

Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Characterization of the Vertical Energy Distribution of the Internal Wave Field in the Upper Ocean JEREMY BRUCH¹, Johns Hopkins University — A method to simulate internal waves in the upper ocean is proposed by defining the vertical energy distribution as a function of mode number with the associated vertical structure functions as an appropriate set of orthogonal basis functions. An internal wave simulation is shown for a case with a stylized BV peak profile, using the Garrett and Munk internal wave model (GM) as the input energy distribution. The resulting simulated spectra are shown to be self-consistent with the proposed definition of the vertical energy distribution. Application of the GM model requires many assumptions, including the requirement that the internal waves are modeled strictly in deep water where there is little variation in the stratification. Given the typical non-uniformity of the stratification profile in the upper ocean, it may be of interest to relax this restriction of the GM model but the obvious non-stationary properties near the thermocline are incompatible with the calculation of the vertical spectrum of the internal wave field. The method described in this presentation suggests a means to reconcile this incompatibility.

¹Membership pending

Jeremy Bruch
Johns Hopkins University

Date submitted: 08 Aug 2013

Electronic form version 1.4