



## **Linking surface salinity anomalies and water column stability in the Greenland Sea gyre**

Siv Lauvset (1), Ailin Brakstad (2), Kjetil Våge (2), Are Olsen (2), Emil Jeansson (1), and Kjell-Arne Mork (3)

(1) Uni Research Climate, Bjerknes Centre for Climate Research, (2) Geophysical Institute, University of Bergen and Bjerknes Centre for Climate Research, (3) Institute of Marine Research and Bjerknes Centre for Climate Research

The importance and relevance of deep convection in the Greenland Sea gyre is a topic of continued research, and several studies the past decade have shown significant changes to the hydrography of the gyre. In this study we use Argo data up to and including 2015 to show that the water column stratification in the Greenland Sea gyre, which was very weak in the late 1980s, increased throughout the 1990s, but started decreasing again in the mid-2000s. These observed changes in water column stability are associated with salinity changes at 1000 m in the gyre. By cross-correlating changes in the gyre with hydrographic time series of surface water masses we find that warm and saline surface waters exert influence on the water column to depths exceeding 1000 m, and have had an impact on the water mass structure in the Greenland Sea gyre. Such a link between surface anomalies and water column stability in the Greenland Sea gyre could have strong implications for deep ocean oxygen levels and storage of carbon.