



River-Network Numerical Model Base on Flux Difference Split Method

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The paper proposes an implementation of river-network numerical model in computational hydraulics study. The numerical basis of the model is the high resolution method which was usually used in gas dynamics. A high accurate numerical scheme for saint-venant was introduced base on flux difference split method, coupled with wave transportation, Limiter and entropy fixed. Two different problems were discussed for the model, the first is the method for construct the boundary conditions and the second is the method for connecting the network. A partial flux difference split method was employed for the discrete on boundary; the characteristic direction is critical factor to decide which partial to use. Among network coupling process, conservation laws was applied including mass conservation and energy conservation for all river connection points. The scheme can keep high accurate and good stability in the mean time. The present numerical method was applied to two different benchmark problems, one is ideal dam-break and another is irregular channel, both reflected that the introduced method was confirmed to be effective. And then a real river-network was tested, the comparison of observation and the numerical results show the high reliable of the introduced model.

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