

Research on Fluctuation of Suspended Sediment Concentration in Xuliujing Shoal and Groove of Yangtze River Estuary

Zhou Hao¹ and Shuguang Liu¹

¹Tongji University

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Abstract

In order to study the fluctuation law of suspended sediment concentration (*SSC*) of different water layers in Xuliujing marginal shoal and deep groove of Yangtze River Estuary with time under spring, middle and neap tides, and analyze the relevant factors of *SSC* fluctuation in shoal and groove, so as to help calculate and calibrate line computation of *SSC*, infer continuous sediment transport rate and compile sediment discharge in Xuliujing section, provide theoretical basis for scientific research on analysis of Yangtze Estuary channel erosion and deposition and river regime change, river regulation and wading projects plan. Used horizontal sampler, bottom sampler and other instruments to conduct on-site hydrological and sediment tests of 1#(marginal shoal) and 4#(deep groove) measuring verticals on Yangtze Estuary Xuliujing Section. The research conclusion: the maximum correlation between *SSC* and flow velocity reaches 90.5%, *SSC* fluctuation degree increases with the increase of flow velocity, *SSC* fluctuation peaks in marginal shoal mainly occur at high flow velocity, *SSC* fluctuation peaks in deep groove mainly occur at low flow velocity; The maximum correlation between *SSC* and water depth reaches 99.7%, fluctuation degree increases with the reduction of distance to bottom, fluctuation in marginal shoal is more violent than deep groove; Occurrence time of *SSC* fluctuation peaks is related to sediment d_{50} and sediment transport between shoal and groove; Spring and middle tides are the time when shoal and groove *SSC* fluctuation degrees reach their maximum, 28h, 17h, 14h and 14h, 8h, 5h fluctuations are main patterns of shoal and groove *SSC* variation.

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