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Resonant Forcing of Barotropic Coastally Trapped Waves

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ABSTRACT

The interaction of a longshore current with a longshore topographic feature is investigated in the barotropic case. It is shown that near resonance, when a long-wave speed is close to zero (in a fixed reference frame), there is enhanced generation of upstream and downstream coastally trapped waves. An evolution equation of the the KdV-type is derived to describe the resonant behavior, and numerical solutions are discussed for a range of parameters describing the forcing terms, the detuning term and dissipation. The analogous situation of resonant generation due to wind stress is developed in an appendix.

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