WAVE DISPERSION STUDY IN THE INDIAN OCEAN -TSUNAMI, DECEMBER 26, 2004-

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ABSTRACT

A numerical study which takes into account wave dispersion effects has been carried out in the Indian Ocean to reproduce the initial stage of wave propagation of the tsunami event occurred in December 26, 2004. Three different numerical models have been used: the nonlinear shallow water (nondispersive), the nonlinear Boussinesq and the full Navier-Stokes aided by the volume of fluid method to track the free surface. Numerical model results are compared against each other. General features of the wave propagation agreed very well in all approaches, however some important differences are observed in the wave pattern when dispersion is not considered, i.e., the development in time of the wave front is shown to be strongly connected to the dispersion effects. Discussions and conclusions are made about the spatial and temporal distribution of the free surface reaffirming that dispersion mechanism is important for tsunami hazard mitigation.