

Distributed hydrological and erosion modelling of the Chabagou basin, China

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Abstract Evaluation of hydrological response and soil erosion is essential for ecological security in the Chabagou basin, which is part of the Wuding River basin, a tributary of the Yellow River. The distributed hydrological model, and the erosion models of the arid region which consider the influence of the soil conservancy projects, are described. In the hydrological model the lag-and-route method and Muskingum method are adopted to do the overland flow routing and the channel flow routing respectively. Allowing for the temporal and spatial variance of the climate, vegetation and underlying surface condition, these two distributed models are applied for flow and erosion simulation to 11 storms in the Chabagou basin during 1970 to 1989. The results show that the simulated results are almost identical to the observed data, and prove the reasonability and reliability of these two models and indicate that the established distributed hydrological model and the erosion model are practical and can be used in the arid area.

Key words Chabagou basin; digital elevation model; distributed hydrological model; distributed erosion model
