



Fig. 26. Altimetric analysis of sea-surface topography, with inferred currents shown as arrows, for June 30, 1995. The location of the moored array is shown as a red square.

This analysis is borne out in the record of horizontal velocity shear and gradient Richardson number for the same period (Fig. 27b and c). The strongest shear in the upper ocean is found just below the base of the mixed layer, and occurs in pulses that are approximately the same length as the inertial period (44.9 h). The shear is spread vertically over ten or more meters, although the vertical variation of the mixed layer base during the course of a day varies by a

similar amount. This variability has a period close to that of the M2 tide, and is likely due to baroclinic tidal-wave motions. This strong shear is associated with critical and near-critical values of the gradient Richardson number that is low throughout the mixed layer, and therefore with shear-driven entrainment at the base of the mixed layer. The physical separation of the measurements of buoyancy frequency (from temperature structure on the WHOI mooring) and