

WATER MASS CONTRIBUTIONS TO CARBON TRANSPORTS IN THE EASTERN NORTH ATLANTIC DURING 2001

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The water mass distribution in an area of the Eastern North Atlantic Ocean (39-45°N, 16-22°W) studied in 2001 within the frame of the French research programme POMME was determined for the upper 2000m using an extended OMP analysis which includes both conservative and non-conservative tracers (Alvarez et al., 2004, 2005). We considered the presence of Eastern North Atlantic Central Water in its subtropical and subpolar branches (ENACWp), (ENACWt), Mediterranean Water (MW) and Labrador Sea Water (LSW). The results were used in combination with mass fluxes in order to determine the transports taking place in the region and to analyze the seasonal variability observed both in the direction and magnitude of the fluxes observed as well as to determine the relative contribution of each water mass to the flows.

Our results show that fluxes change considerably throughout the year. Seasonal variability is evident in the changes in flux direction and in magnitude from one season to the other, particularly from winter to late summer, when there is a net direction change. The differences observed can be explained as a result of mesoscale activity and large scale changes in the MOC and in the location of the Azores front and the subtropical and subpolar gyres.

These findings corroborate most of the previous, and often conflicting, studies in the area, when seasonal variability is considered in both the flow determination and flow mean direction, confirming the importance of seasonal variability studies in order to correctly describe the general behaviour of a given area.

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- **Alvarez, M.**, F.F. Perez, D.R. Shoosmith, H.L. Bryden (2005). "Unaccounted role of Mediterranean Water in the drawdown of anthropogenic carbon." *Journal of Geophysical Research-Oceans* 110 C09S03, doi:10.1029/2004JC002633.