



## **Distribution of water masses and diapycnal mixing in the Cape Verde Frontal Zone**

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Three hydrographic sections were made in September 2003 in the Cape Verde Frontal Zone between 20 and 26N and between 18 and 26W. In this report, we concentrate on the upper 600 m consisting of North Atlantic Central Water (NACW) and South Atlantic Central Water (SACW) separated by the Central Water Boundary. The CTD-O<sub>2</sub> data are used to study the distribution of central water masses and the position of the front at the sampled sections. The results show that the front is characterized by strong meandering and by the presence of large intrusions. The geostrophically calculated currents and the trustworthy ADCP data illustrate the mesoscale structure of velocity field added to a net westward current representing the south part of the Canary Current. The results evidence the relation between the water masses distribution and the ADCP currents indicating that near the front most of the spatial variability could be accounted for by horizontal advection. The diapycnal mixing induced by the shear of the flow and by double diffusion into the main thermocline is also studied. The vertical eddy diffusivity is estimated applying several parameterizations using the gradient Richardson number. To estimate the importance of the double diffusion processes in the diapycnal mixing, the density ratio is calculated with the CTD data. A high variability is obtained in the frontal zone indicating the presence of different mechanisms of double diffusion processes.