Geophysical Research Abstracts, Vol. 8, 02979, 2006
SRef-ID: 1607-7962/gra/EGU06-A-02979

Circulation in the central equatorial Atlantic - mean and intraseasonal to seasonal variability

P. Brandt (1), F. A. Schott (1), C. Provost (2), A. Kartavtseff (2), V. Hormann (1), B. Bourlès (3) and J. Fischer (1)

(1) IFM-GEOMAR, Leibniz-Institut für Meereswissenschaften, Kiel, Germany, (2) LOCEAN, Université Pierre et Marie Curie, Paris, France, (3) Centre IRD de Brest, Plouzané, France (E-mail: pbrandt@ifm-geomar.de, Fax: +49 431 6004102)

The zonal equatorial circulation of the upper 700m in the central tropical Atlantic is studied based on 11 cross-equatorial ship sections taken during 1999-2005 and on data from moored Acoustic Doppler current profilers deployed on the equator at 23°W between December 2001 and December 2002 as well as between February 2004 and June 2005. A comparison between mean transport estimates of the principle equatorial current branches in the central equatorial Atlantic with those at 35°W near the western boundary reveal a reduction of the EUC transport by about a quarter, suggesting substantial recirculation into westward flowing current braches north and south of the western EUC. The repeated equatorial mooring at 23°W allowed estimates on the year-to-year variability in the strength of the EUC. We found a 10% reduction in the core velocity of the EUC from 77cms-1 during 2002 to 70 cms-1 during 2004/05, which is hardly significant. Below the EUC, two westward flowing EIC cores were found with strong seasonal variability superimposed. During 2004/05 the intraseasonal variability of the moored velocity fluctuations was clearly dominated by zonal velocity fluctuations. The generally weak meridional velocity fluctuations in the near surface layer during 2004/05 are in contrast to the very strong signals found during 2002 at the same position. It is suggested that the strong year-to-year variability in the appearance of intraseasonal velocity fluctuations results from the interannual variability in the equatorial zonal current system particularly in the northern South Equatorial Current.