Geophysical Research Abstracts
Vol. 19, EGU2017-14845, 2017
EGU General Assembly 2017
© Author(s) 2017. CC Attribution 3.0 License.

# Flood Risk in the Danube basin under climate change

Kai Schröter (1), Michel Wortmann (2), Maria del Rocio Rivas Lopez (1), Stefan Liersch (2), Dung Viet Nguyen (1), Stephen Hardwick (3), and Fred Hattermann (2)

(1) German Research Centre for Geosciences GFZ, Section 5.4 Hydrology, Potsdam, Germany (kai.schroeter@gfz-potsdam.de), (2) Potsdam Institute for Climate Impact Research PIK, Potsdam Germany, (3) Imperial College, Faculty of Natural Sciences, Department of Physics, London, United Kingdom

The projected increase in temperature is expected to intensify the hydrological cycle, and thus more intense precipitation is likely to increase hydro-meteorological extremes and flood hazard. However to assess the future dynamics of hazard and impact induced by these changes it is necessary to consider extreme events and to take a spatially differentiated perspective.
The Future Danube Model is a multi-hazard and risk model suite for the Danube region which has been developed in the OASIS project. The model comprises modules for estimating potential perils from heavy precipitation, heat-waves, floods, droughts, and damage risk considering hydro-climatic extremes under current and climate change conditions. Web-based open Geographic Information Systems (GIS) technology allows customers to graphically analyze and overlay perils and other spatial information such as population density or assets exposed. The Future Danube Model combines modules for weather generation, hydrological and hydrodynamic processes, and supports risk assessment and adaptation planning support.
This contribution analyses changes in flood hazard in the Danube basin and in flood risk for the German part of the Danube basin. As climate change input, different regionalized climate ensemble runs of the newest IPCC generation are used, the so-called Representative Concentration Pathways (RCPs). They are delivered by the CORDEX initiative (Coordinated Downscaling Experiments). The CORDEX data sample is extended using the statistical weather generator (IMAGE) in order to also consider extreme events. Two time slices are considered: near future 2020-2049 and far future 2050-2079. This data provides the input for the hydrological, hydraulic and flood loss model chain. Results for RCP4.5 and RCP8.5 indicate an increase in intensity and frequency of peak discharges and thus in flood hazard for many parts of the Danube basin.