



The upper ocean MOC return flow near the Caribbean Sea

K. Kirchner (1), M. Rhein (1), C. Mertens (1), C.W. Böning (2) and S. Hüttl (1)

1. Institute of Environmental Physics, University of Bremen, Bremen, Germany
2. Leibniz Institute for Marine Sciences (IFM-GEOMAR), Kiel, Germany

In the equatorial Atlantic waters from the South Atlantic enter the northern hemisphere via the North Brazil Current (NBC). Mostly this water retroflects into the North Equatorial Countercurrent (NECC) and recirculates in the equatorial gyre, but a part of this flow continues northwestward toward the Caribbean Sea. The rings shed at the retroflexion (the North Brazil Current Rings) form a major mechanism for the cross-gyre transport. The transport and fate of the southern hemispheric waters, namely of the NBC rings, are the topic of this presentation. Near the Caribbean, the southern waters can be identified by their temperature and salinity signature. The Caribbean inflow contributes to the Florida Current and thus represents a direct return flow of the MOC. An Atlantic pathway is indicated by the ring propagation. Shipboard hydrographic data as well as Argo profile data is used to investigate the distribution and transport of South Atlantic Water (SAW) near the Caribbean. Together with a high resolution ocean model (FLAME, $1/12^\circ$) we use the data to specify the flow into the Caribbean and at the Atlantic route. The complicated topic of ring interaction with topography (the Lesser Antilles Islands arc) is investigated in the model as well.