

Automated statistical downscaling in several river basins of the Eastern Monsoon region, China

ZONGXUE XU, PIN LIU & WENFENG LIU

College of Water Sciences, Beijing Normal University; Key Laboratory of Water and Sediment Sciences, Ministry of Education, Beijing 100875, China

zongxuexu@vip.sina.com

Abstract The tendency of global warming, as described by the IPCC (Intergovernmental Panel on Climate Change), will lead to changes in rainfall and other climate variables, which will be amplified in runoff. However, GCMs (global climate models) can only provide information at a coarse resolution and cannot be used directly in hydrological modelling. Statistical downscaling methods are used to fill the gap between large-scale climate change data and fine-scale hydrological applications. An Automated Statistical Downscaling (ASD) technique is adopted for a case study in three river basins of the Eastern Monsoon region, China. Results show that ASD is able to present seasonal variation of four variables during both calibration and validation periods. The efficiency of simulation for air temperature is better than precipitation due to the high degree of uncertainty within precipitation. Meanwhile, the performance of ASD model changes in different river basins, depending on geographic and meteorological factors in the study area; better simulation is obtained in areas with higher homogeneity.

Key words climate change; Eastern Monsoon region; ASD; ERA-40; GCMs