

4.12 TOWARDS A COMMON PROCEDURE FOR THE EVALUATION OF DAMAGE-PRODUCING EVENTS

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There is a growing number of requests for an analysis of damage producing events and its classification as “normal” (within the limitations of design standards and should be therefore handled by existing structures) or “exceptional” (known as force majeure) for liability purposes. Since this classification is crucial for the decision who is liable for occurred damage, a standard procedure is required for transparent decisions processes on compensation, which is also accepted by courts and can be a basis for accords or even verdicts.

Damage sites regarding convective events - may be very local and therefore, the rainfall data need to have a high spatial resolution 1 x 1 km or better). Also, flow paths or the whole hydrological catchment must be considered since a damage site may differ from the location of the highest precipitation observed.

A suitable procedure should include the following minimum standards:

- Initial conditions must be known (soil wetness, current capacity of the sewer system etc.).
 - The basic data for the event analysis should span the entire event, including at least 24 hours before damage occurrence in order to include a potential time of water accumulation on the ground and possible basin retention times.
 - Radar data are required with a time step of 5 or 6 minutes or less so that statistical assessments can be performed.
 - Radar data must be quality controlled according to the state of the art of radar data processing. This includes corrections for clutter, blockage, attenuation, hail, bright band (if applicable), temporal interpolation and second trip.
 - Rain gauges must be used as ground reference for radar adjustment when reflectivity data are used. Adjustment has to be performed according to national and international regulations. If available, stations close to the damage site of all operators shall be included. Because adjustment procedures are sensitive to rain gauge data, the measurements from rain gauges must be quality controlled as well. If the gauge network density is less than 1 gauge per 10 km², a sensitivity analysis of the result is required, giving the 90%-percentile of the adjustment procedure.
 - For the classification, a extreme value statistics / design storms of locally representative stations (point or grid) are preferable to the official statistics grid (like KOSTRA in Germany). The classification is then performed for the highest value for each relevant pixel for different selected integration periods,
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ranging from 5 minutes to 24 hours. A relevant pixel is defined as a pixel above the damage site and upstream of the damage site. For events with strong winds, upwind pixels also have to be included.

This procedure allows the intercomparison of events, based on a similar data quality standard. Further work needs to formulate the detailed minimum requirements of this procedure as an internationally acknowledged guideline.
