



Transport variability of the subpolar gyre at the Mid-Atlantic Ridge

Achim Roessler, Monika Rhein, Christian Mertens, and Dagmar Kieke

University Bremen, Institute of Environmental Physics, Bremen, Germany (a.roessler@uni-bremen.de)

The subpolar gyre of the North Atlantic Ocean is an integral component for the climate relevant oceanic circulation. To measure the variability of the North Atlantic Current (NAC) and thus the strength of the subpolar gyre, an array of four inverted echo sounders with bottom pressure sensors (PIES) was deployed along the Mid-Atlantic Ridge between 47° and 53°N in August 2006. The locations of the individual PIES allow the separation of the main spreading paths of the NAC. The array was deployed at ground track crossing points of altimetry satellites. The PIES delivered daily data that were retrieved by acoustic telemetry each year, while the array remained at the sea floor.

The first four year long time series is analysed regarding the transport variability of the NAC and the underlying water masses. The transports are calculated using the Gravest Empirical Mode technique, which has been adapted and tested. The surface velocities from altimetry were analysed, correlated to the PIES transports and used to calculate a baroclinic transport time series for the entire 19 years of satellite measurements. The PIES and altimetry transport time series will be presented and discussed with regard to the transport uncertainty, variability, periodicity and the pathways of the NAC across the array.