Geophysical Research Abstracts
Vol. 21, EGU2019-7627, 2019
EGU General Assembly 2019


# Transports and sea surface height variability of the North Atlantic Current studied with observational data from pressure sensor equipped inverted echo sounders

Hannah Nowitzki (1,2), Monika Rhein (1,2), Achim Roessler (1,2), Dagmar Kieke (1,2)

(1) MARUM - Center for Marine Environmental Sciences, University of Bremen, Bremen, Germany, (2) Institute of Environmental Physics, University of Bremen, Bremen, Germany

The North Atlantic Current (NAC) forms the upper limb of the Atlantic Meridional Overturning Circulation. As the northward extension of the Gulf Stream, it transports warm and saline water from the subtropics into the subpolar North Atlantic partly providing by this the energy for the recent melt of the Greenland Ice Sheet. The strength and pathways of the NAC are thus closely linked to the global climate.
In the Newfoundland Basin, the NAC splits up into a recirculation and different branches that cross the Mid-Atlantic Ridge (MAR) and flow into the eastern North Atlantic. With higher speeds and transports in the western North Atlantic basin, the NAC flow pattern in this region differs from the NAC regime in the MAR region and in the eastern North Atlantic basin. While several studies exist concerning NAC related transports in the western basin and the MAR region, whether and how much water is exchanged between the subpolar and the subtropical regime in the eastern basin is unknown.
To examine the transports in the eastern North Atlantic and to study the different flow regimes of the NAC, we use observational daily data from moored pressure sensor equipped inverted echo sounders (PIES). The instruments are deployed at 47/48°N since 2013 (western basin) and 2016 (eastern basin) and at the MAR since 2006. We will present preliminary transport time series for the eastern North Atlantic basin calculated from PIES data. Additionally, we will show first results of the analysis of satellite altimetry and PIES data from the western and eastern North Atlantic at 47/48°N and the MAR region in terms of sea surface height variability.