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Mixing by internal gravity waves that break at sloping topography VAMSI CHALAMALLA, SUTANU SARKAR, University of California San Diego — Direct and large eddy simulations are performed to study the near-bottom mixing that occurs during the interaction of internal waves with a critical slope. The pathway from the input wave energy to the irreversible mixing of density field is explored. Diagnostics such as the turbulent kinetic energy budget and the density variance budget are discussed to explain the phasing of turbulence and associated mixing. Background and available potential energies are utilized to differentiate irreversible mixing from the reversible buoyancy flux. Mixing efficiency in all the simulated cases is found to be much higher than the frequently used value of 0.2 especially during large convective overturns. The ratio of Ozmidov and Thorpe length scales averaged over various sections of a wave cycle is investigated to assess inferences of turbulent dissipation rate from the Thorpe length scale.

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