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Sea ice running the Atlantic water inflow

Polona Itkin and Rüdiger Gerdes
Alfred Wegener Institute for Polar and Marine Research, Bremerhaven, Germany (prozman@awi.de)

Atlantic water is entering the Arctic ocean through the Fram Strait and through the Barents Sea. The Barents Sea branch is larger in volume but it transports only a low amount of heat. The Fram Strait branch is comparatively smaller in volume but warmer. We have performed an ensemble of model experiments with different sea ice parameters and discovered that in all the runs with high maximal compressive sea ice strength (p*) the Fram Strait branch of the Atlantic water is stronger and correspondingly Barents Sea branch is weaker than in the runs with low p*. Consequently all the runs with high p* have relatively warm Atlantic water layer and all the runs with low p* have relatively cool Atlantic water layer in the Arctic Ocean. Our preliminary results show that the ratio between the volumes of the both Atlantic water branches is governed by local sea ice extent in the Fram Strait and Barents Sea and by the fresh water fluxes though the Fram Strait.