

Abstract Submitted
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Observations of the turbulence kinetic energy dissipation rate in the mid-water column of an estuary LUKSA LUZNIK, Department of Mechanical Engineering, US Naval Academy, LOUISE WALLENDORF, Hydromechanics Laboratory, US Naval Academy — A substantial number of oceanic observational studies show that beneath surface waves the turbulence kinetic energy dissipation rate is often much larger than in a comparable turbulent boundary layer over a rigid wall. However, the vertical extent of the region of enhanced dissipation rate is not well characterized primarily due to variability in atmospheric forcing and wave conditions. Here, observations of turbulent dissipation rate are examined together with simultaneous measurements of surface wind waves and tidal currents in Chesapeake Bay during the summer of 2009 under low to moderate wind conditions. The data were collected with two vertically separated acoustic Doppler velocimeters (ADV's) and a high-resolution pulse coherent profiler (Aquadopp) covering a range of depths from 2-4m below the surface in 5m of water. A bottom mounted acoustic wave and current meter (AWAC) provided wave measurements and mean velocity profiles. Estimates of dissipation rates are obtained from inertial subrange spectra derived from temporal (ADV's) and spatial (Aquadopp) data. Various dissipation scaling will be discussed to determine the relative importance of encountered wave and tidal conditions.

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