



Climate Change and Its Impact on Water Resources in Yixun River Basin

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Abstract: In recent decades, the global climate has changed markedly characterized by the increasing temperature. The water resources and the environment are all influenced significantly. As one of the most intense river basin and water-short region in China, the water resource is very sensitive to the climate change. In this paper, considering the less affected by human activities, the Yixun river is set as the research region. Based as the literatures of the future climate change in Haihe river, four climatic change scenarios for the next 50 years is established. A watershed-scale distributed hydrological model with physical mechanism-Spatial Averaging Watershed Hydrological Model is applied to simulate the hydrological cycle under the four different climatic change scenarios, and the influence of water resources in Yixun river is also analyzed. Under the premise of the precipitation keep stable, when the temperature raise one centimeter, the amount of yearly runoff will decrease by 5.19% and the yearly evaporation will increase by 0.58%. When the temperature increase one centimeter, the precipitation should increase 1.12% to make the amount of water resources stable. While the temperature is a constant, if the precipitation raise by 1%, the amount of yearly runoff and evaporation will increase by 3.37% and 0.91% respectively. The results show that in the scenarios characterized by the increasing temperature, the amount of water resources depend on the increasing extent of precipitation. The precipitation should increase 2.3% by 2020 and by 2050 the range should reach 3.4% to make the amount of water resources steady in Yinxun river.

Key words: Climate change; Water resources; Spatial Averaging Watershed Hydrological Model; Yixun river