## Meeting AMOC Observation Needs in a Changing Climate



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## Energetic overturning flows, dynamic interocean exchanges, and ocean warming observed in the South Atlantic

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Since the inception of the international South Atlantic Meridional Overturning Circulation initiative in the 21st century, substantial advances have been made in observing and understanding the Southern Hemisphere component of the Atlantic Meridional Overturning Circulation (AMOC). Here we synthesize insights gained into overturning flows, interocean exchanges, and water mass distributions and pathways in the South Atlantic. The overturning circulation in the South Atlantic uniquely carries heat equatorward and exports freshwater poleward and consists of two strong overturning cells. Density and pressure gradients, winds, eddies, boundary currents, and interocean exchanges create an energetic circulation in the subtropical and tropical South Atlantic Ocean. The relative importance of these drivers varies with the observed latitude and time scale. AMOC, interocean exchanges, and climate changes drive ocean warming at all depths, upper ocean salinification, and freshening in the deep and abyssal ocean in the South Atlantic. Long-term sustained observations are critical to detect and understand these changes and their impacts.

## Topic

Value of AMOC observing -what have we learned?

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