Circulation and Variability at the Southern Boundary of the Brazil Basin

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ABSTRACT

As a contribution to the WOCE Deep Basin Experiment, an array of current meters with individual record lengths exceeding l 1/2 years was set aeross the southern boundary of the Brazil Basin between early 1991 and early 1996. The array spanned the Santos Plateau, the Vema Channel, and the Hunter Channel. all areas believed to be important for Transport of Antarctic Bottom Water between the Argentine and Brazil Basins. From the combination of geostrophic velocities computed from hydrographic stations and those directly measured, the total Transport of bottom water (potential temperature below 2°C) is estimated to be about 6.9 Sv (Sv = 10^6 m^3s^{-1}) northward, with about 4 Sv coming through the Vema Channel and the remainder through the Hunter Channel. Properties of the eddy field are also discussed. Eddy energy levels and their spatial distribution are similar to comparable regimes in the North Atlantic. Integral timescales vary from a few days to several weeks with distance from the Brazil Current and the western boundary. The eddy heat flux is in the same direction as the beat advection by the mean flow but considerably smaller.