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Spatial Interpolation of Precipitation using Rain Gages and Radar for the 2002 Elbe Flood Event

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This investigation deals with spatial estimation of short-time increment precipitation for flood analysis and modelling. Precipitation data of the Elbe storm from 10th to 13th of August 2002 have been used here, which has lead to the extreme Elbe flood event. Interpolations of daily and hourly precipitation using conventional and geostatistical methods have been carried out and compared. The paper focuses on the spatial interpolation of hourly precipitation with limited point observations using kriging with external drifts from the topography of the region, from the denser daily station network and from weather radar data. Cross validation shows, that for daily precipitation all interpolation methods perform similar good. For hourly precipitation estimation the geostatistical methods have smaller errors than conventional methods. The improvements become very distinct, when external drift kriging is applied using additional information from the daily station network and from the weather radar.