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## A Stable and Efficient Flood Routing Model Based on Unstructured Grid

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Godunov-type schemes are widely applied to solve shallow water equations. In this study, a novel non-negative water depth Multislope MUSCL reconstruction method is incorporated into a two-dimensional unstructured cell-centered Godunov-type finite volume model to simulate shallow water flows. It is verified that the method performs well in avoiding non-physical oscillation and also has well-balanced performance by simulate three test cases. Due to the limitation of CFL conditions, mesh refinement will greatly increase the computational cost. In this study, A Local Time Stepping(LTS) strategy is specifically designed to greatly improve the computational efficiency. In addition, in order to make the model suitable for more application scenarios, we have realized the coupling of one-dimensional and two-dimensional models. Based on the above three improvements, we have developed a stable and efficient flood routing model.