



## **Diapycnal mixing and water mass transformation in the Gulf of Cadiz**

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We consider mixing of Mediterranean Water (MW) with North Atlantic Central Water while flowing along the Gulf of Cadiz continental slope. A budgetary basis for estimating entrainment is provided by a large increase in volume transport of “diluted” MW with correspondingly reduced salinity. Local estimates of diffusivity are also attempted using some CTD and many XBT profiles obtained by the Geophysical Oceanography project ([www.dur.ac.uk/eu.go/](http://www.dur.ac.uk/eu.go/)) in spring 2007. Fine structure in the CTD profiles enables estimates based on Thorpe scale, strain and shear (with lowered ADCP). Of these, only strain-based estimates are directly feasible with temperature alone from the XBT. We have used a novel technique to infer salinity and reconstruct water mass structure from XBT profiles. The technique provides a stable density profile, precluding Thorpe scale analysis. However, estimates of turbulent mixing based on the strain variability method are improved compared with those from temperature alone. The budgetary and local estimates of mixing are comparable.