

A Two-Stage, High-Accuracy, Finite Element Technique of the Two Dimensional Horizontal Flow Model

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Abstract: An algorithm and essential subroutines programs are presented which implement two stage finite element Galerkin method for integrating the complete two dimensional horizontal flow model. In this method high accuracy is obtained by combining the Galerkin product with a high-order difference approximation to derivatives in the nonlinear advection operator.

Program includes the use of a weighted selective lumping scheme in the finite element method, use Gauss-Seidel iterative method for solving the resulting systems of linear equations. Small scale noise was eliminated by using a Shulman filter.

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