

VARIABILITY OF THE DWBC AT 26°N FROM *IN SITU* OBSERVATIONS AND SATELLITE MEASUREMENTS

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The MOC sustained a striking period of low transport in 2009–10, the question remains as to the source of this reduction and whether it signals a continued weakening of the MOC and its associated northward heat transport. Here, we use the time series of the MOC at 26°N in the Atlantic from Apr 2004–Oct 2012, to examine the interannual variability, particularly of the lower return flow of the MOC: the deep western boundary current (DWBC). Combining independent datasets with the mooring array, we investigate the variability in the barotropic flow of the Atlantic on timescales of days to decades.

Two major findings result. Firstly, on timescales under a year, a baroclinic response to fluctuations in wind-driven Ekman transport is observed below 2000 m depth, with a signature that maps onto isopycnal displacements at the interface between the Labrador Sea Water and Denmark Strait Overflow Water layers. Secondly, using sea surface height anomalies and GRACE satellite-derived bottom pressure measurements, we are able to reconstruct the barotropic transport variability on interannual timescales, suggesting that the observed interannual variability of the DWBC from the RAPID mooring array may be part of a longer period variability.