Geophysical Research Abstracts Vol. 20, EGU2018-16361, 2018 EGU General Assembly 2018 © Author(s) 2018. CC Attribution 4.0 license.



Compartment analysis to predict flood generation in a karst catchment

Paul Knöll and Traugott Scheytt

Technische Universität Berlin, Applied Geoscience, Berlin, Germany (paul.knoell@tu-berlin.de)

A knowledge of key factors controlling runoff generation is vital for effective flood warning, especially for karst catchments. However, runoff generation can be a very complex process involving a vast range of factors varying in space and time. Additionally, the knowledge of the size of surface water and subsurface catchments are crucial for a profound early warning system.

In order to better understand the system behaviour of the Lauchert karst catchment in the Swabian Alb, SW Germany, we analysed a wide range of data, including spatially distributed precipitation data, landuse information, soil properties, changes of soil water storage, groundwater level changes, hydraulic aquifer properties, results of tracer experiments, as well as spring discharge and stream runoff.

It was possible to show that in most conditions runoff is generated only within the subsurface catchment. For modelling purposes, this is vital information, since the subsurface catchment differs significantly from the surface catchment in parts of the studied area. The data suggests further that runoff generation is largely controlled by the soil zone and the aquifer. Water storage in the soil, and flow through the unsaturated and saturated zone of the subsurface have the most important effect on the hydrograph of the river Lauchert. Even for high intensity rainfall events, the subsurface passage is the most important flow path.