

Evaluation of the Application of One-Dimensional Non-Linear Shallow Water Equations in Nearshore Shallow Water

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Abstract

There are numbers of models for prediction of hydrodynamic parameters at nearshore according to different assumptions. However, the capability and comprehensiveness of the models in different conditions are still questionable. In this article, the results of numerical model based on Non-Linear Shallow Water (NSW) equations were compared to the results of MIKE21 BW 1DH which are based on Boussinesq equations in order to investigate the level of the accuracy of NSW in different beach slopes and bed particle sizes, under various incident wave conditions. The results of two numerical models in terms of water depth are also compared with field data. No clear advantage of Boussinesq model on NSW model is evident in prediction of water depth in the surf and swash zone. This will encourage application of NSW equation (due to relative simplicity) for prediction of sediment transport and beach profile evolution in the surf and swash zone.

Keywords: *Non-Linear Shallow Water equations (NSW), Boussinesq equations, MIKE21 BW 1DH, Field data.*
