

Abstract Submitted
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Turbulence measurements under unsteady deep-water breaking waves DAVID DRAZEN, KEN MELVILLE, Scripps Institution of Oceanography — We present results of laboratory experiments on turbulence in deep-water unsteady breaking waves. Through the use of a 10 megapixel 3 Hz digital camera we conducted Digital Particle Image Velocimetry (DPIV) measurements on a large scale, approximately 1.8 m x 0.6 m. Using both instantaneous full-field measurements, and mosaic reconstructions of the flow field (Melville, Veron, and White, 2002), we present results of measurements in both the stream-wise and cross-stream planes. We present results on the evolution of horizontal and vertical wavenumber spectra in both planes. The suite of experiments discussed covers a spectral range of $kl \rightarrow O(k\eta)$, where l is the integral length scale of the flow and η is the Kolmogorov length scale. Additionally, evolution of the turbulent kinetic energy density will be presented with an emphasis on the rate of dissipation for times soon after breaking. The use of these results for modeling breaking-induced turbulence will be discussed.

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