

U.S. Atlantic Meridional Overturning Circulation (AMOC) Update May 2011

Under the guidance and support of relevant federal agencies (NASA [lead], NOAA, and NSF), the US AMOC Program is coordinating research focused on the 4th near-term priority of the Ocean Research Priorities Plan, the Atlantic Meridional Overturning Circulation (AMOC). The AMOC Science Team continues development of the AMOC Program with annual meetings and strong collaboration with European, South American and South African colleagues. In addition, the design and proposals for expanding the AMOC observing system in the subpolar North Atlantic and subtropical South Atlantic have been developed and are under consideration (see below).

Furthermore, at the 2010 annual science team meeting, seven high-priority, near-term research objectives were identified. The four newly restructured task teams: AMOC Observing System Implementation and Evaluation (Susan Lozier and Patrick Heimbach, chairs); AMOC State, Variability, and Change (Josh Willis and Rong Zhang, chairs); AMOC Mechanisms and Predictability (Gokhan Danabasoglu and Young-Oh Kwon, chairs); and AMOC: Climate/Ecosystem Impacts (Ping Chang and Yochanan Kushnir, chairs) have been assembling their task teams and discussing potential activities to accomplish these near-term objectives.

Recent US AMOC Activities

- This year's US AMOC Annual Science Team meeting will be held in conjunction with the UK Natural Environment Research Council's Rapid Climate Change programme (RAPID) Science Meeting, July 12-15, 2011. (<http://www.noc.soton.ac.uk/rapid/ic2011/>) The meeting is entitled "Past, Present and Future Change in the Atlantic Meridional Overturning Circulation. US AMOC Science Team members Sirpa Hakkinen and Susan Lozier are invited speakers. Yochanan Kushnir, Gokhan Danabasoglu and Rong Zhang are presenters as well.
- Three planning workshops for the developing OSNAP (Overturning in Subpolar North Atlantic Program) program were held this past spring: one in early March 2011 in Southampton, one in early April 2011 at the EGU meeting in Vienna and another in late April 2011 in Halifax. This US-led program now has four international partners (UK, Canada, Germany and Netherlands), all who are contributing to the observing system under design. Additionally, with the collaboration of Uwe Send, in his capacity as an OOI project scientist, plans are underway to interface OSNAP and the Irminger Sea global node. Planned submissions for the US and UK proposals are July and August of 2011. Finally, planning for the

biology/biogeochemistry components of OSNAP (BOSNAP) will continue in earnest this summer.

- The 4th South Atlantic MOC workshop (SAMOC 4) will be held on September 27-29 in Simons Town, South Africa (http://www.aoml.noaa.gov/phod/SAMOC/index_SAMOC3.html). The organizing committee consists of Silvia Garzoli (U.S), Chris Reason (South Africa), and Isabelle Ansorge (South Africa). The objective of the workshop is to provide an update on the scientific collaborations in the region and the status of ongoing and proposed programs. Proposals for enhancement of the 35°S AMOC measurement line were submitted to NSF and NOAA this spring.

| **New Science Results**

- Kanzow, T., S. A. Cunningham, W. E. Johns, J. J-M. Hirschi, J. Marotzke, M. O. Baringer, C. S. Meinen, M. P. Chidichimo, C. Atlinson, L. Beal, H.L. Bryden, and J. Collins, Seasonal Variability of the Atlantic Meridional Overturning Circulation at 26.5°N, *J. Climate*, **23**, 5678–5698, doi: 10.1175/2010JCLI3389.1, 2010.
- Kwon, Young-Oh and Claude Frankignoul, Stochastically-driven multidecadal variability of the Atlantic meridional overturning circulation in CCSM3, *Clim Dyn*, DOI 10.1007/s00382-011-1040-2, March 2011.
- Shum, C., and C. Kuo, Observation and geophysical causes of present-day sea level rise, *Climate Change and Food Security in South Asia*, Part 2, 85-104, doi: 10.1007/978-90-481-9516-9_7, 2011.
- Willis, J., D. Chamber, C. Kuo, and C. Shum, Global sea level rise: Recent progress and challenges for the decade to come, *Oceanography*, **23**(4), 26-35, 2010.
- Zhang, D., R. Msadek, M. McPhaden and T. Delworth, Multidecadal variability of the North Brazil Current and its connection to the Atlantic meridional overturning circulation, 2011 AGU Editor's Highlight. <http://www.agu.org/cgi-bin/highlights/highlights.cgi?action=show&doi=10.1029/2010JC006812&jc=jc>