



Recent temperature variability and trends in the coastal areas of the western Svalbard

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The Svalbard Archipelago (74°-81°N, 10°-35°E) has experienced the greatest temperature increase in Europe during the latest three decades. Svalbard is also noted for its wide year-to-year variation in monthly temperatures and weather. The project “Arctic climate system study of ocean, sea ice and glaciers interactions in Svalbard area” (AWAKE-2) is a continuation and extension of the Polish-Norwegian AWAKE project (2009-2011). The aim of the AWAKE-2 is to understand the interactions between the main components of the climate system in the Svalbard area 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 create feedback effects in ocean and atmosphere.

One of the objectives in the AWAKE-2 project is to study atmospheric climate variability and trends in the coastal areas of the western Svalbard. In this study we analyse the recent temperature increase and temperature variability along the western coastal areas of Svalbard and compare this to the long-term variability based on historical data. Especially focus is given to the spatial and temporal air temperature gradients along western Svalbard. Changes in possible key factors controlling the recent large temperature anomalies are discussed.