

Abstract Submitted
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Internal waves and turbulence created by tidal flow over small-scale topographic features MASOUD JALALI BIDGOLI, NARSIMHA RAPAKA, SUTANU SARKAR, Mechanical and Aerospace Engineering, University of California, San Diego — Numerical simulations are used to study the internal waves and turbulence generated by the oscillation of a barotropic tide over bumps of small length scale where the tidal excursion number, Ex , i.e., the ratio of tidal excursion length to the topographic width is order unity. The objective is to go beyond linear theory to assess the effect of tidal excursion number. Subcritical to supercritical slope angles are considered to investigate if slope angle in conjunction with excursion number leads to different regimes. At low values of Ex , the results agree with Rapaka et al (2011) but there are significant differences in the $Ex = O(1)$ limit. The internal wave field is characterized using spectra, modal analysis and the baroclinic energy budget. Qualitative differences in turbulence generation, phasing and energetics are found when Ex increases.

Masoud Jalali Bidgoli
Mechanical and Aerospace Engineering, University of California, San Diego

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