Arctic climate system study of ocean, sea ice and glaciers interactions in Svalbard area (AWAKE-2)

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Description

Being a link land and ocean, Arctic fjords are highly vulnerable to warming and are expected to exhibit the earliest environmental changes resulting from anthropogenic impacts on climate. In the Arctic, the inshore boundary of a fjord system is usually dominated by glaciers and seasonal freshwater input while its offshore boundary is strongly influenced by warm oceanic waters. Improved understanding of the fjords-ocean exchange and processes within Arctic fjords is of a highest importance because their response to atmospheric, oceanic and glacial variability provides a key to understand the past and to forecast the future of the high latitude glaciers and Arctic climate.

AWAKE-2 is a continuation and extension of the Polish-Norwegian AWAKE project. The aim of the AWAKE-2 is to understand the interactions between the main components of the climate system in the Svalbard area: ocean, atmosphere and ice to identify mechanisms of interannual climate variability and long-term trends. The main hypothesis is that the Atlantic Water inflows over the Svalbard shelf and into the fjords have become more frequent during the last decades due to changes in the ocean and atmosphere. The integrated effect of these events results in new regimes and changes in atmosphere, ocean, sea ice and glaciers in Svalbard. Furthermore, changes in the cryosphere and geosphere create feedback effects in ocean and atmosphere. The dedicated, multidisciplinary approach to achieve the project's aims will be adopted by carrying out the coordinated meteorological, oceanographic, glaciological and geophysical observations in Hornsund and on the adjacent shelf and open sea. The synthesis will build on the first AWAKE and combine the new interdisciplinary AWAKE-2 results with other existing data into the new and improved knowledge of the critical interconnections between atmosphere, hydrosphere and cryosphere.