



Diapycnal diffusivity at the upper boundary of the North Tropical Atlantic oxygen minimum zone

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Diapycnal mixing was studied in the tropical northeastern Atlantic by a deliberate tracer release experiment in 2008 – 2010. The tracer, CF_3SF_5 , was injected on an isopycnal surface $\sigma_\theta = 26.88 \text{ kg m}^{-3}$, which corresponds to about 350 m depth. Three surveys performed 7 months, 20 months and 30 months after the release, sampled the laterally and vertically expanding tracer patch. The diapycnal diffusivity for the whole period was found to be $(1.2 \pm 0.1) \times 10^{-5} \text{ m}^2 \text{ s}^{-1}$, or in density units $(3.1 \pm 0.2) \times 10^{-11} (\text{kg m}^{-3})^2 \text{ s}^{-1}$. The result expressed in density units is independent of stratification, which in the studied region had a gradient increasing from 2.1 cph in the north-west to 2.7 cph in the south-east. Correspondingly, the diapycnal diffusivity estimate expressed in depth units was ranging from 0.7 to $1.3 \times 10^{-5} \text{ m}^2 \text{ s}^{-1}$. Diapycnal diffusivity studied in density units revealed increased diapycnal mixing by about 30% over the seamount region.