1033-35-164 **Luan T Hoang*** (LTHOANG@MATH.UMN.EDU), SCHOOL OF MATHEMATICS, UNIVERSITY OF MINNESOTA, 127 VINCENT HALL, 206 CHURCH ST. S.E., MINNEAPOLIS, MN , and **George R Sell**. *Global strong solutions of equations in geophysical fluid dynamics.*

We study the Boussinesq equations of the ocean which is a nonlinear system of equations for fluid velocity u, temperature T and the concentration of salinity S. The domain considered has depth of order ε as $\varepsilon \to 0$. The velocity field is subject to the Navier friction boundary conditions on the non-flat top and bottom boundaries. The friction coefficients are of order ε as well. Roughly speaking, we show that for generic domains and appropriate forces, if the H^1 norm of initial velocity is $O(\varepsilon^{-1/2})$, and the L^2 norms of the initial temperature and salinity concentration are $O(\varepsilon^{-3/2})$, then there exists a unique "strong-weak" solution (u, T, S) which is strong in u and weak in (T, S) for all time. Moreover, if additional regularity of the initial data is assumed, then the corresponding strong solution (in all u, T and S) uniquely exists for all time. (Received September 11, 2007)