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Dr. Amy Bower: A Crossroads of the Atlantic Meridional Overturning Circulation: The Charlie-Gibbs Fracture Zone

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Project Summary

The oceanic Meridional Overturning Circulation (MOC) is a global circulation pattern that redistributes heat and freshwater over the largest spatial scales. The Atlantic MOC (AMOC) is considered to be the strongest part of the global MOC. Although some long-term observing systems have been set up at various locations along the paths of the AMOC, little attention has been paid over the past two decades to the Charlie-Gibbs Fracture Zone (CGFZ), where both the warm and cold limbs of the AMOC cross the Mid-Atlantic Ridge.

The primary objectives of this combined observational and modeling study are:

(1) To obtain an improved direct estimate of the mean and low frequency variability of the westward transport through the deep CGFZ using an array of current meters.

(2) To gain a better understanding of the causes of the low-frequency variability in the deep westward transport through the CGFZ, especially of the role of the NAC in generating this variability, using observations combined with idealized, process-oriented, modelling.

Related Multimedia

CGFZ mooring

deployment cruise photos / R/V Meteor / August 2010

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CGFZ Mooring deployment, w/ music

B. Hogue

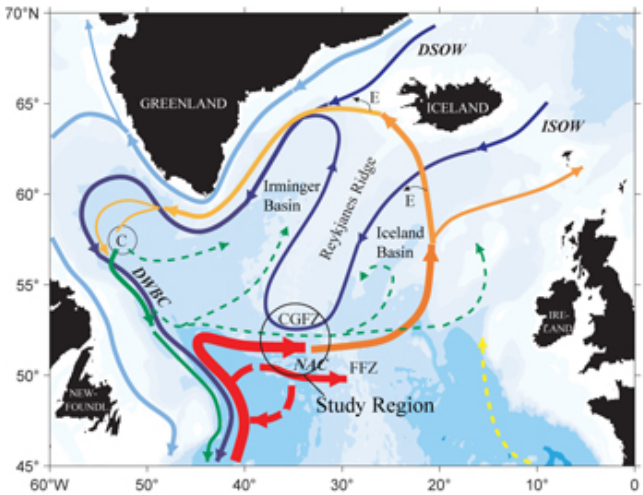

Figure 1. Schematic circulation of the North Atlantic, with study region marked.

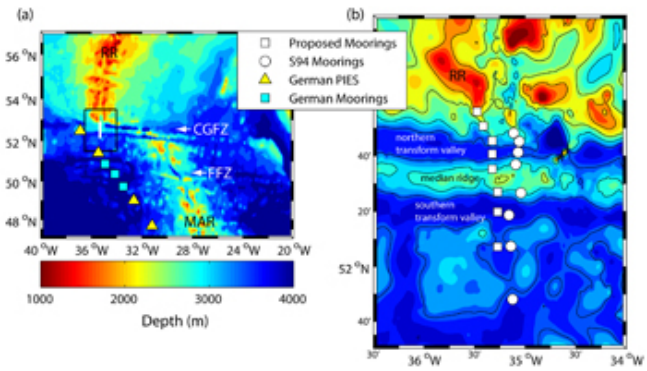

Figure 2. Enlargement of study region, and mooring locations.

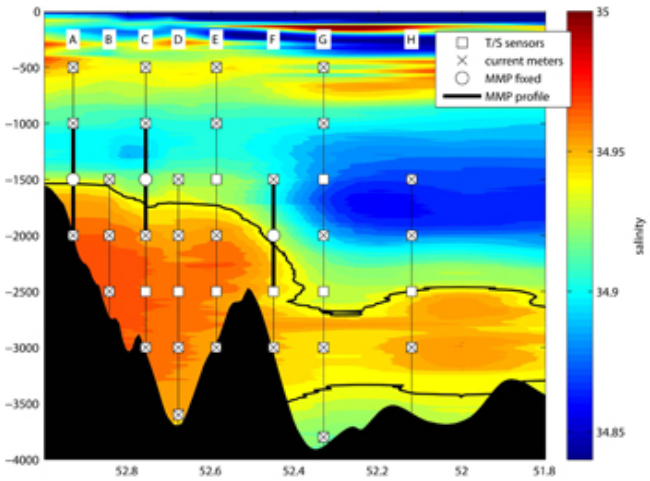

Figure 3. Placement of moorings, and instrumentation.

Posters

Technical and Cruise Reports

Furey, H., L. Trafford, and A. S. Bower, 2014. A Crossroads of the Atlantic Meridional Overturning Circulation: The Charlie-Gibbs Fracture Zone Data Report, August 2010-June 2012. August 2014, *WHOI Technical Report WHOI-2014-04*, 145 pp.

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