

## **Comparison of two grid-based distributed flow routing models**

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**Abstract** Two grid-based distributed flow routing models: the time–area concentration model and the kinematic wave model, are discussed. In both models, the basin is subdivided into a square raster system for representation of its spatial heterogeneity. All the grids are divided into two groups: the hillslope grids and the river grids. The time–area concentration model divides the basin into several isochrone areas and two different methods are used for hillslope grids flow routing and river grids flow routing respectively. In the latter model, the kinematic wave method is used for flow routing. The Xinanjiang model is used to calculate excess rainfall in both of the models. They are both applied to the Huangnizhuang basin of the Huaihe River, China. The structure and performance of the two models are compared and discussed in this paper. The simulation results showed that the two models would be useful for basin-scale flood forecasting.

**Key words** distributed flow routing model; digital drainage network; DEM; Xinanjiang model

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