1015-86-200 **Theodore Tachim Medjo***, Department of Mathematics, Florida International University, Miami, FL 33199, and **Roger Temam**, Department of Mathematics, Indiana University, Bloomington, IN. *A small eddy correction algorithm for the primitive equations of the ocean.*

Considering the interaction between the baroclinic and barotropic flows and using the idea of the Newton iteration, a small eddy correction method is proposed for approximating and numerically solving the primitive equations of the ocean. We assume that the barotropic approximation to the soluion is known. Formally applying the Newton iterative procedure to the baroclinic flow equation, we then generate approximate systems. It is shown that the first step leads to the well known quasi-geostrophic equations. The convergence analysis is presented and the resuts show that the small eddy correction method can greatly improve the accuracy of the quasi-geostrophic approximate solution. More precisely, we prove that the approximate system derived from the procedure converges to the primitive equations of the ocean and we estimate the rate of convergence as a function of the aspect ratio of the ocean. Some sumerical simulations of a wind-driven circulation problem are presented to illustrate the method. (Received February 05, 2006)