1057-35-255   **Catherine Sulem*** (`sulem@math.toronto.edu`), Department of Mathematics, University of Toronto, 40 St George Street, Toronto, Ontario M5S2E4, Canada. *Water waves over a random topography.*

We discuss the problem of nonlinear wave motion of the free surface of a body of fluid over a variable bottom. The object is to describe the character of wave propagation in a long wave asymptotic regime, under the assumption that the bottom of the fluid region is described by a stationary random process whose variations take place on short length scales. Our principal result is the derivation of effective equations and a consistency analysis. We compute the effects of random modulation of solutions, and give an explicit expression for the scattered component of the solution due to waves interacting with the random bottom. (Received January 24, 2010)