



Variations of the geostrophic transport through the Lesser Antilles Passages

C. Mertens and M. Rhein

Institute of Environmental Physics, University of Bremen, Germany

South Atlantic water enters the northern hemisphere in the western equatorial Atlantic with part of it forming the warm water path of the meridional overturning circulation. A large amount of this southern hemispheric water enters the Caribbean Sea through the Lesser Antilles passages. To measure the geostrophic transport variations a triangle of three moorings with conductivity and temperature recorders was deployed in June 2003 between the islands Tobago, Barbados, and St. Vincent, and recovered in June 2004. Additionally two inverted echo sounders with high precision pressure sensors were mounted on the seafloor. The conductivity/temperature timeseries and the travel time measurements of the inverted echo sounders are used to estimate variations of the vertical density structure and of the corresponding baroclinic transport variations. The horizontal bottom pressure differences are used to estimate the barotropic transport variations. The resulting timeseries show fluctuations of the baroclinic transport of about ± 5 Sv on monthly time scales and barotropic transport fluctuations of ± 1 Sv.