The Nordic Seas play an important role in global climate change. Compared with other areas, this region has the largest ocean surface and air positive temperature anomalies in the world. It is particularly important for the water masses formation and modification and for interactions between the ocean and atmosphere. This region is also the main route for freshwater and heat exchange between the North Atlantic and the Arctic Ocean.

Every summer the Institute of Oceanology, Polish Academy of Sciences conducts measurements along more than 10 hydrographic sections, including about 200 stations and covering the area between northern Norway and Fram Strait (Fig. 1). These time series allowed us to analyze how the parameters of the intermediate and deep water have changed over the last decades (Fig. 2).

However, because the ship-borne measurements are performed usually during the spring to the autumn season, there is no data to analyze seasonal changes in the intermediate and deep water. The Argo floats, operating throughout the whole year, allow observation of seasonal changes that occur in particular regions. This is especially important in the Nordic Seas, where conditions of the oceanographic observations are very difficult even during the summer.

In this study we compare the summer hydrographic data collected by IO PAN with the data from Argo floats in the Nordic Seas region in 2008-2017. Based on the data, both the temporal and spatial variability of the basic physical properties of the intermediate and deep water were analyzed. It allowed determining how the parameters of these waters changed both seasonally and spatially.

The Argo float, launched by IO PAN in the summer 2014 (Fig. 4), allows to observe seasonal variability of water properties. During almost 1.5 years of the mission, the float performed measurements in a very limited area. This allows to observe seasonal changes in intermediate and deep water (Fig. 5).

Conclusions:

- Data from Argo floats are extremely valuable, especially in regions so important for global climate change and so difficult due to harsh weather conditions and ice situation like the Nordic Seas,
- Comparison of profiles from Argo floats with profiles from AREX program confirmed that data from Argo floats have very good accuracy. They can be used to extend the ship-borne measurements, both temporally and spatially,
- Far too few Argo floats are launched in the Nordic Seas, especially in the northern part,
- In many regions of the Nordic Seas the number of profiles is insufficient to include these areas in long-term analyzes of changes in water properties.

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