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Bottom turbulence during resonant generation of Internal waves at a critical slope BISHAKHDATTA GAYEN, SUTANU SARKAR, UCSD — A numerical study based on direct numerical and large eddy simulation is performed to investigate internal tide generation that occurs when a barotropic tide oscillates over a sloping bottom. An intense boundary flow is generated in the near-critical case with slope angle equal to the natural internal wave propagation angle. The intensification of upslope and downslope flow increase with the length of the near-critical region of the topography. Nonlinear processes become important in the vicinity of the slope. The propagating internal tide has higher harmonics, subharmonics and inter harmonics. The resonant wave undergoes both convective and shear instability and promote strong turbulence over the entire slope and afterward it effects on the intensification rate. The maximum turbulent kinetic energy, dissipation and production lag with respect to the peak external velocity depending on the height above the bottom. The baroclinic energy flux, turbulence production and turbulent dissipation rate increase with increasing slope length.

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