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Propagating and evanescent internal gravity waves in the deep ocean MATTHEW S. PAOLETTI, M.C. DRAKE, HARRY L. SWINNEY, University of Texas at Austin — We present experimental and numerical studies on internal gravity waves in a stably stratified fluid designed to model the deep ocean. Internal gravity waves generated by tidal flow over ocean topography are responsible for much of the energy transfer in the ocean. King et al. recently found that there exist regions in the deep ocean where the density gradient becomes so small that the buoyancy frequency (proportional to the square root of the density gradient) becomes smaller than the tidal frequency; below such (previously unknown) "turning points" the internal gravity waves become evanescent. The present experiments and simulations examine internal wave reflection and energy transfer at turning points. Further, we study internal wave generation for tidal flow over a ridge on the ocean bottom, and we examine how the evanescent and propagating internal wave intensities depend on the height of the ridge relative to the turning point depth.

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