



The Circulation of the Western Tropical Atlantic at Mid-Depth as Observed by Floats

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Float data from two depth layers in the western tropical Atlantic between 25S and 25N are analysed with respect to the mean and eddy velocity field. The depth ranges chosen were 600–1000m and 1200–2000m, which sample the Antarctic Intermediate Water (AAIW) and the upper part of the North Atlantic Deep Water (uNADW), respectively. Data comes from floats that were acoustically tracked (RAFOS, SOFAR, MARVOR) as well as from profiling floats (e. g. those used in ARGO). In total, more than 300 years of trajectory data were obtained. For the AAIW layer, the temporal evolution of at least five zonal current bands between 6S and 6N is documented. Outside the equatorial band, strong mesoscale variability dominates the current field, for which the Lagrangian time, space, and energy scales are described using the acoustically-tracked floats. In contrast, the Deep Western Boundary Current (DWBC) is the most prominent feature of the uNADW layer. In the equatorial band, zonal flow patterns similar to those of the AAIW layer are suggested, but there are differences in amplitude. In both layers, these open-ocean flows interact with the boundary currents and tend to intensify or detrain them, depending on the direction of the flow. Where sufficient data is available, Lagrangian eddy scales are also described for the uNADW layer.