



Variability of the Subpolar Gyre and the North Atlantic Current inferred from Pressure Inverted Echo Sounders

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The subpolar gyre of the North Atlantic Ocean is one of the key regions for the earth's climate system. Warm and saline waters of the North Atlantic Current (NAC) are transferred into the subpolar and polar regions, and subsequently returned as the deep and cold limb of the Atlantic Meridional Overturning Circulation (AMOC).

To measure the variability of the NAC and thus the strength of the subpolar gyre, an array of four pressure inverted echo sounders (PIES) was deployed along the Mid Atlantic Ridge between 47 and 52°N. The array was deployed in August 2006; the first data were retrieved acoustically during a Maria S. Merian cruise in August 2008, while the array remained at the seafloor to complete its scheduled 5-year deployment period. The travel time measurements of the PIES are used in conjunction with hydrographic data from profiling Argo floats, and ship measurements to determine density anomalies and time series of the corresponding baroclinic transport variability. The horizontal bottom pressure differences are used to estimate the barotropic contribution.

Here, we will present the first results from daily averages of this two-year record.