

Improving hydrological modeling with radar data

Marc Scheibel

Water Resources Management & Flood Protection, Wupperverband, Germany

E-mail: schei@wupperverband.de

In the analysis of single heavy rain events the use of radar data to improve knowledge of the areal precipitation is already common. Also hydrological modeling for such individual events increased. For the basic use of precipitation data from weather radar measurements, the applications are far more in the field of updating hydrologic forecast-models and including nowcasting. To use Weather radar data for the general calibration and simulation of hydrological models is so far still accompanied by much skepticism. The fear is the need to calibrate and maintain “two” models: one with station data and once with weather radar data. Even there is there is the big discussion about the different time and spatial distribution and the relation between the precipitation measured by weather radar in higher altitudes and on the ground by the pluviographs. However, due to the different input data not only new uncertainties arise, because experiences already show partially: the possibility of calibration is only given by the additional use of weather radar data (small-scale variable events). By now over 10 years of calibrated weather radar data in NRW gives also possibilities of long-term evaluation of hydrological models. This can be used in comparison with terrestrial precipitation data for dimensioning issues, and also for the identification of peak flows from different weather conditions (time of concentration of different sub-catchments).

The presentation will therefore show and explain the experience with the combined and comparative hydrological modeling in different scales of

- individual heavy rainfall events in the aftermath
- flood simulations in the online case
- Calibration of hydrological models
- Results of long-term simulations
- Compare and contrast simulations with station data

that the topic is up for discussion.