



## **Viennese Seminars in Hydrology**

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Spatial and temporal modelling of precipitation  
for rainfall-runoff prediction

**Prof. Dr. Uwe Haberland**

Leibnitz-University Hannover, Germany

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TU Wien, Karlsplatz 13 HS 7 (Hof 2, Stiege 7)

Univ.Prof. Dr. Günter Blöschl & Univ.Prof. Dr. Karsten Schulz

# Short Abstract

## **Spatial and temporal modelling of precipitation for rainfall-runoff predictions**

Representative rainfall data in space and time are basic condition for reliable flood predictions using rainfall runoff modelling. This contribution discusses methods for optimal spatial estimation and for temporal synthesis of short time step rainfall for flood simulations. First, methods for the estimation of spatial rainfall distribution combining point measurements and weather radar data are presented. The value of the merging products is evaluated based on cross validation of precipitation and on hydrological modelling. The results show that using radar data as additional information improves significantly the spatial rainfall representation but leads not generally to a better performance of the hydrological model. Second, a parameter parsimonious stochastic rainfall model is presented which allows an efficient simulation of hourly space-time rainfall for observed and unobserved locations. Simulated precipitation is evaluated based on rainfall statistics and hydrological simulations. The results show that the stochastic rainfall can be used very well for derived flood frequency analysis to obtain reliable design floods, especially if the hydrological model is calibrated using statistical flood information.