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# The Response of Stratified Shelf and Slope Waters to Steady Offshore Forcing

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### ABSTRACT

The effect of steady, deep-ocean forcing on the flow over a continental slope and shelf region is examined using a linear and time-independent numerical model which includes continuous stratification, vertical and horizontal diffusion of momentum and density and linear bottom friction. The penetration of the pressure forcing is measured by the vertically averaged kinetic and potential energy as a function of cross-shore location. The most important factor governing the penetration of energy across the continental slope is the vertical structure of the imposed forcing: a surface-intensified pressure perturbation can penetrate easily onto the upper slope. Increasing the stratification also increases the energy penetration but not as effectively. Diffusion is relatively unimportant. The velocity field over the continental shelf is depth-independent regardless of the stratification or the location or vertical structure of the forcing function, and relatively little energy penetrates shoreward of the shelf break.

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