



## **Development and evaluation of a framework for global flood hazard mapping**

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Nowadays, the development of high-resolution flood hazard models have become feasible at continental and global scale, and their application in developing countries and data-scarce regions can be extremely helpful to increase preparedness of population and reduce catastrophic impacts.

The present work describes the development of a novel procedure for global flood hazard mapping, based on the most recent advances in large scale flood modelling. We derive a long-term dataset of daily river discharges from the global hydrological simulations of the Global Flood Awareness System (GloFAS). Streamflow data is downscaled on a high resolution river network and processed to provide the input for local flood inundation simulations, performed with a two-dimensional hydrodynamic model. All flood-prone areas identified along the river network are then merged to create continental flood hazard maps for different return periods at 30'' resolution. We evaluate the performance of our methodology in several large river basins by comparing simulated flood maps against both official hazard maps and satellite-derived flood maps. We further investigate the sensitivity of the flood modelling framework to different parameters and modelling approaches and identify strengths, limitations and possible improvements of the methodology.