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**Evaluation of medium-range ensemble flood forecasting based on
calibration strategies and ensemble methods in Lanjiang Basin,
Southeast China**

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Summary

Ensemble flood forecasts by hydrological models using numerical weather prediction products as forcing data are becoming more commonly used in operational flood forecasting applications. In this study, a hydrological ensemble flood forecasting system comprised of an automatically calibrated Variable Infiltration Capacity model and quantitative precipitation forecasts from TIGGE dataset is constructed for Lanjiang Basin, Southeast China. The impacts of calibration strategies and ensemble methods on the performance of the system are then evaluated. The hydrological model is optimized by the parallel programmed ϵ -NSGA II multi-objective algorithm. According to the solutions by ϵ -NSGA II, two differently parameterized models are determined to simulate daily flows and peak flows at each of the three hydrological stations. Then a simple yet effective modular approach is proposed to combine these daily and peak flows at the same station into one composite series. Five ensemble methods and various evaluation metrics are adopted. The results show that ϵ -NSGA II can provide an objective determination on parameter estimation, and the parallel program permits a more efficient

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