

A Simplified Model for the Nearshore Currents

Eugen Rusu, Andrei Zanopol, Mariana Bernardino
Dunărea de Jos University of GALAȚI
Portuguese Meteorological Institute

ABSTRACT

In this work we present some numerical tests aiming to emphasize the role of some mechanisms in the near shore currents. The long shore pressure gradient can be quite a substantial force for the long shore currents in the near shore region, in addition to the forcing provided by the radiation stress gradients. These forces are mainly balanced by the bottom friction and the dispersive mixing due to the vertical variation of the currents. The separate effects of the long shore pressure gradient, the bottom friction, and the dispersive mixing in the prediction of the near shore circulation over a long shore varying barred beach will be analyzed. Another issue that is relevant in near shore currents is whether, on a beach of a general topography, the observed (or predicted) long shore currents are stable or unstable, which in the latter situation can lead to the so-called shear waves. In order to address the study of shear waves over a long shore non-uniform barred beach the dynamics of these motions over a long shore uniform plane beach will be first investigated.

Keywords: *nearshore currents, shear waves, model simulations*

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