrow (RS) together with the Slupsk Sill (PS) -** a transit area for the inflow waters
- **Gdańsk Deep (GG) –** the area acting a buffer role in which the part of inflow waters recirculates

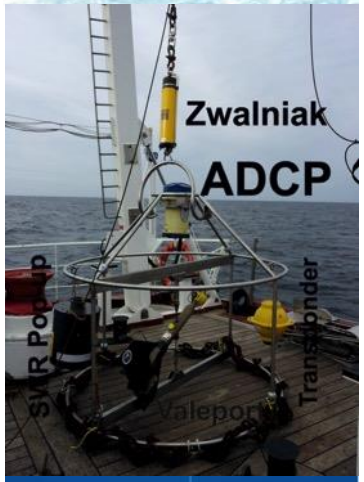
Measurements from the r/v Oceania

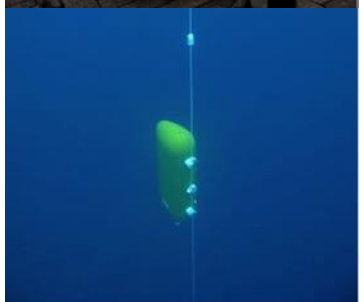
Repeated hydrographic sections:

- **CTD measurements** with a towed probe
  83 hydrographic cruises (1998 – 2019)
- **DO measurements** with a Rinko II probe
  (2013 – 2019)
- **Sea current measurements** with acustic doppler current meater (RDI VMADCP 150 kHz)

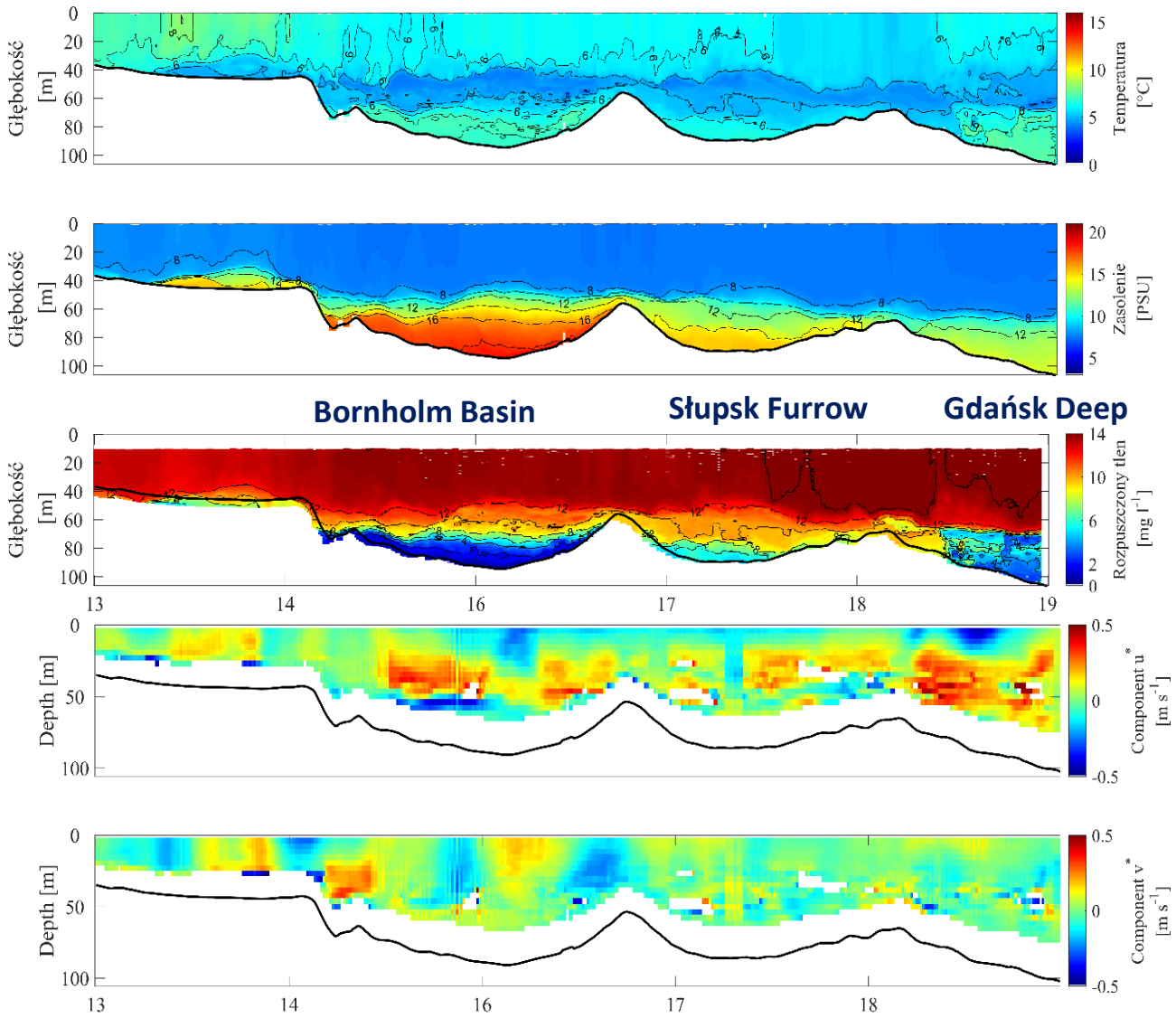


Monthly cruises schedule r/v Oceania 1998-2019

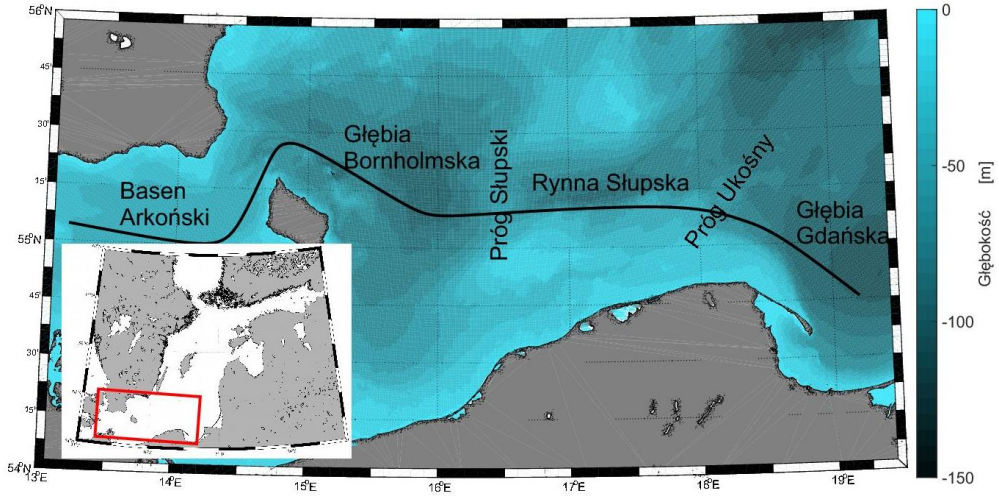




Measurements from the r/v Oceania



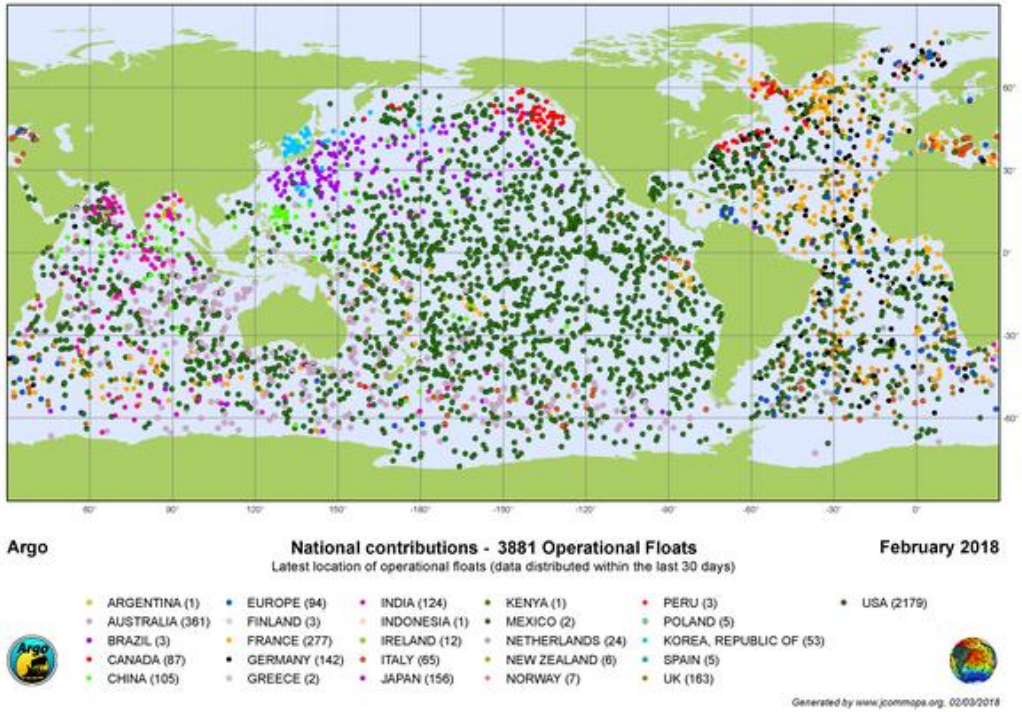
The temperaturę, salinity, dissolved oxygen and a flow components (parallel and perpendicular to the main axis) during small inflow in May, 2017



The main hydrographic section through the deep basins of the Proper Baltic

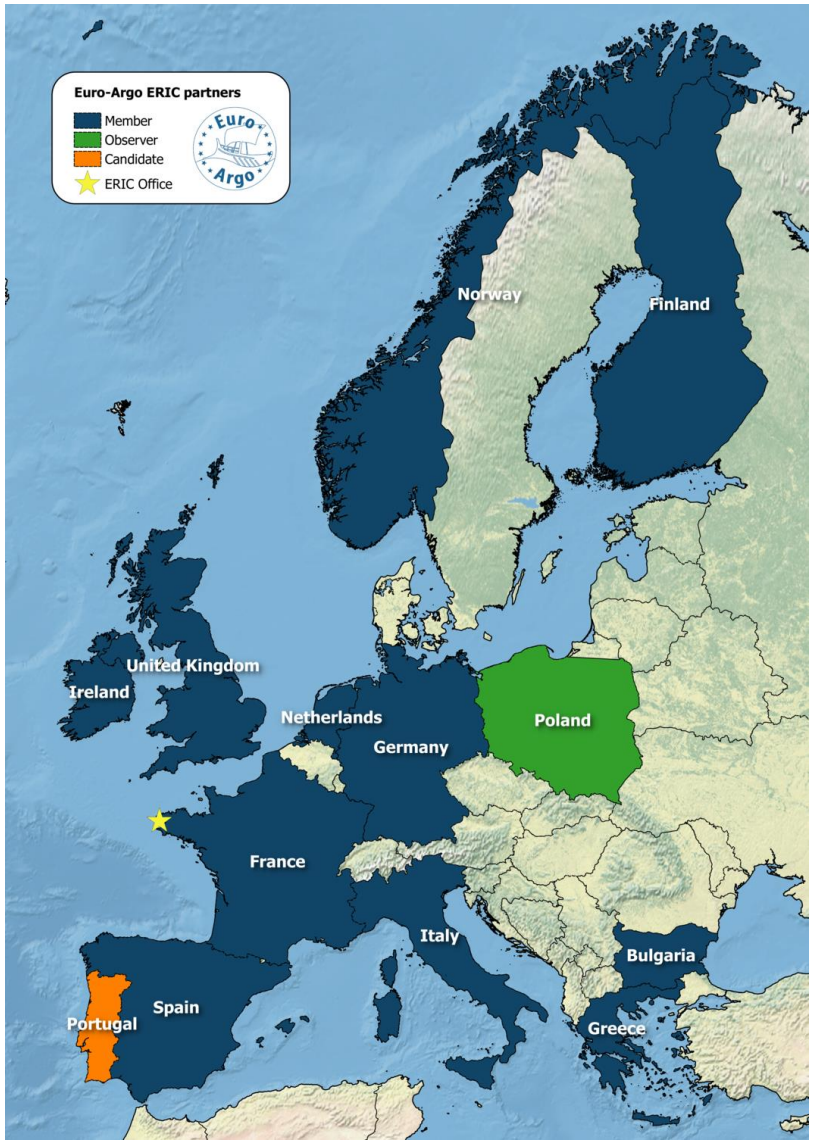
Argo floats

Argo is an international program that uses profiling floats to observe temperature, salinity, currents, and, recently, bio-optical properties in the global oceans.



The distribution of active floats in the Argo array, colour coded by country that owns the float,
as of February 2018.

http://www.ifremer.fr/argoMonitoring/floatMonitoring/648



Argo floats - deployment

http://www.ifremer.fr/argoMonitoring/floatMonitoring/648

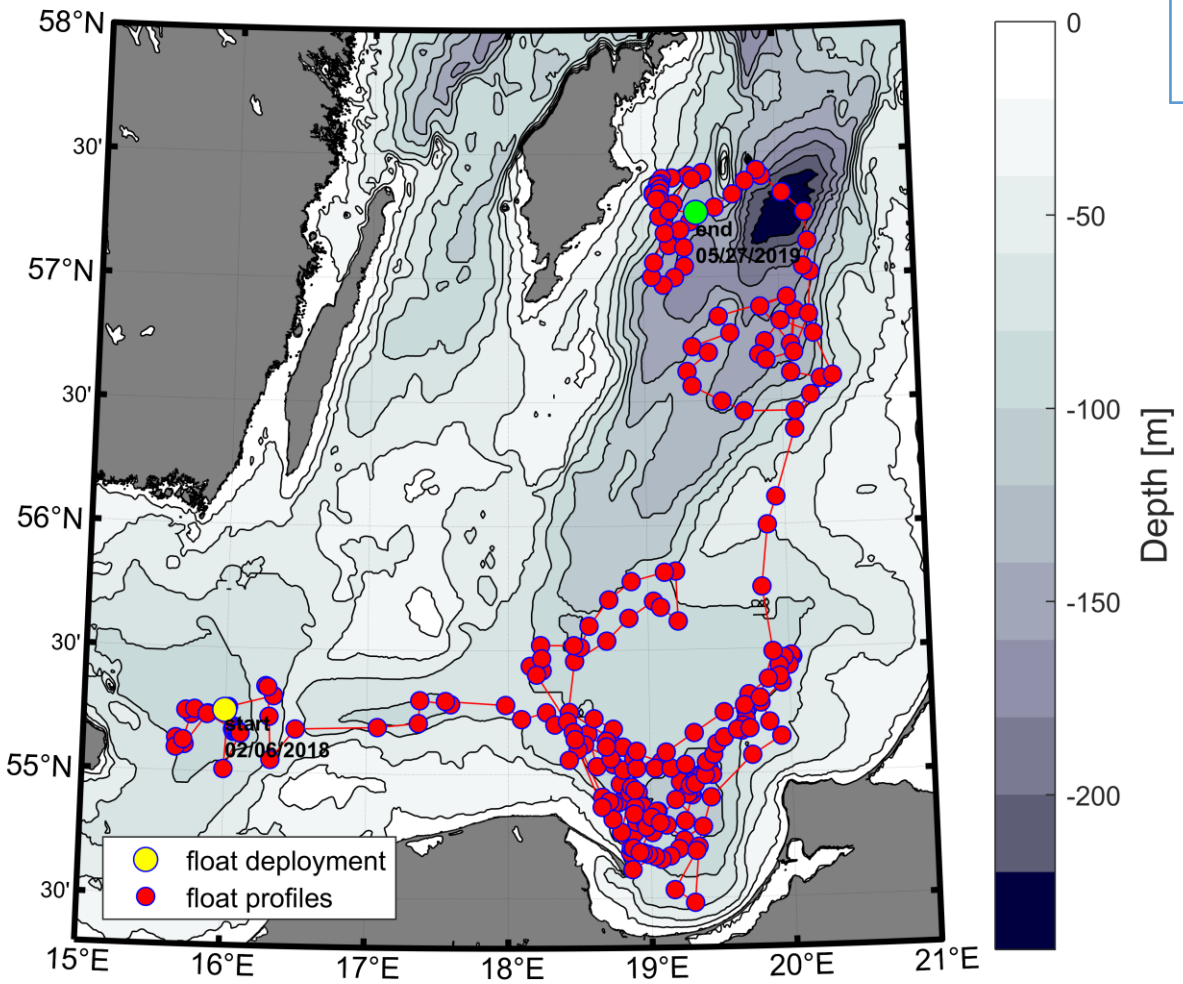
- Three argo floats have been deployed by the IOPAN in the Southern Baltic Sea
  - Two Argo floats in the Baltic Sea are still active
  - The one unactive float has been recovered in May, 2019
- In the future the biogeochemical float will be purchased

Deployment, recovery and calibration of the Argo floats in the Southern Baltic from *R/V Oceania*

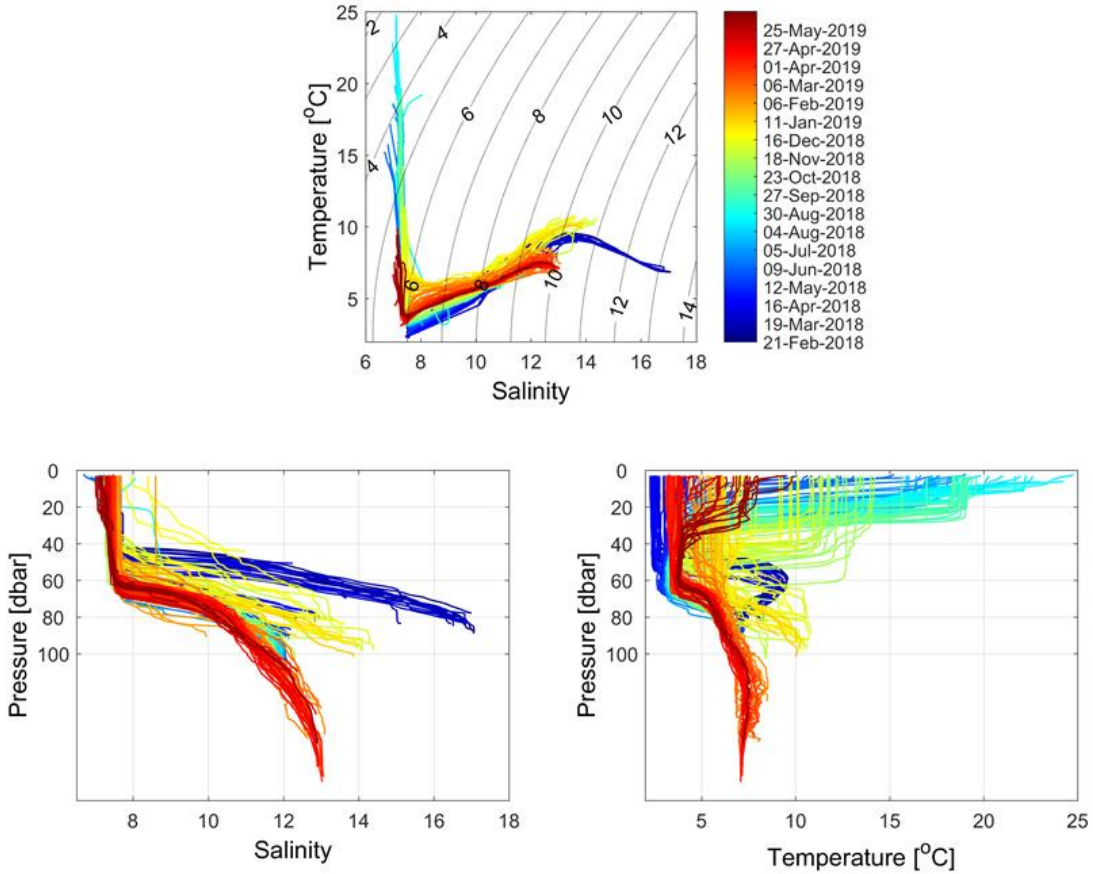
Argo floats – output data: float no. 3902101

http://www.ifremer.fr/argoMonitoring/floatMonitoring/648

The 3902101 float deployed 06 February 2018 in the Bornholm Basin. This float made 240 CTD and DO casts.



Surface positions of Argo float deployed in the Baltic Sea in February 2018 (WMO 3902101)

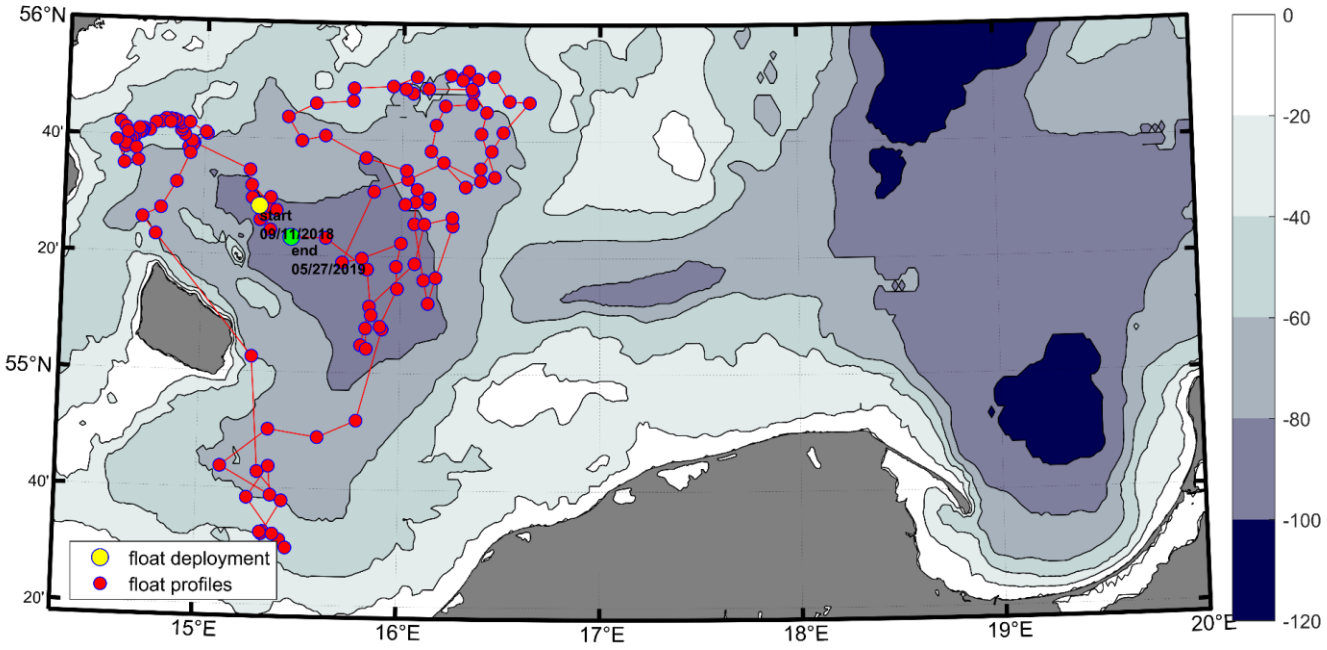


T/S diagrams, salinity and temperature profiles from the Argo float (WMO 3902101).

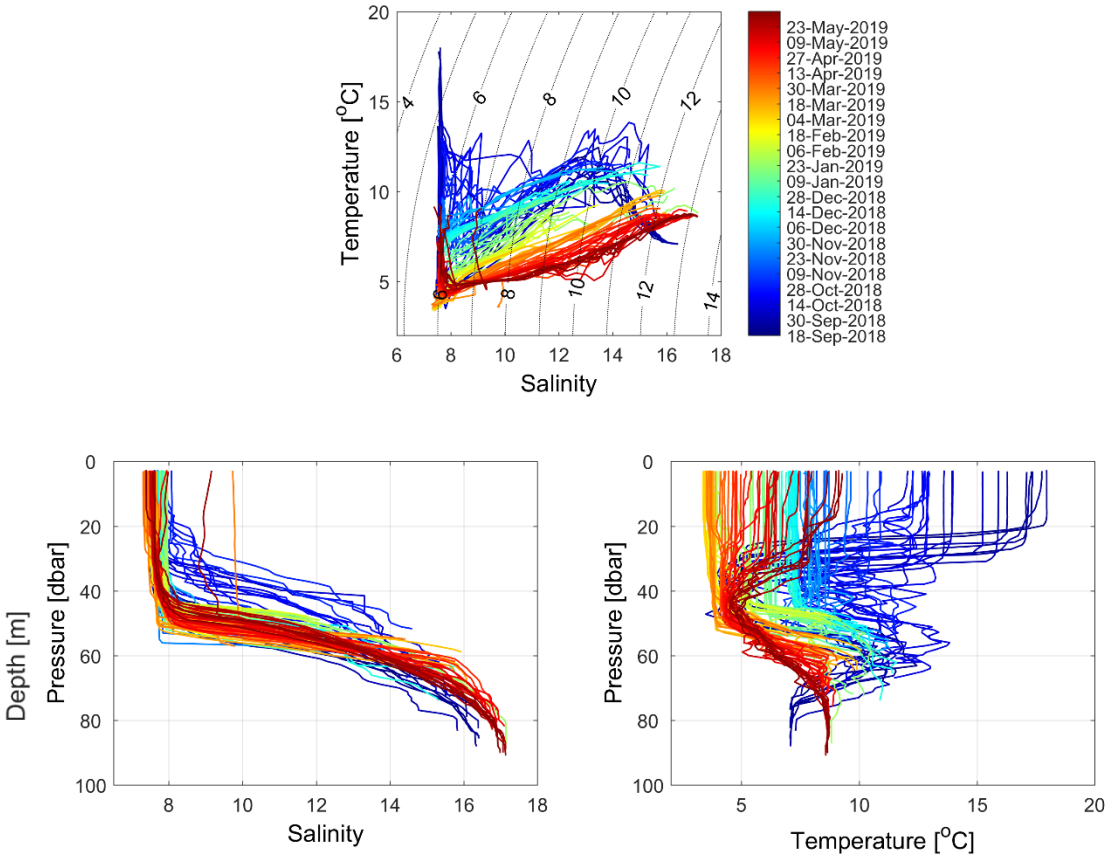
Argo floats – output data: float no. 3902106

http://www.ifremer.fr/argoMonitoring/floatMonitoring/648

The float no. 3902106 has been deployed 11 September 2018 in the Bornholm Basin. This float made 140 casts of CTD and DO.

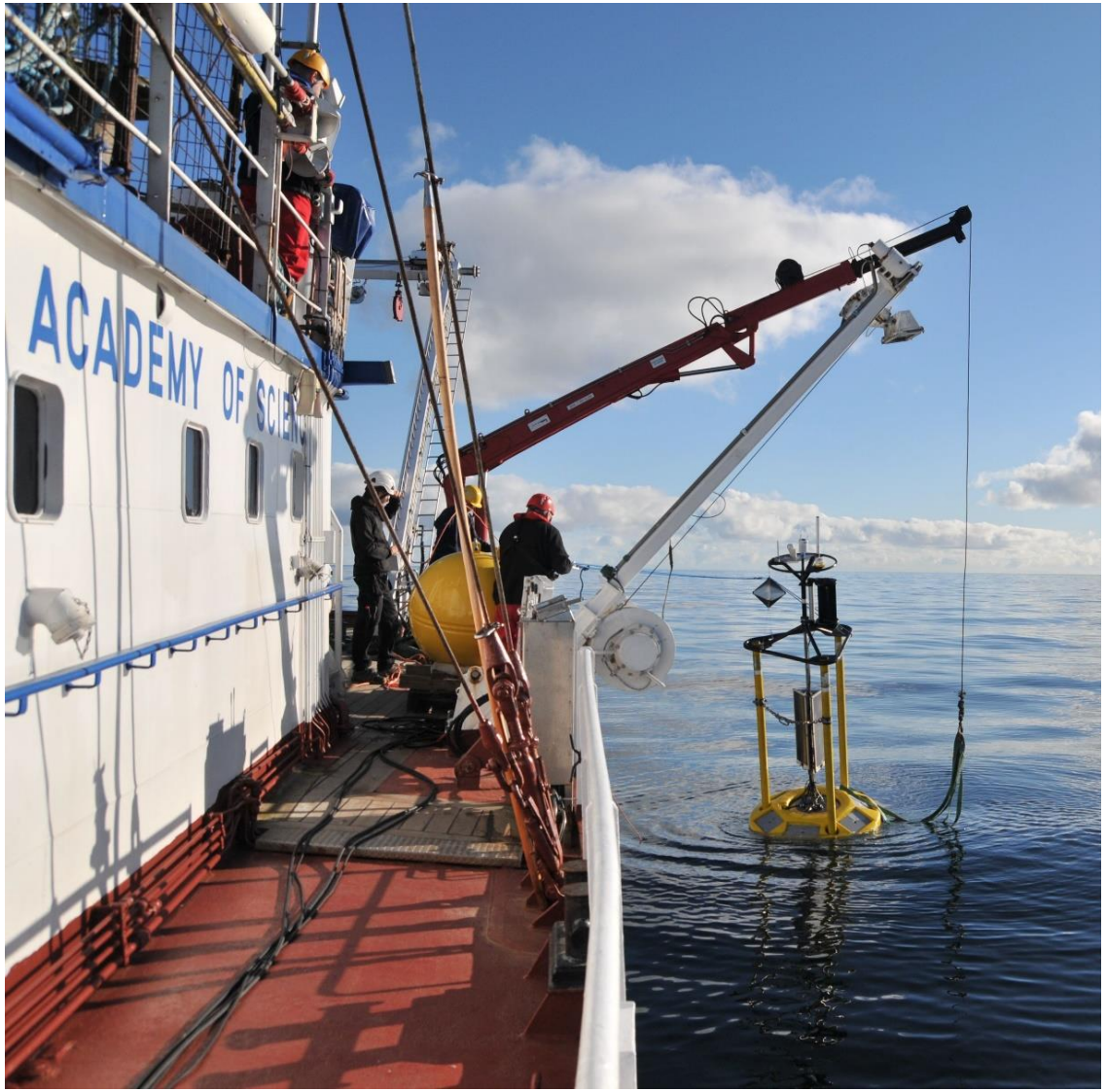


Surface positions of Argo float deployed in the Baltic Sea in May 2018 (WMO 3902106)



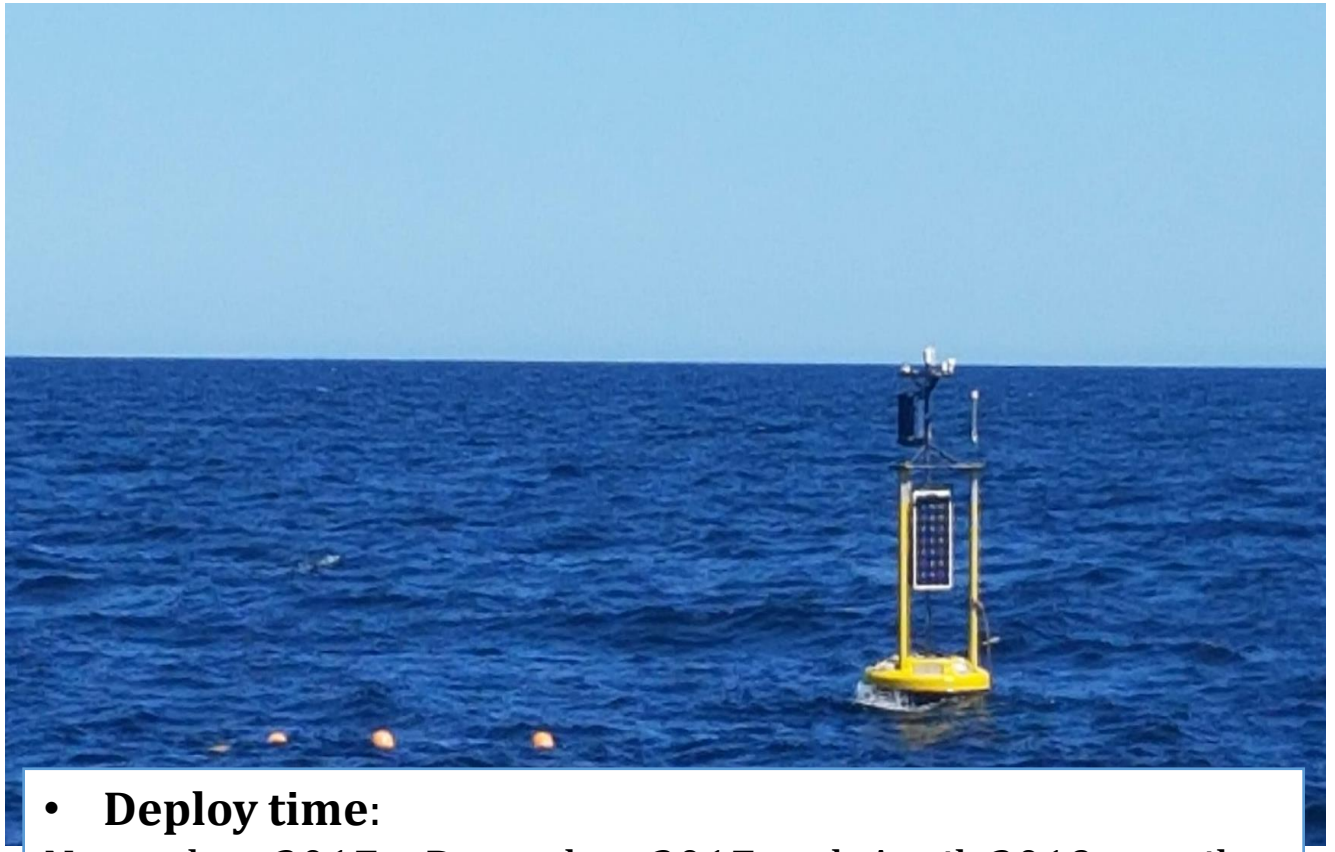
T/S diagrams, salinity and temperature profiles from the Argo float (WMO 3902106)

The Słupsk Sill – *Oceanor* buoy



The Oceanor buoy at the Slupsk Sill

https://buoy.iopan.pl/playlists/play/1



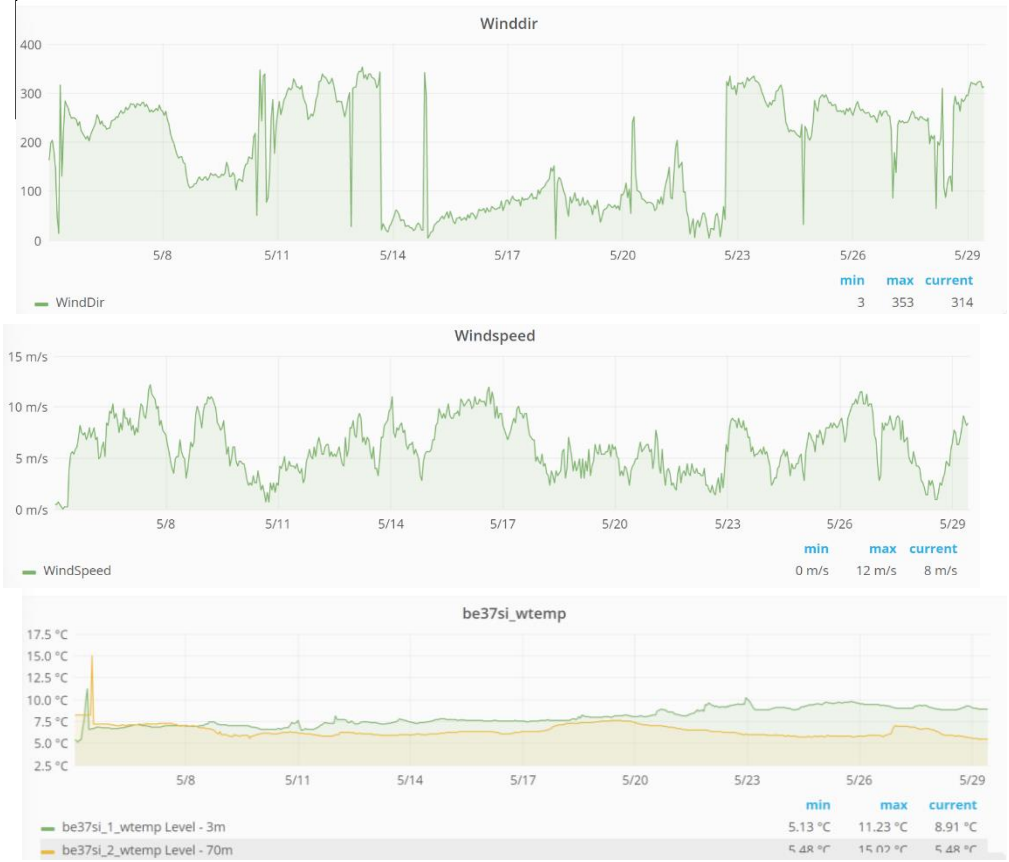
- **Deploy time**:

November, 2017 – December, 2017 and April, 2019 - until now.

- **Deployed in geographical position**:

Latitude= 55 deg 12.73' N,
Longitude = 16 deg 41.46' E
Depth = 74 m

The Słupsk Sill – *Oceanor* buoy

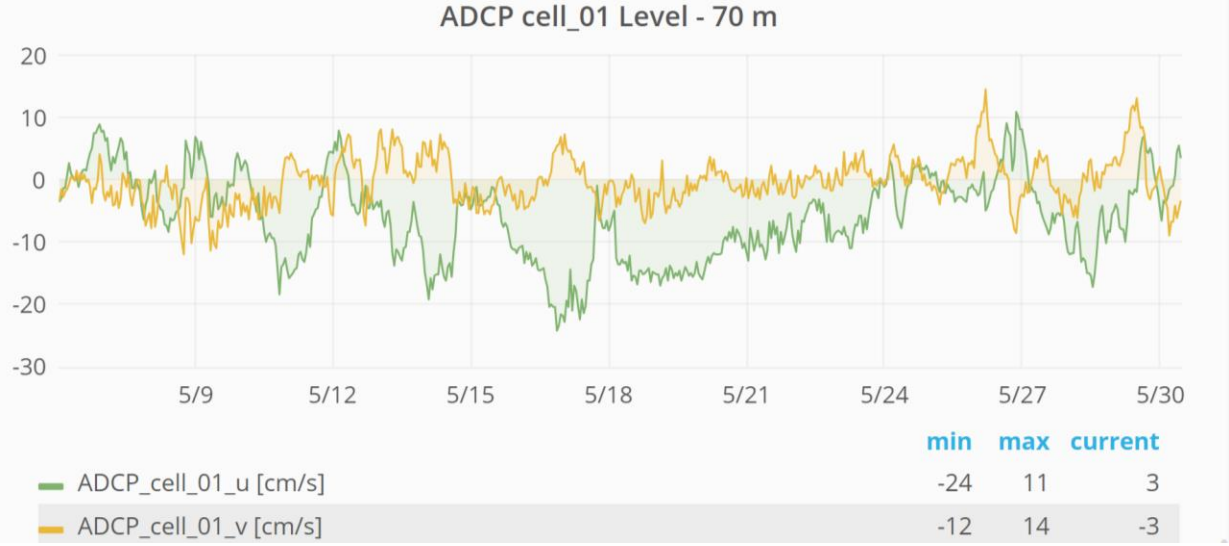


The examples of the output data from buoy meteo station and Microcat SBE37 in upper layer.

https://buoy.iopan.pl/playlists/play/1

- **Measurements**:
  1. Meteo (wind direction, speed),
  2. CTD (Condutivity, Salinity, Depth) – SBE37 (3 and 70 meters),
  3. Aquadopp Profiler 600 kHz
  4. Nortek Aquadopp Z-Cell 1 MHz

- The Oceanor buoy data are integrated in the SatBałtyk system (http://www.satbaltyk.pl/en/)



The north and east flow component on the Oceanor buoy in the Slupsk Sill. The ADCP's first cell (70 m depth)

Thank you for your attention