2012 Project Summary

An Observing System for Meridional Heat Transport Variability in the Subtropical Atlantic

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The objective of this program is to continuously monitor the strength and structure of the Atlantic meridional overturning circulation and meridional ocean heat transport at 26.5°N using a basin-wide observing system. As of December 2010 we had 6.7 years of data in hand from the full trans-basin array. With current funding the array will be maintained through 2014.

**Recent Results**

(1) The mean overturning strength from 2004-2010 is 17.9 Sv with r.m.s. variability of 4.7 Sv. The uncertainty of the mean MOC estimate over this period is approximately ±1.9 Sv including statistical and bias errors.

(2) The associated meridional ocean heat transport (MHT) is 1.28 ± 0.40 PW, with a statistical mean uncertainty of 0.13 PW. ARGO data is now incorporated into the interior ocean heat transport estimates. The MHT is highly correlated with the MOC strength, and the MOC carries 90% of the total heat transport. Both the MOC and the MHT show a significant annual cycle, of ±3 Sv and ±0.35 PW, respectively.

(3) Year-to-year variability of the MHT is relatively small during the first 5 years of the time series (2004-2008), but a large anomaly occurred in 2009-2010, resulting in much lower mean heat transports of ~1.1 PW during those years. This anomaly was driven in large part by reduced Ekman transports associated with a strong negative NAO anomaly in winter 2009-2010, which recurred again in winter 2010-2011.

**Bibliography**


