The Preliminary Application of Ensemble Streamflow Prediction in Flood Forecast Based on AREM model

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Ensemble prediction technology is a new numerical weather forecast technology, which is widely used in meteorology abroad. Compared with determinate prediction, the ensemble prediction the ensemble prediction can not only offer the distribution of precipitation but also offer the quantitative reliability with the result. If the result of ensemble prediction is input into the hydrological model, So the probabilistic hydrological forecasting system can to be built, and make the hydrological forecasting more credible. Accordingly, under the support of Ensemble prediction technology, the research make the Ensemble Streamflow Prediction experiments on several flood process of Zhanghe Reservoir Basin in Hubei Province in flood season in 2008.

Zhang he river originated from the Nanzhang county of Hubei Province, its length is 202 km. Basin flows the northwest to southeast, its control area is 2980 Km2, Zhanghe Reservoir locates in Jingmen City in Hubei Province, its undertaking area is 2212 Km2. The average rainfall of basin is 1003.6mm, the rainfall distribution is not even in time and space, the main rainfall centralize in June, July and August, the times of the rainstorm is more, its intension is great, the flood go up and drop very quickly, the conflux time is short. The hydrological measure net in basin distributes evenly. The measure net help to study the short-term flood forecast.

During the experiment, we take the process of a flood in Zhanghe Reservoir from 21 to 25 in July 2008 as an example. Firstly we adopt radar and rain gauge to estimate rain in past, and then get different rain in the future 12,24, 36 hours with AREM model on the support of Ensemble prediction, lastly we make forecast test on flood process under condition that with considering different rain in the future 12,24, 36 hours. The results show that: the Ensemble Streamflow Prediction can offer the a series of quantitative results to make the customers reference, make forecasting result more credible.

Keywords : AREM model, ensemble prediction, Xin an-jiang model, Flood forecasting

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