



## **Research on Dualistic Water Cycle Simulation in the Reception Basin of South-to-North Water Diversion under Climate Change**

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As social and economic activities is increasing day by day, interference to water cycle that made by human activities breaks principle and balance of original natural water cycle system, so that the existing water cycle system from dominated only by natural cycle to a new water cycle system dominated by combinational effect of natural and artificial system. The paper firstly developed the dualistic water cycle model in the reception basin of the Middle Route Project of South-to-North Water Diversion, which is developed under lots of problems such as inter-basin, large-scale, human activity, water cycle flux instability, and then parameter sensitivity analysis, parameter calibration, model validation are given. On the basis of dualistic water cycle model development, CMIP3 data is used to analysis temperature and precipitation, climate change scenario in the reception basin is scientifically given. Under the condition of climate change, the natural and artificial collateral water cycle effects by climate change are presented respectively. The results show that under climate change scenarios, runoff ratio changed greater in the water three geographical areas of Ziya River in Haihe River Basin, YongdingHe CeTian reservoir, and CeTian reservoir to Sanjiadian. Climate change impacts runoff in the reception basin as well as the quantity of water demand. From the view of result, climate change is not bringing large change to the water balance in the reception basin, and water supply could meet the 95% guarantee.