

EGU21-6964, updated on 03 Dec 2022

<https://doi.org/10.5194/egusphere-egu21-6964>

EGU General Assembly 2021

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## A study on the dynamic process of fluid mud and its effect on siltation in the Yangtze Estuary Deepwater Channel

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The Yangtze Estuary Deepwater Channel Project has brought great economic and social benefits since its completion, but the siltation problem is still worthy of attention. In order to investigate the mechanisms of fluid mud in the estuary and to study the influence of fluid mud on siltation in the Yangtze Estuary Deepwater Channel, a two-dimensional physically-enhanced two-layer flow model will be developed in this paper. The model includes two series of governing equations which are about environment fluid and fluid mud, respectively. The model is based on the unstructured grid, and the governing equations are discretized by the finite volume method, and the improved LTS/GMaTS technology is used to improve the computational efficiency. Firstly, an experiment that the fluid mud was flowing underwater along a gentle slope is reconstructed by the two-layer model. It shows the ability of the model to describe the simple movement of fluid mud. Secondly, the model is applied to Yangtze Estuary. Without the fluid mud layer, the model can be simplified as a tide-current model. The reliability of the tidal current and tide level is verified, and it means the model can describe the tide accurately. Based on this, the process of formation, transport, and break-down of fluid mud is simulated and its effect on the siltation in the Yangtze Estuary Deepwater Channel is estimated.