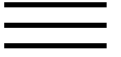


An investigation into processes influencing the morphodynamics of an intertidal mudflat, the Dollard Estuary, the Netherlands: I. Hydrodynamics and suspended.

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Estuarine, Coastal and Shelf Science

Volume 50, Issue 5, May 2000, Pages 607-625

Regular Article

An Investigation into Processes Influencing the Morphodynamics of an Intertidal Mudflat, the Dollard Estuary, The Netherlands: I. Hydrodynamics and Suspended Sediment

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Abstract

As part of an interdisciplinary experiment, a series of measurements have been obtained on the mudflats of the Dollard Estuary, the Netherlands. The aim was to investigate the sediment transport and accumulation processes occurring during the covering and uncovering of the mudflats, particularly as the area was known to be ebb current dominant. Current velocity measurements confirmed the ebb dominance, and suspended matter concentrations measured over several tidal cycles in calm weather revealed that the highest concentrations occurred at the beginning of the flood and the end of the ebb. The resulting sediment flux, however, was flood dominant. During windy weather

ebb. The resulting sediment flux, however, was flood dominant. During windy weather the balance of flux changed to ebb dominance. Measurements of floc size and settling velocity show a major organic component produced by entrainment of a thin surface layer during the early flood tide. During a windy period settling velocities in the adjacent channel together with the concentration variations showed a phase lag with water depth and velocity. The highest settling velocities occurred at about slack water, and there were residual ebb fluxes of suspended sediment. It is concluded that the ebb dominance of the currents is not apparent in the sediment fluxes during calm weather, but in periods of high winds the flux is likely to be ebb directed, except when diatom productivity is high. The overall response is similar to that of flood dominated mudflats.



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Keywords

mudflats; suspended matter; flocculation; sediment transport; deposition; Netherlands coast

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