

Evaluating the Hydrodynamic and Morphology of Sefidroud River Delta Using 2D Simulation and Remote Sensing Data

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Abstract

One of the most important issues in river and coastal engineering is the estimation of sediment transport, which is determined in delta regions by river flow, wave, and longshore currents due to the waves breaking. This study aims to evaluate the dynamics of waves, current and trend of morphology and coastline variation of Sefidroud River Delta. In the first section, wave, flow and sediment transport characteristics were simulated using the MIKE21 model and in the second section, the rate of delta coastline changes were obtained by processing satellite images of LandSat for the last decade. Results indicated that the model had the capability to generate the actual pattern of waves, currents (with nRSME factor of 12.07 to 17.02%) and sediment transport in coastal areas, as well as sediment transport trend had a good agreement with that of satellite imagery processing. Compression of the results indicated that propagation of delta's western and eastern coastline towards the coast and the northern coastline to the landward side stems from either seawater level reduction, or sediment transport. Therefore, recognizing morphological behavior of delta coasts and seawater level variation trend can provide required measures to manage and protect Sefidroud Delta's coasts.

Keywords: Wave, Flow, Sediment transportation, MIKE21, Remote sensing, Sefidroud Delta.
