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Internal Wave Apparatus for Copepod Behavior Assays S. JUNG, K.A. HAAS, D.R. WEBSTER, Georgia Tech — Internal waves are ubiquitous features in coastal marine environments and have been observed to mediate vertical distributions of zooplankton *in situ*. Internal waves are generated through oscillations of the pycnocline in stratified waters and thereby create fine-scale hydrodynamic cues that copepods and other zooplankton are known to sense, such as fluid density gradients and velocity gradients (quantified as shear deformation rate). The role of copepod behavior in response to cues associated with internal waves is largely unknown. Thus, a coupled quantification of copepod behavior and hydrodynamic cues will provide insight to the bio-physical interaction and the role of biological versus physical forcing in mediating organism distributions. We constructed a laboratory-scale internal wave apparatus to facilitate fine-scale observations of copepod behavior in flows that replicate *in situ* conditions of internal waves in a two-layer stratification. Three cases are chosen with density jump ranging between 0.75 – 1.5 kg/m^3. Analytical analysis of the two-layer system provides guidance of the target forcing frequency to generate a standing internal wave with a single dominate frequency of oscillation. Flow visualization and signal processing of the interface location are used to quantify the wave characteristics. A copepod behavior assay is conducted, and sample trajectories are analyzed to identify copepod response to internal wave structure.

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