



## Abstract View

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# Circulation Induced by River Inflow in Well Mixed Water over a Sloping Continental Shelf

**G.T. Csanady**

*Woods Hole Oceanographic Institution, Woods Hole, MA 02543*

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### ABSTRACT

The pressure field over a sloping continental shelf subject to freshwater runoff at the coast can be resolved into a nearly two-dimensional dynamic height field and a residual field, the latter arising from the interaction of baroclinity and topography. The residual field is essentially three-dimensional and so constituted as to supply the fluid for the baroclinic alongshore flow off a coastal source of buoyancy associated with the cross-isobath density gradients. The intensity of the induced residual circulation (its total transport in  $\text{m}^3 \text{s}^{-1}$ ) varies directly with the buoyancy input and bottom slope, and inversely with the zero-order alongshore flow velocity and Coriolis parameter. Over the Mid-Atlantic Bight continental shelf the runoff-induced residual circulation makes a generally weak contribution to the observed mean flow field. It could, however, be more important over a low-latitude shelf subject to high runoff.

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