

U.S. Atlantic Meridional Overturning Circulation (AMOC) Bi-monthly Update
February 2009

Under the guidance and support of relevant federal agencies (NASA [lead], NOAA, and NSF), the US ocean research community has launched a focused effort to address the 4th near-term priority of the Ocean Research Priorities Plan, the Atlantic Meridional Overturning Circulation (AMOC). Here we report significant events resulting from that effort during the previous two weeks:

Planning Activities

- Planning for the community-wide AMOC Science Meeting scheduled for 4-6 May 2009 in Annapolis, MD is underway. This meeting is open to all interested parties, both U.S. and international. Six speakers have been invited to give overviews on the status of AMOC science. The abstract (registration) deadline is 20 March (3 April) 2009.

- Four task teams have been formed with members of the US AMOC Science team. These task teams will be addressing the four recommendations from the US AMOC Science Team Progress Report, issued in October of 2008. These recommendations were formulated to address programmatic gaps. In brief, these are:
 - 1) The design and implementation of a monitoring system for the time varying strength of the AMOC in the subpolar North Atlantic and subtropical South Atlantic.
 - 2) The establishment of a link between AMOC variability and SST changes.
 - 3) The improvement in our mechanistic understanding of the AMOC.
 - 4) An assessment of AMOC's role in the predictability of the climate system on decadal timescales.

Science Results

- WHOI has completed its 2008 "Line W" cruises with the majority of intended moorings deployed. Plans are being developed for the remainder to be deployed in 2009. This NSF-funded 10-year effort to monitor the Deep Western Boundary Current will continue through 2013.

- Now in its 5th year of operation, the RAPID-MOCHA Array along 26.5°N continues to provide a unique record of the time-varying strength of the Atlantic Meridional Overturning Circulation (AMOC). A new publication will come out in 2009 based on the available 3.5 year record, which shows large fluctuations in the instantaneous strength of the MOC and the associated heat transport.

- Ping Chang and his colleagues published a recent paper in *Nature Geoscience* on AMOC and Africa Monsoon relationship. Chang, P., R. Zhang, W. Hazeleger, C. Wen, X. Wan, L. Ji, R. J. Haarsma, W-P. Breugem, and H. Seidel, 2008. Oceanic link between abrupt changes in the North Atlantic Ocean and the African monsoon. *Nature Geoscience*, **1(7)**, 444-448.

- Started in 2000 as a German CLIVAR project, MOVE (Meridional Overturning Variability Experiment), has integrated NADW flow over 1000km with “geostrophic” end-point moorings. The project has 8.5 years of continuous data, with a 97% data return on internal and boundary transport.
- The Ocean Surface Topography Science Team used 15 years of altimeter data to show that a stronger Gulf Stream does not increase North Atlantic Current (no evidence of “ocean conveyor model”). The team recently submitted a manuscript to *Geophysical Research Letters*. Kelly, K., L. Thompson, and S. Dickinson, 2009. Gulf Stream: Conveyor or Switch. *Geophysical Research Letters*, submitted.

Outreach

- Susan Lozier, chair of the US AMOC Science Team, has been invited to give an update on the US AMOC program to the Ocean Studies Board on March 18, 2009 in D.C.
- The first US AMOC report documenting progress on the Implementation Strategy for AMOC published in October 2007 can be found at: http://www.atlanticmoc.org/meetingpubs/AMOC_Progress%20Report%202008%20Final.pdf for an electronic copy. Hardcopies are available upon request.
- Development of the website, www.AtlanticMOC.org, continues. This website is dedicated to the dissemination of information about AMOC activities.
- “Line W” (see above) was featured on PBS’s NOW series 9 January 2009.

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