Geophysical Research Abstracts
Vol. 14, EGU2012-2950, 2012
EGU General Assembly 2012

Great Meteor Seamount revisited: DETAILED INTERNAL WAVE TURBULENCE

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Turbulent vertical eddy diffusivity (Kz) and dissipation rate (eps) are estimated between 0.5 and 50 m above a slope of Great Meteor Seamount, Canary Basin, using 101 moored temperature sensors, 1-mK precision, sampling at 1 Hz. Detailed observed time-depth temperature images are split in two: a statically stable and a turbulence image. Averaged over a fortnight, the observed overall time-depth mean Kz=3+-1x10-3 m2 s-1 and eps=1.5+-0.7x10-7 W kg-1. Variations with time and depth are large, by up to four orders of magnitude. Although tidal variations do occur, shorter-scale variations are more intense. A particular tidal period shows multiple vigorous overturning events, the largest found away from the bottom during the downslope phase but just prior to arrival of an upslope moving, equally vigorous bore. The strength of the bore may be controlled by the intensity of the mixing just prior to it. The bore itself is turbulent from the bottom upward, up to some 40 m above it. Its mixing is most efficient providing large fluxes in extremely thin layers.