Geophysical Research Abstracts
Vol. 20, EGU2018-18434, 2018
EGU General Assembly 2018

A standardized hydrological model framework for the updating flood risk maps in southern Germany

Franziska Villinger, Jürgen Ihringer, and Erwin Zehe
KIT, IWG, Hydrology, Germany (franziska.villinger@kit.edu)

The federal state of Baden-Württemberg (BW) is required to provide legally binding flood risk maps. The latest version of these maps was finished in 2015 on the basis of very heterogeneous hydrological data sources. A new update is planned which uses a consistent data basis for the entire 11,000 km of stream length. Calculation for such a large area requires a special, standardized modelling framework. The conceptual river basin model developed by hydrologists of the Karlsruher Institute of Technology is used as basis. The model is a conceptional hydrological model which is widely used in BW to design measures for technical flood protection. The model framework is applied successively to river basins up to 500 km^2 until the entire area corresponding to the 11,000 km stream length is modelled.
So far the model mainly relies on calibration of parameters to discharge response at measured stream gauges. However, in small catchments with an area of less than 10 km^2 very few stream gauges are established and hence simulation of discharge in these catchments can only be transferred and is highly uncertain. One possibility to deal with this challenge could be to characterize soil hydraulic properties and associated runoff coefficients with the help of pedotransfer functions using commonly available soil data and maps. A different approach could be to adapt the model structure itself to accommodate hydrological process understanding, for example to distinguish between flood events that are intensity-controlled as opposed to storage-controlled. We test the applicability of both approaches on the subset of the small catchments that are gauged, for example in the first approach we use ROSETTA on a local soil map with a scale of 1:25,000.