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Distributed hydrological modelling for estimation of hydrological dynamics in a karst region

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Abstract Karstic geology and landforms, such as epikarst, underground channels and dolines or sinkholes, significantly influence hydrological processes. In this study, we improved the distributed hydrological model for a karst basin developed by Zhang *et al.* (2011) by adding computation of exchange between underground channel flow and surface water through dolines. A small karst basin located in Guizhou province of southwest China was selected for this hydrological simulation. The results show that the underground channel is a major passageway for groundwater discharge, and the underground channel flow hydrograph shows a sharp increase and decrease due to recharge from surface water through dolines.

Key words karst; distributed hydrological model; doline; underground channel