



The Impact of the Greenland Tip Jet on the Subpolar North Atlantic

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In recent years, the Irminger Sea has been rediscovered as a site of open ocean convection. It has been shown that a possible mechanism forcing such convection in the Greenland tip jet, a low-level atmospheric jet emanating from the southern tip of Greenland which can have wind speeds of over 30 m/s and heat fluxes in excess of 800 W/m². However, due to the small scale of the jet, it is not well resolved in the global reanalysis datasets which are often used for forcing ocean models. Here, we develop a simple parameterization of the tip jet and insert it into the ECMWF ERA-40 dataset, which is then used to force a global ocean GCM with a high resolution in the subpolar North Atlantic. The parameterization, particularly the enhanced heat fluxes and wind stress curl, are shown to have a significant impact in the North Atlantic including, but not limited to, a deepening of the winter mixed layer in the Irminger Sea and an enhanced production of Labrador Sea Water (LSW).