



Characteristics and trends of Atlantic water - polar water front north of Svalbard 1905-2018

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The Nansen Legacy project investigates how the Barents Sea region functions in today's climate and how this will change in the future. In this study we focus on the area north of Svalbard where the northward flowing Atlantic water meets polar waters creating distinct thermohaline fronts. Previous work has revealed seasonal variations and a trend in the hydrography of the northwestern area of Svalbard, but the time series ended in 2000 (Saloranta and Haugan, 2001; 2004) with a study of 2001 by Cokelet et al. (2008). Here special emphasis is therefore given to the period from 2001 - present since recent dramatic changes in water mass characteristics, circulation patterns, and air-sea-ice interaction processes north of Svalbard have been reported (e.g. Onarheim et al., 2014 and Lind et al., 2018). The UNIS Hydrographic Database (UNIS HD) for 1905-2018 and the UDASH database for 1980-2015 (Behrendt et al., 2017) are the main sources of in situ data. Hydrography from the Yermak Plateau along the shelf slope north of Svalbard and north-western Barents Sea is studied from observations. Hydrographic sections crossing the polar front are constructed from the coast of Svalbard over the Yermak Plateau and meridionally north of Svalbard. Decadal trends in water mass properties and distributions are described. Seasonal variability in the water masses and in the frontal structures are compared from the decades with sufficient data coverage.