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Topographic Drag Due to Barotropic Flow over the Continental Shelf and Slope

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ABSTRACT

A barotropic model is formulated to investigate the topographic drag due to steady barotropic alongshore flow over the continental shelf and slope. The topography is extensive, irregular and of small amplitude. Topographic drag is in general only appreciable when the mean flow runs counter to the direction of free shelf-wave phase propagation. The cross-shelf structure of the drag is determined by which mode lee waves dominate. This selection is determined by the projection of the topographic structure onto the wave mode, and by the degree of matching between dominant topographic length scale and natural lee wave wavelength.

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