



Equatorial upwelling rates inferred from helium isotope and QuikSCAT wind-stress data

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Helium isotope and hydrographic data were recorded during Le Suroit Cruise EGEE2 in September 2005, L'Atalante Cruise EGEE3 in June 2006 and Meteor Cruise M68/2 in June 2006 in the Tropical and Equatorial Atlantic region. Particular sections were at 3°E (EGEE2 and EGEE3), 10°W (EGEE2, EGEE3 and M68/2) and 23°W (M68/2).

Being hampered by the small velocities on scales of 1 m/day, vertical motion has to be estimated by indirect methods. Klein and Rhein (2004) proposed a novel approach to infer equatorial upwelling velocities by exploiting the helium isotope disequilibrium between atmosphere and equatorial oceanic mixed layer. Using this approach, equatorial upwelling rates are calculated from helium measurements in the pelagic.

These results are compared to upwelling rate estimates from other studies and to upwelling rates calculated from QuikSCAT reanalysis windstress data from 2001-08.