

Uncertainty in climate change impacts on peak discharges

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Abstract

It is crucial for flood management that information about the impacts of climate change on peak discharges and the uncertainties herein becomes available. This has been achieved by using information from different Regional Climate Models for different emission scenarios to assess the uncertainty in climate change for the Meuse River in North-western Europe. A hydrological model has been used to simulate flows for current and changed climate conditions. The uncertainty in the hydrological model is assumed to be represented by the difference between observed and simulated discharge and incorporated in the uncertainty analysis through the model parameters. Climate change results in an increase of the 100-year flood of about 30%. This increase is primarily caused by an increase of precipitation in winter. The predictive uncertainty in this impact is about 20% resulting from uncertainties in climate change (about 50%) and uncertainties in hydrological model parameters (about 50%).