



## **Atlantic-Arctic exchange in a series of ocean model simulations (CORE-II)**

Christina Roth, Erik Behrens, and Arne Biastoch

Helmholtz Centre for Ocean Research Kiel (GEOMAR), Ocean Circulation and Climate Dynamik, Kiel, Germany  
(croth@geomar.de)

In this study we aim to improve the understanding of exchange processes between the North Atlantic and the Arctic Ocean. The Nordic Sea builds an important connector between these regions, by receiving and modifying warm and saline Atlantic waters, and by providing dense overflow as a backbone of the Atlantic Meridional Overturning Circulation (AMOC). Using a hierarchy of global ocean/sea-ice models, the specific role of the Nordic Seas, both providing a feedback with the AMOC, but also as a modulator of the Atlantic water flowing into the Arctic Ocean, is examined. The models have been performed under the CORE-II protocol, in which atmospheric forcing of the past 60 years was applied in a subsequent series of 5 iterations. During the course of this 300-year long integration, the AMOC shows substantial changes, which are correlated with water mass characteristics in the Denmark Strait overflow characteristics. Quantitative analyses using Lagrangian trajectories explore the impact of these trends on the Arctic Ocean through the Barents Sea and the Fram Strait.