Abstract View

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Baroclinic Coastal Jets in Lake Ontario during IFYGL

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ABSTRACT

Coastal current observations taken at five locations in Lake Ontario during IFYGL, in periods of summer stratification, are presented and interpreted in terms of a linear dynamical model. Wind-stress impulses set up a pattern of flow characterized by baroclinic coastal jets, flowing initially from an upwind stagnation point along both shores to a downwind one. In time this flow pattern rotates slowly counterclockwise so that at certain fixed points on shore the coastal jet reverses direction and flows upwind. Several instances of this remarkable phenomenon were observed during IFYGL on the south shore of Lake Ontario, following west-southwest wind-stress impulses. Two episodes of this kind are analyzed in detail to show that there is qualitative accord between theory and observation, to the extent one might reasonably expect from the simplified model.