

Variability of the MOC in the South Atlantic since 1993.

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This work presents results that use blended satellite altimetry observations together with XBT, Argo profiling float, and climatological data to investigate the year-to-year variability of the meridional overturning circulation (MOC) and meridional heat transport (MHT) along 35°S since 1993. The barotropic contribution to the MHT and MOC are compared against results from a short record of three pressure equipped inverted echo-sounders (PIES) deployed in the western South Atlantic along 35°S in 2009-2010, while the baroclinic component are validated by the XBT derived MHT and MOC estimates. Results from the altimetry-based methodology show similar changes to those obtained from in situ measurements. Changes in MOC and MHT are linked to variations in the wind field and in the subtropical gyre. Results obtained from this study demonstrate the importance of satellite altimetry observations for MOC studies in the South Atlantic Ocean and in particular to extend the in situ observational record for the longer time scales needed for understanding climate dynamics.