



## The North Atlantic Eastern Boundary: Observations from Moorings at Goban Spur 2016-2019

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Since 2016 a moored observatory is operated at the eastern extension of the “North Atlantic Changes (NOAC)” array at 47°/48°N. This observatory is installed across the shelf break at Goban Spur and consists of two deep-sea moorings that are separated by about 60 km.

The aim of this ongoing monitoring program is to quantify the variability and trends in the properties and transport rates of water masses that are advected northwards along the North Atlantic Eastern Boundary and modify the adjacent regions, i.e. the Northwest European Shelf, North Sea, Nordic Seas and Arctic Ocean. Furthermore, the continuous long term time series are essential for a thorough understanding of the circulation system in the eastern North Atlantic and the underlying physical mechanisms that govern its variability.

Here, we present results of the analysis of temperature, salinity and current velocity time series from 2016 to 2019. These provide a descriptive view of the complex current structure and variability of water masses on daily to intra- and inter-annual time scales.

The most pronounced signal in the variability of temperature and salinity is caused by the presence of Mediterranean Outflow Water located at about 1000 m depth. During the observation period we find significant positive trends in temperature and salinity in the depth range of 500 to 1500 m. The velocity measurements of the onshore mooring show a northeastward directed mean flow following the topography with along-slope variations, while the flow at the offshore mooring position is more unstable with predominantly cross-slope variations.

The combination of our observations with float and altimeter data indicates that the presence of eddies and the interaction with the topography seems to play a crucial role for setting the variability of the flow in this region.

Finally, we present an approach to evaluate the volume fluxes at the eastern boundary that will add toward an integrated estimate of the strength of the Atlantic Meridional Overturning Circulation at 47°/48°N.