Geophysical Research Abstracts
Vol. 17, EGU2015-11391, 2015
EGU General Assembly 2015

Western boundary circulation in the tropical Atlantic at 11°S revisited

Rebecca Hummels, Peter Brandt, Marcus Dengler, and Jürgen Fischer
GEOMAR Helmholtz Centre for Ocean Research, Kiel, Germany (rhummels@geomar.de)

The tropical Atlantic Ocean plays an important role for climate variability in the Atlantic region. A key region within the tropical Atlantic is the western boundary, where the variability of the North Brazil Undercurrent (NBUC) and the Deep Western Boundary Current (DWBC) supposedly exhibit variations of the meridional overturning circulation (AMOC) and the subtropical cells (STCs) on different time scales. The strength of boundary current fluctuation recently found in observational and modeling studies largely vary; however, the evidence of such fluctuations from direct observations is outstanding. Currently, the western boundary current system off the coast of Brazil at 11°S is investigated with a mooring array and ship based observations including direct current as well as hydrographic measurements. Together with several research cruises acquired between 1990 and 2004 and a similar mooring array installed between 2000 and 2004 at the same location, the new observational program aims at investigating interannual to decadal variability of the western boundary current system, its relation to AMOC and STC variability and its impact on tropical Atlantic variability.
Here we present results from the first two research cruises in 2013 and 2014 as well as the first 10.5 months of moored observations in comparison to the observations a decade ago. It appears that the average transports of the NBUC and the DWBC have not changed significantly between the two observational periods. DWBC eddies, that were assumed to disappear with a weakening AMOC, are still present with similar characteristics. Observed patterns of water mass property changes on decadal timescale are associated with both, isopycnal heave and real water-mass modification of the temperature–salinity relationship.