

A New Approach to the Simulation of Flash Floods in Tropical Humid Monsoon Catchments

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Abstract: Flash Floods, which observed during high intensities of monsoon rain in medium sized catchment areas, form a potential danger due to their short duration and their high peak discharges. Existing models can not simulate adequately flash floods. In this paper a new approach to the simulation of flash floods in tropical humid monsoon regions is developed. The model for flash flood simulation is conceived as a deterministic rainfall-runoff model. The determination and development of a theoretical time-area function for the flow concentration in a catchment model, which is set up mainly by means of topographical information (GIS), is emphasized in this paper.

The determination of the time-area function is derived as a mathematical function from the rising limb of a historical flood hydrograph. The inflection point of this part of the hydrograph can be identified topographically with a specific route through the main stream. The temporal and spatial flood routing can be combined.

Since the approach is based on topographically defined features. It requires no extensive hydrological measurements and can be verified simply. The deterministic approach planned deterministic is to a large extent scale independent and regional applicable. The method was developed on flash floods in catchments of Vietnam.

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