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# On the Circulation of a Homogeneous Ocean Induced by the Presence of Continental Slopes

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### ABSTRACT

The three-dimensional circulation of a steady, frictional, homogeneous ocean forced by a wind stress varying sinusoidally in the northward direction is examined, with reference to the effects of continental slopes. It is found that the local circulation pattern is considerably altered by the presence of slopes, although the global pattern is not. Moderately strong eastern boundary currents, of order  $1\text{--}3\text{ cm sec}^{-1}$ , are predicted, flowing in the same direction as those observed. Areas of secondary up- or downwelling are found near the bottom of the continental slope, even in the absence of a local long-shore wind stress, again agreeing qualitatively with observations.

The northward, intense (linear) return flow on the western boundary is again modified. It consists of a wide weak flow over the slope, and a narrower strong flow over the flat bottom; both flows have a northward flux of the same order, however.

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