

**U.S. Atlantic Meridional Overturning Circulation (AMOC) Bi-monthly Update**  
**April 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 4<sup>th</sup> 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 nearly complete. Currently, 85 scientists have registered for the meeting. 37 oral presentations, including 6 invited talks, and 30 posters will be presented.
  
- Molly Baringer, Chris Meinen, and Silvia Gazoli will attend the South Atlantic Meridional Overturning Circulation (SAMOC) second meeting in Paris, July 2 and 3 2009. As representatives of the US AMOC Science Team they will coordinate with international partners on plans for a South Atlantic observing system.
  
- The four tasks teams charged with addressing the four recommendations from the US AMOC Science Team Progress Report, issued in October of 2008, will meet in Annapolis to continue their work.

**New Science Team Members**

Terrence Joyce - Woods Hole Oceanographic Institution

- Atmospheric Coupling to Gulf Stream and Kuroshio Path Changes

Vikram Mehta - The Center for Research on the Changing Earth System (CRCES)

- A Diagnostic Study of the Interannual to Decadal Variability of the Tropical Atlantic Sea-surface Temperatures Using Satellite Remote Sensing Based and ECCO-assimilated Oceanographic Data Products

C. K. Shum - Ohio State University

- Satellite Monitoring of the Present-day Evolution of the Atlantic Meridional Overturning Circulation

Xiao-Hai Yan - University of Delaware

- Satellite Multi-Sensor Studies of Deep Ocean Convection (DOC)

**Science Results**

- WHOI has completed its 2008 "Line W" cruises with the majority of intended moorings deployed and is scheduled to sail on R/V Oceanus June 10-13 out of Woods Hole. This cruise will deploy the two remaining moorings in the planned array and recover a bottom pressure gauge for U.K. collaborators. A cruise is also scheduled on R/V Endeavor September 1-11 out of Narragansett to occupy the hydrographic section along

Line W all the way into Bermuda territorial waters. This NSF-funded 10-year effort to monitor the Deep Western Boundary Current will continue through 2013.

- Now in its 5<sup>th</sup> 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.
- Carl Wunsch and his colleagues published a recent paper in *The Journal of Physical Oceanography*. Wunsch, C. and P. Heimbach, The global zonally integrated ocean circulation (MOC), 1992-2006: Seasonal and decadal variability, *J. Phys Oc.*, 39, 351--368, 2009.

## Outreach

- Susan Lozier, chair of the US AMOC Science Team, gave 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 2008 can be found at: [http://www.atlanticmoc.org/meetingpubs/AMOC\\_Progress%20Report%202008%20Final.pdf](http://www.atlanticmoc.org/meetingpubs/AMOC_Progress%20Report%202008%20Final.pdf) for an electronic copy. Hardcopies are available upon request.

Submitted by:

Susan Lozier, Duke University (AMOC Science Team chair)

Eric Lindstrom, NASA HQ

15 April 2009