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A simple semi-distributed hydrological model for karst area

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Abstract: A semi-distributed hydrological model was developed for both the base and the surface flow components, of large-scale karst basins. Long-term daily stream-flow data were separated to base-flow and surface flow using the 'recursive digital filter' method, which provides time series for model calibration and validation. The initial value of each parameter in the model could be determined from field work directly. The model was applied to the Sanchahe watershed which located at the upstream of the Wujiang River. The watershed was subdivided into four sub-watersheds based on three sinkholes within the research area, and then the 1km*1km grid was used to describe the heterogeneity of the underlying surface. It was verified by comparing the calculated surface flow and base-flow with the daily time series of the base-flow separation procedure, and demonstrated good agreement of both the total flow (r2>0.9) and base-flow (r2>0.9) of the research area.

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