

## Line W: A Sustained Measurement Program Sampling the North Atlantic Deep Western Boundary Current and Gulf Stream at 39°N

### Completing a 10-Year Record of Deep Western Boundary Current Observations at Line W: A Contribution to the AMOC Study

---

PIs: J. Toole<sup>1</sup>, M. McCartney<sup>1</sup>, R. Curry<sup>1</sup>, T. Joyce<sup>1</sup>, M. Andres<sup>1</sup>, and W. Smethie<sup>2</sup>

1 Woods Hole Oceanographic Institution, Woods Hole MA

2 Lamont-Doherty Earth Observatory, Palisades NY

Collaborators: J. Smith<sup>3</sup>, S. Elipot<sup>4</sup>, C. Hughes<sup>5</sup>, and B. Peña -Molino<sup>6</sup>

3 University of Miami, Miami, FL

4 Bedford Institute of Oceanography, Dartmouth NS, Canada

5 National Oceanography Centre, Liverpool, UK

6 University of Tasmania, Hobart, Australia

The Line W program seeks to document interannual transport changes in the North Atlantic's Deep Western Boundary Current and Gulf Stream and investigate their causes and consequences for the climate system using data from a sustained moored array and repeated occupation of a hydrographic section. The program will produce a 10-year-long time series of boundary current variability that will be used together with companion programs at other latitudes in the Atlantic to characterize the Meridional Overturning Circulation in this ocean. The principal research activities carried out in 2014 included the final cruise of the field program aboard *R/V Knorr* (May 1-12, 2014) during which the six moorings in the array were recovered and the hydrographic section was reoccupied (Figure 1), on-going processing and analysis of data obtained thus far, and continuation of the efforts to write-up results for journal publication. MIT/WHOI Joint Program student Isabela Le Bras, who is supported on this project, is investigating the North Atlantic's deep western boundary current and its interaction with the Gulf Stream. Finalized mooring and cruise datasets available to date have been submitted to the *OceanSites* data archive.

#### Online data

Line W program website: <http://www.whoi.edu/science/PO/linew/index.htm>

#### Bibliography

Andres, M., G. G. Gawarkiewicz, and J. M. Toole, 2013: Interannual sea level variability in the western North Atlantic: Regional forcing and remote response, *Geophys. Res. Lett.*, **40**, 5915-5919, doi:10.1002/2013GL058013.

Le Bras, I.A., and J.M. Toole, 2014: Evaluating classic theories of wind-driven gyre circulation in the subtropical North Atlantic. *J. Phys. Oceanogr.*, submitted.