



A fast-track flood risk assessment

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Using a large ensemble of regional climate model (RCM) simulations (weather@home HadRM3P model), we evaluate the performance of three different river routing models (RRM; Cama Flood, SWAT and LISFLOOD) over the South Asia region, with particular focus on India and Bangladesh. Simulated daily rainfall, temperature, runoff and/or potential evaporation from HadRM3P are utilised as input variables for the river routing models. Drawing on earlier work where we validated the model performance with regard to rainfall and temperature over South Asia, here we test the fidelity of the combined RCM-RRM system to simulate river flow by comparing with available river flow data from the India and Bangladesh Met departments. In addition, the RCM-RRM system is applied to estimate the change in risk of an event like the Mumbai Flood in August 2017 occurring under current climate conditions compared to counterfactual conditions. We separate the influence of GHG-induced changes in risk from those caused by anthropogenic aerosols which have shown to be a potent modulator of the Asian monsoon. Such tested, the RCM-RRM system is going to be an integral part of the rapid attribution framework established by the World Weather Attribution team, enabling us to do fast-track flood risk assessment for the first time.