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Sensitivity Analysis of Key Impact Factors of Flood Simulation in Huai River Basin China

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Flood simulation can replicate and forecast hydrological process in rivers, and characterize water level, peak flow and other important hydraulic elements. For a flood simulation model, it is crucial to understand its impact factors and their influence. Based on an established flood simulation model of Huai River Basin, China, in which featured with large reservoirs in tributaries and various flood detention areas around mainstream, this paper chooses channel roughness coefficient, tributary confluence and schedule rule of flood detention area, which are three typical impact factors of model stability and model accuracy. By using the single factor sensitivity analysis method to evaluate their influence, and also a historical flood event act as a simulation object, results show that (a) the suitable channel roughness coefficient in Huai River Basin is 0.01 to 0.05, (b) the amplitude of Shiguan tributary confluence flow rate should be 0.5 times to 1.5 times, (c) the schedule of Qiujiahu flood detention area has a great influence on water level process while little impact on the flow rate process in upstream channel. The analysis of impact factors has important reference value for improving the accuracy of flood simulation model of Huai River Basin.