

Analiza czynników wpływających na obserwowane zmiany warunków hydrograficznych w fiordzie Hornsund, Spitsbergen.

Analysis of factors affecting the observed variability in hydrographic conditions in Hornsund, Spitsbergen.

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Fjords can play a role of buffer between the ocean and land. This is the place where different water masses meet, mix and transform and can significantly influence marine and terrestrial ecosystems. Understanding of the influence of different factors (oceanic, climatic, terrestrial) on fjords' hydrography will in turn lead to improved knowledge of air-sea-ice interactions.

The annual summer monitoring cruise AREX, carried out by Institute of Oceanology PAS, made it possible to collect unique data set of high resolution hydrographic measurements that span over 10 years. Additional measurements acquired from spring to late summer expeditions to Hornsund between 2010 and 2015, combining with data from year round recording moored systems gave a chronological view of hydrographic conditions evolution in the fjord. To find an answer for observed changes in Hornsund, data of water temperature and salinity were correlated with air temperature and wind from meteorological station in Polish Polar Station in Hornsund (atmospheric factor) as also with characteristics of West Spitsbergen Current (WSC, oceanic factor).

Results shows that Hornsund is susceptible for recently observed atmospheric and oceanic extreme events in the Svalbard area. General warming of waters in Hornsund is dictated not by increase in temperature of Atlantic Water in the WSC, but rather by the availability of Atlantic Water on the shelf which in turn is largely possible through favorable wind directions.