



Increasing flood risk of Chinese railway infrastructures from future climate change

Weihua Zhu (1,2), Kai Liu (1,2), Ming Wang (1,2)

(1) Academy of Disaster Reduction and Emergency Management, Faculty of Geographical Science, Beijing Normal University, 100875 Beijing, China, (2) State Key Laboratory of Earth Surface Processes and Resource Ecology, Beijing Normal University, 100875 Beijing, China

Railway infrastructure has a crucial role in economic and social development of China. However, they are prone to flood hazard, which is expected to become increasingly common because of climate change. This study presents an integrated framework to analyze the flood risk of railway infrastructures considering future climate. First, we used hydrological and flood routing modelling to generate historical flood inundation scenarios of China for the period of 1958-2010. Validations were performed based on recorded flood hazard data. The validated model was then used to predict future flood inundation scenarios based on future climate projections. The failure probability for each railway segment was then determined by considering engineering standards. We finally quantified future flood risk of railway segment based on failure probability and train flow. Risk curve across different return periods of railway infrastructure was generated, which is of guiding significance for flood disaster prevention and reduction of railway infrastructures.