Characterizing the Atlantic Meridional Overturning Circulation

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The Atlantic Meridional Overturning Circulation (AMOC) consists of northward flow at surface and intermediate depths, and southward flow of North Atlantic Deep Water. The AMOC is a major component of northern hemisphere meridional heat transport, and may fluctuate on a broad range of time scales with significant climate implications. In this poster, we describe efforts to characterize and observe the AMOC and its variability. These include Argo float and Expendable Bathythermograph profiles, measurements of the Florida Current transport and the Deep Western Boundary Current off the Bahama Plateau (the Western Boundary Time Series program), several new programs to measure the AMOC in the South Atlantic, and the Meridional Overturning Circulation Heat-flux Array (MOCHA) at 26.5°N across the Atlantic. The MOCHA system is part of the joint U.K./U.S. RAPID-MOCHA program, and has been continuously observing the AMOC since March 2004.

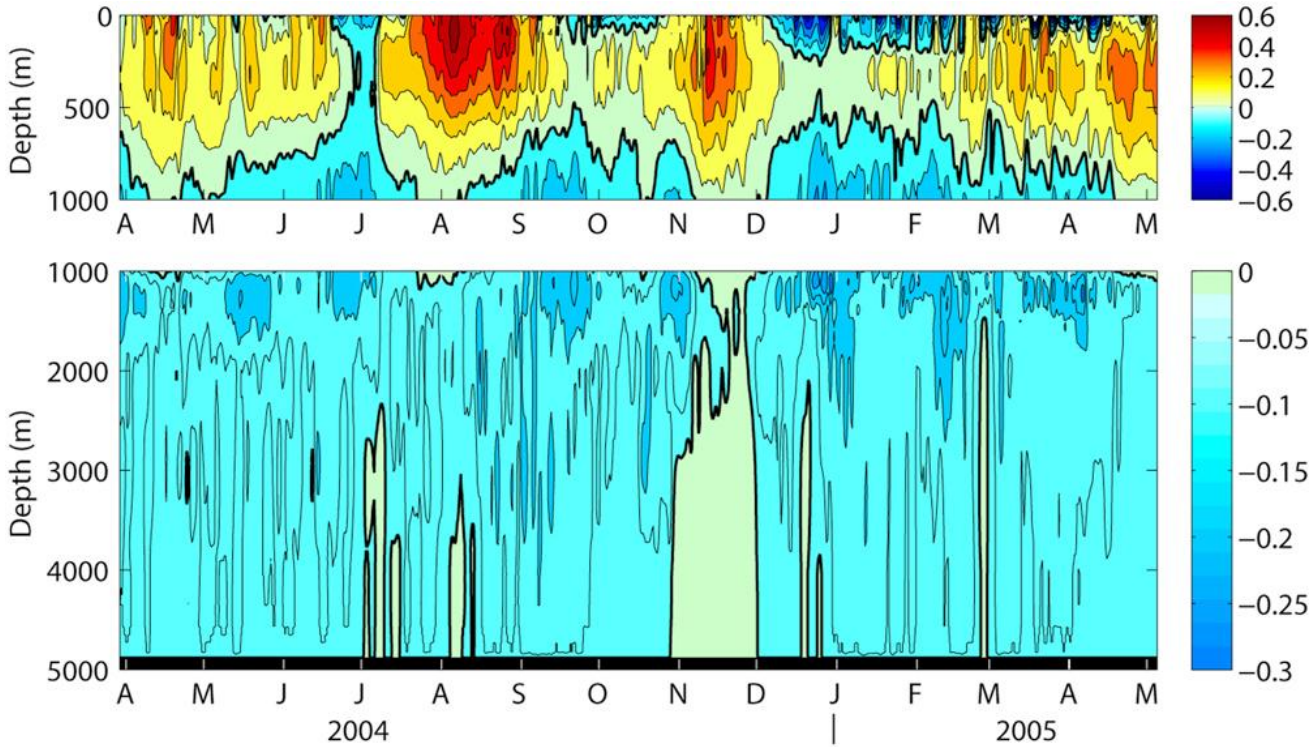

Figure 1. Time series of the transport-per-unit-depth profile (10^5 m^2/s) measured by the MOCHA array. The contour interval is decreased in the lower panel to better illustrate the deep variability. A notable reversal in the deep flow occurs during November 2004 (from Johns et al., 2008).