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# PROBABILISTIC SCENARIO DEVELOPMENT TO ESTIMATE FUTURE RUNOFF IN THE YELLOW RIVER BASIN, CHINA

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**Abstract**

This paper focused on estimating climate change impact on the future water availability in the Yellow River Basin, China. However, climate change and its impact on water availability are subject to large uncertainties. In order to deal with uncertainties, scenarios were used to explore possible future states of climate variables under uncertainty, and probabilities were attached to represent uncertainty explicitly according to the Principle of Maximum Entropy. Probabilistic scenarios of future precipitation and temperature were developed based on the results of multiple Global Climate Models, and applied as inputs to a conceptual hydrological model to construct water scenarios using Monte Carlo simulations. The results showed that the annual average runoff change for the period 2010-2039 is between -18% to +7% compared to the baseline conditions. Seasonally, the runoff will decrease in spring and autumn, while increase slightly in summer and winter.

*Key words:* climate change, probabilistic scenario, runoff, Yellow River Basin

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