

Recent observational advances from the South Atlantic Meridional overturning circulation Basin-wide Array (SAMBA) at 34.5S

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The South Atlantic is a key gateway for water mass and property exchanges between the Atlantic and other basins, and is thus a crucial place to measure changes in the Meridional Overturning Circulation (MOC). The international South Atlantic MOC Basin-wide Array (SAMBA) at 34.5S was initiated in 2008-2009 for this purpose, utilizing a mix of pressure-equipped inverted echo sounders (PIES) and PIES augmented with a current meter 50-m above the seafloor (CPIES). Over the past decade, the array has grown to include 8 PIES/CPIES on the western boundary, 3 PIES/CPIES in the interior, and 8 PIES/CPIES on the eastern boundary, and includes 4 tall moorings and Acoustic Doppler Current Profilers. SAMBA was recently linked with the South Atlantic Gateway Array (SAGA) along 9W. A multi-year daily time series of the MOC volume and heat transport has been generated using data from the SAMBA, resolving for the first-time daily transport variations from the abyssal overturning circulation cell as well as the upper MOC cell. Volume, heat and salt transport by the MOC and the contribution by mesoscale eddies were estimated from the first GO-SHIP section along 34.5S. On the western boundary, moored observations were used to study deep and abyssal temperature variations and to detect long-term trends. SAMBA measurements have also been used to study the temporal variability of key contributors to the upper and abyssal overturning cell, including the Brazil, Benguela, Deep Western and Eastern Boundary Currents. During this presentation, we will summarize key findings from those studies.