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Estimated Overturning of Internal Waves due to Time-Dependent Shear in the Ocean LEONARDO LATORRE, JULIE VANDERHOFF, Brigham Young University — The ocean and atmosphere have a particular characteristic that sustains propagation of internal gravity waves called a stable stratification. Internal waves are generated, with wavelengths which can vary from a few meters to kilometers. These waves propagate through the ocean and atmosphere exchanging energy and momentum as they interact with other fluid phenomena and break, which in turn affects circulation, heat transport, nutrient distribution and biological activity in the oceans and the atmosphere. However large scale circulation models lack the appropriate resolution to detect these motions, hence it is necessary to accurately parameterize internal wave breaking in order to establish a better relationship between wave energy dissipation and its effects on oceanic and atmospheric circulation patterns. In this research internal waves interact with a time dependent background in the form of a near-inertial wave, which are common in the ocean. Using a two dimensional, fully non-linear Navier-Stokes equation solver and ray theory, estimates of wave breaking parameters which predict breaking at the same location in both of these models are accomplished. A statistical analysis of waves observed during the Hawaiian Ocean Mixing Experiment will provide an estimate of the percentage of waves expected to break during propagation through an inertial wave.

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