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# Extended-range runoff forecast using climate model and hydrological model for the Yiluo River and the Beijiang River in China

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Extended-range runoff forecast is important for water resources management and energy planning. Ensemble hydrological forecast by coupling climate model and river basin hydrological model is a popular method since the 21 century. An experimental extended-range runoff forecast is underway, using an extended-range climate model developed by National Climate Center, China Meteorological Administration, and a semi-distributed hydrological model HBV-D The skill of runoff forecast were explored with indices of MSSS, ACC and MCRPSS for three experimental 51-day periods (June 1 to July 21, July 1 to August 20, and August 1 to September 20) in flood season for two rivers located in southern and southern China,. The results indicate that ensemble forecast is skillful in terms of multi-year mean, and MCRPSS sore is positive even > 0.5 for most days during the three periods. However, MSSS and ACC are only positive for the former days of each period, and the skillful time slice length varies with period and river location. These suggest that ensemble forecast is potential for extended-range runoff forecast compared with determined forecast. Among the three periods, skill of ensemble forecast is the highest for August 1 to September 20 for both rivers, in terms of it temporal mean. And the skill is higher for the Beijiang River than the Yiluo River for June 1 to July 21and July 1 to August 20, while lower than the Yiluo River for August 1 to September 20. This suggests that extended-range ensemble runoff forecast is skillful by simple coupling climate model and hydrological model without any pre-processing and post-processing.