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Equatorial circulation and EUC variability during TACE

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The Tropical Atlantic Climate Experiment (TACE) envisioned by Fritz Schott and coauthors in their white paper represents a focused observational and modeling effort to enhance our understanding of Tropical Atlantic Climate Variability. During recent years, intense shipboard and moored observations were carried out within different national and international initiatives contributing to TACE. The current availability of a large number of cross-equatorial ship sections allows quantifying the mean flow structure in the equatorial Atlantic. Using these shipboard sections a mean westward weakening of the EUC and a westward strengthening of the SEUC from the western boundary toward the central Atlantic were found suggesting substantial recirculations between eastward and westward current bands. Such recirculations are confirmed by subsurface float trajectories. Velocity data from moored Acoustic Doppler current profilers that are deployed on the equator at 23°W between December 2001 and December 2002 as well as between February 2004 and February 2008 allow addressing the seasonal to interannual variability of the flow field along the equator. During the last mooring period from July 2006 to February 2008 additional moorings at 0.75°S and N were successfully deployed. The interannual EUC variability is discussed with respect to the interannual boreal summer cold tongue variability showing substantial variations of the sea surface temperature during recent years.