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# Large-Scale Wind-Driven Ocean Response in the Australian Coastal Experiment Region

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### ABSTRACT

Theory is used to predict the large-scale wind-driven response on the eastern coast of Australia in the region of the Australian Coastal Experiment. An analytic model for water of constant depth suggested that the response in deep water could be negligible. This was confirmed by a model with more realistic topography, which showed that the ocean response was confined to the continental shelf and upper continental slope. The response was baroclinic except at the middle and outer shelf where it was quasi-barotropic. Because of the dominance of the first coastal-trapped wave mode and the influence of an effective southern boundary, sea level and longshore current propagated northward at a speed comparable to the first-mode coastal-trapped wave speed ( $4.3 \text{ m s}^{-1}$ ).

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