Abstract View

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A Simple Exact Treatment of the Baroclinicity-Bathymetry Interaction in a Frictional, Iterative, Diagnostic Ocean Model

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ABSTRACT

A formulation of the vorticity equation in terms of Ekman, baroclinic and barotropic transports, defined such that the bottom is the reference level-of-no-motion for the baroclinic velocity, yields a topographic-Sverdrup relation for the bottom pressure anomaly. This formulation does not contain the Jacobian term relating density to bathymetry found in earlier diagnostic formulations. As a consequence the resulting deep flow pattern is not sensitive to “noise” in the density field. The effects of bottom friction are introduced by an iterative scheme.