

Mechanisms for sediment deposition in the altered Nakdong estuary - ROMS numerical study

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Nakdong estuary has been altered by estuarine dams to prevent the salt intrusion. The reduction in tidal energy and river discharge due to the presence of the dam has caused a shift from a relatively tide-dominated estuary to a wave-dominated estuary. In this paper, we attempt to explain the mechanisms for the alteration of sediment transport and topography using the Regional Ocean Modeling System (ROMS). This model ran with wind, tide, river discharge, and waves as inputs and was verified with in-situ data of sediment transport measured at the river mouth of the Nakdong estuary in 2011. The model was utilized to investigate especially the sediment flux into the estuary under the combined effects of waves and currents through the inlets. The results show that when the river discharge was dominant during the summer, the flux gradient between the upper and lower estuary was responsible for the convergence of sediment in the middle of estuary. On the other hands, residual transport induced sediment flux into the estuary in absent of strong discharge.

Keywords: altered estuary, sediment , transport, mechanism, convergence