



## **An integrated modeling framework to assess future changes in flood and drought risks on a pan-European scale**

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Climate model simulations suggest that in the future extreme precipitation events may be more frequent and more intense. To investigate what the consequences of these changing climatic conditions would be for the associated risk of floods and droughts in Europe, we are developing an integrated modeling framework that combines regional climate predictions with a physically-based rainfall-runoff model. The climate data are derived from a very high-resolution simulation experiment of the regional climate model HIRHAM. To avoid any adverse effects from systematic biases in the model, the climate data are compared with a high-resolution network of synoptic weather stations. After any bias correction, the data are used to drive the hydrological model LISFLOOD. By analyzing the changes in the runoff statistics by means of extreme value analysis we will be able to make an assessment of the expected changes in flood and drought hazard. The changes in hazard are then combined with estimates of the vulnerability and exposure to yield an assessment of the expected changes in flood and drought risks. We present an outline of the integrated modeling framework, and show some initial results of a pilot study in the Meuse catchment. In the near future we will extend the methodology to other river basins across Europe.