



Future hydrology in Lanjiang River Basin, East China

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The hydrological cycle has been substantially influenced by climate change and human activities. Therefore, it is important to investigate the potential impact of future climate change on regional water resources or local hydrology. In this paper, the Soil Water Assessment Tool (SWAT) model is used as a tool to analyze the impact of climate change on future hydrology in Lanjiang River Basin, one tributary of Qiantang River Basin, East China for the future period 2011-2100. Precipitation, potential evapotranspiration and runoff are the three main components concerned. Reliability ensemble averaging method is used to obtain ensemble projections of 16 GCMs under three emission scenarios A1B, A2 and B1. The SWAT model calibration and validation outcome show reasonable performance. The final results show that annual river runoff will likely decrease almost under all emission scenarios. Particularly, at Jinhua Station, significant decreases of annual river runoff can be observed, indicating less water resources possibly available for the region in future. Simulated seasonal patterns show that the largest decrease will likely occur in winter while the largest increase will occur in summer, implying possible more floods or droughts in this region in future. However, it is also noticed that the changes are quite different under various emission scenarios and different stages of the future period, indicating large uncertainty involved in the impact analysis.