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Sediment trapping in the Changjiang estuary: Observations in the north passage over a spring-neap tidal cycle

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Water current, salinity and suspended sediment concentration (SSC) were measured at three anchored boat sites along the North Passage (NP) of the Changjiang estuary over a spring-neap tidal cycle, in order to study sediment trapping and siltation in the estuary. Pronounced stratification was observed during the late flood tide and the following early ebb tide, along with an advancing and retreating salt wedge, whereas strong vertical mixing occurred during the late ebb when the effect of the salt wedge faded. Therefore, the SSC in the flood-ebb tidal cycle tended to be asymmetric. In the upper reach of the NP, the seaward advective near-bed sediment transport dominated the total near-bed sediment transport, whereas in the middle reach of the NP, the landward tidal pumping component dominated. Accordingly, a notable convergent near-bed residual sediment transport was generated near the middle reach. Because the convergence of residual sediment transport in the region of a salt wedge is generally recognized as sediment trapping, convergent near-bed residual sediment transport is the cause of the high sedimentation rate in the NP.

Biography

Ding Zhangliang is a postgraduate at East China Normal University. His major is estuary and coastal research. And he is studying for a doctor's degree.

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