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Repeated Profiling of Microstructure Lenses with a Midwater Float

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ABSTRACT

A freely drifting, midwater float equipped with a buoyancy controller has been developed and used to obtain 20 m profiles of temperature gradient (~ 0.02 m resolution) and temperature (~ 0.5 m resolution) at ~ 6 min intervals. Thermal structure and internal wave motions from a 20 h record obtained at 550 m depth and 500 km offshore from Southern California are analyzed. Intense microstructure activity is episodic and concentrated into microstructure “lenses.” Two of three lenses of increased microstructure activity found were associated with intrusions of ~ 5 m vertical and ~ 100 m horizontal scale. A third, much smaller and weaker lens was associated with a temperature step. A hint that microstructure intensity was modulated by low-frequency internal wave shear is also found.

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