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Analysis of Flood Runoff Simulation of Radar Rainfall using Probabilistic Approach

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Recently, the use of radar and satellite data has been increasing in the hydrological field in order to provide accurate forecasts of rainfall and provide data rapidly. However, since Quantitative precipitation estimation includes very large uncertainties from observations, it is necessary to know characteristics of the uncertainties in radar QPE with accurate rainfall estimation for the reliable flood analysis. The purpose of this study is to investigate the effect of radar rainfall uncertainty on flood analysis by generating a radar rainfall ensemble and applying it to a distributed rainfall - runoff model.
It was showed that the rainfall ensemble is able to simulate the pattern of the rain-gauge rainfall as well as to correct the overall bias of the radar rainfall. However, the large error were occurred in a mountainous region which gave the overestimated bias and uncertainties. The results of runoff analysis excluding rainfall observations in mountain area showed better than those of including all the observations. Therefore, the rainfall ensemble by a probabilistic approach can provide reliable range for a simulated flood runoff and a useful information for decision making.

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