

Abstract

A coupling method is proposed between extended Boussinesq equations, as formulated by Jamois et al. [2006. A numerical study of nonlinear wave run-up on a vertical plate, Coastal Engineering, 53, 929-945], and the integral equation method, under the assumption of potential flow. In both domains, the same fully nonlinear free surface equations, in Zakharov form, are being used. Implementation is carried out in the case of a two-dimensional numerical wavetank. Application cases concern nonlinear propagation of a steep regular wave, linear wave interaction with a rectangular caisson at the free surface, and wave transformation over varying bathymetry. They demonstrate the robustness and efficiency of the proposed method