



High Risk Flash Flood Rainstorm Mapping Based on Regional L-moments Approach

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Difficulties and complexities in elaborating flash flood early-warning and forecasting system prompt hydrologists to develop some techniques to substantially reduce the disastrous outcome of a flash flood in advance. An ideal to specify those areas that are subject at high risk to flash flood in terms of rainfall intensity in a relatively large region is proposed in this paper. It is accomplished through design of the High Risk Flash Flood Rainstorm Area (HRFFRA) based on statistical analysis of historical rainfall data, synoptic analysis of prevailing storm rainfalls as well as the field survey of historical flash flood events in the region. A HRFFRA is defined as the area potentially under hitting by higher intense-precipitation for a given duration with certain return period that may cause a flash flood disaster in the area. This paper has presented in detail the development of the HRFFRA through the application of the end-to-end Regional L-moments Approach (RLMA) to precipitation frequency analysis in combination with the technique of spatial interpolation in Jiangxi Province, South China Mainland. Among others, the concept of hydrometeorologically homogenous region, the precision of frequency analysis in terms of parameter estimation, the accuracy of quantiles in terms of uncertainties and the consistency adjustments of quantiles over durations and space, etc., have been addressed. At the end of this paper, the mapping of the HRFFRA and an internet-based visualized user-friendly data-server of the HRFFRA are also introduced.

Key words: HRFFRA; Flash Flood; RLMA; rainfall intensity; Hydrometeorological homogenous region.