



Analysis of Arctic outflows west and east of Greenland in an eddying global sea ice-ocean model

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Low salinity buoyant polar waters exit the Arctic Ocean into the Nordic Seas and the North Atlantic, affecting deep convection in the Nordic and Labrador Seas with potential impacts on the meridional overturning circulation. The pathways of the polar water in Davis Strait, Fram Strait and then to the south are well documented by observations and model simulations. In contrast, measurements upstream of Fram Strait are too sparse to allow us to explain what causes the outflows to exit either west or east of Greenland or to attribute the variability in the Arctic outflows to atmospheric or oceanic mechanisms. A high-resolution global ocean general circulation model, NEMO-ORCA12, has been used to examine the dynamics of the outflow north of Greenland, above the Belgica Bank and in Nares Strait. Montgomery potential analysis is used to investigate the dynamics of the currents in the area. The model results suggest wind as a driving mechanism for the variability of the ocean circulation in these areas.