

01/09/02
10:33:18

abstract

1

Name: Y. Tony Song
Title: Dr.
Organization: Jet Propulsion Laboratory, California Institute of Technology
Address: JPL, MS 300-323, 4800 Oak Grove Dr. Pasadena, CA 91009
Email: song@pacific.jpl.nasa.gov
Phone: (626)393-4876

An Adaptive Vertical Coordinate Ocean Model

Y. Tony Song
Jet Propulsion Laboratory, California Institute of Technology
Pasadena, California 91109

ABSTRACT

An adaptive vertical coordinate ocean model is introduced to better represent the subgridscale mixing and bottom boundary layer processes. The new vertical coordinate system is formulated by combining the techniques of a general pressure gradient formulation, a finite volume algorithm, and a smooth transition scheme to represent the optimal features of z , σ , and isopycnal coordinates. The numerical scheme can be adapted by existing ocean models. Two different problems: a coastal upwelling and a global $1x1$ degree model, are used to demonstrate the feasibility of the adaptive method. Our preliminary results show that the new method is capable of handling both shallow- and deep-ocean processes. This development effort will provide an improved tool to allow diverse ocean modelers to choose optimal vertical model structures for a hierarchy of scales, from coastal to global.