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Investigation of Internal Wave Spectra due to Observed Interactions BENJAMIN HILLYARD, JULIE VANDERHOFF, Brigham Young University, Provo — Fluids such as the ocean and atmosphere are stably stratified such that the density within the fluid increases with depth. Perturbations to the stratification for example by flow over topography, convective storms or turbulent mixing can lead to the generation of internal waves. As these waves are generated and propagate through their respective media, they interact with a multiplicity of other internal waves. Each wave-wave interaction outcome is governed by the parameters of each wave involved in the interaction. When one of the waves is significantly larger scale, such as an inertial wave, linear theory may be used to asses the interaction between it and a smaller scale wave. The result is three basic types of interactions: small wave vertical group velocity larger than the phase speed of the inertia wave, closely matches, or is much slower than the phase speed of the inertia wave. Using ray theory, these interactions are traced and analyzed to better understand the dynamics of each type of interaction. A set of waves, defined by observations, is tested and conclusions on their effect in the ocean are made. Although a single set of observational data is used, the behavior of small-scale internal waves during and after interacting with common large scale inertia waves will allow for an enhanced understanding the Earth's atmospheric and oceanic global circulation patterns.

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