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Energy transfers associated with the propagation of the internal tide from a continental slope in a closed domain.

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We address the nonlinear dynamics and energy transfers associated with the internal wave field generated by the interaction of a barotropic tide with a continental slope. This is done by a joint approach combining experiments and numerical modeling. The experiments were made at the Coriolis platform in Grenoble and the finite-volume, non-hydrostatic and implicit free-surface numerical code developed at MIT has been used to mimic the experimental set-up. In this talk, we focus on the case of a uniformly stratified fluid with a mixed layer at the bottom, in a two-dimensional (vertical) geometry. In this simplified situation, the internal wave field organizes itself as a rectilinear wave beam tangent to the topography. The beam reflects at the bottom mixed layer and at the surface of the ocean. The amount of energy transferred from the barotropic tide to the internal tide will be discussed; we shall also compare the energy lost into dissipation and mixing near the generation region with the energy propagating away from this region.