



## Global flood hazard map comparison for China

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In this study we carry out a comparison of global flood hazard maps for China. This is important because floods are among the most frequent and damaging natural hazard event in the world. Between 1980 and 2016, floods caused 23% of the overall economic losses and 14.3% of the fatalities due to natural hazards worldwide (Munich Re, 2017). In 2016 economic losses from flooding amounted to \$56bn globally. Of these, \$20bn occurred in China alone (Munich Re, 2017). A precondition to any risk assessment is the availability of quantitative information on the flood hazard. National or regional scale mapping of flood hazard is at present providing an inconsistent and incomplete picture of flood risk that is not fit for consistent and equitable decision making at an international level. With the availability and improvements of global datasets, numerical algorithms, computing power, and coupled modelling frameworks global flood hazard models have been developed over the past 5 years. There is now a significant demand for testing of the global hazard maps generated by these global flood hazard models in order to understand their applicability for international risk reduction strategies and for reinsurance portfolio risk assessments using catastrophe models.

The study addresses this demand by comparing hazard maps of several return periods for China. China poses many challenges to flood modelling: data scarcity; a variety of flood mechanisms spanning many climatic zones; complex topography; strong anthropogenic influence on the flood regimes, for example through river training; and a very high concentration of exposure. Key questions addressed in our study are: How large are the differences or similarities between the global flood hazard models? Can differences between the models be explained with respect to data used, methods, and model structure? How do these differences affect the reinsurance industry? For the first time, this study comprises both publically available global flood hazard models (e.g., GLOFRIS, ECMWF, CAMA-UT, JRC, and CIMA-UNEP) and industry models (KatRisk, Fathom and JBA Risk Management) applied within the wider re-insurance industry.