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Recent Progresses of Shallow Water Hydro-sediment-morphodynamic Modelling: Improvement of Computational Efficiencies and Typical Applications

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ABSTRACT

Shallow water hydro-sediment-morphodynamic modelling plays significant role in several aspects (e.g., river and estuarine engineering). In response to climate change and intense human activities, there have been dramatic changes in river water and sediment flux conditions, and thus sediment transport intensity and bed morphological evolution differs from traditional characteristics. These necessitates fully coupled shallow water hydro-sediment-morphodynamic modelling, which however may damage the computational efficiency. Here we report some progresses in developing a computationally efficient version of fully coupled shallow water hydro-sediment-morphodynamic model and its preliminary applications in bottle-neck navigational waterways of the Yangtze river.

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