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## Impacts of spatial data resolution on simulated discharge, a case study of Xitiaoqi catchment in South China

G. J. Zhao<sup>1</sup>, G. Hörmann<sup>1</sup>, N. Fohrer<sup>1</sup>, and J. F. Gao<sup>2</sup>

<sup>1</sup>Department of Hydrology and Water Resources Management, Ecology Centre, Kiel University, Germany

<sup>2</sup>Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, Nanjing, China

**Abstract.** In this paper we analyse the effects of different spatial input data resolution on water balance simulation using a simple distributed hydrological model: PCR-XAJ model. A data set consisting of land use and digital elevation model at 25 m resolution of Xitiaoqi catchment in South China is used for investigation. The model was first calibrated and validated at 50 m cell size, thereafter an aggregation of the digital elevation model (DEM) and land use maps at 100 m, 200 m, 300 m, 500 m and 1 km are applied to evaluate the effects of spatial data resolution on simulated discharge. The simulation results at a grid size of 50 m show a good correlation between measured and simulated daily flows at Hengtangcun station with Nash-Sutcliffe efficiency larger than 0.75 for both calibration and validation periods. In contrast, the model performs slightly worse at Fanjiacun station. The increasing grid size affects the characteristics of the slope and land use aggregation and causes important information loss. The aggregation of input data does not lead to significant errors up to a grid of 1 km. Model efficiencies decrease slightly with cell size increasing, and more significantly up to the grid size of 1 km.

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