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NUMERICAL MODELLING OF LONGSHORE CURRENTS IN MARINE ENVIRONMENT

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Abstract

The present work carries out a parallel analysis between the performances and, on the other hand, of the restrictions of two different model systems designed to assess the nearshore circulation. These are SHORECIRC, which is a widely known general prediction system for nearshore circulation and ISSM (the Interface for SWAN and SURF Models). SHORECIRC is a quasi-3D model that combines a numerical solution for the depth-integrated 2D horizontal momentum balance equations with an analytical solution for the 3D current profile. The restrictions of the model are very mild and the basic circulation equations solved can therefore in general be considered very accurate. In addition, such a model catches the non-linear feedback between wave generated currents and the waves that generate them. The ISSM system is composed of a MATLAB GUI in the foreground, which directs the integration of the SWAN shallow water wave model with a 1D surf model in the background. The present study performed in a non conventional coastal environment attempts to find out the limits of the numerical models for the coastal circulation and to balance the advantages and disadvantages brought by the two systems compared

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