



## Precipitation based hydrometeorological services of the Deutscher Wetterdienst for water management and flood protection in Germany

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Inland water management agencies of the German "Länder" address flood forecast and prevention in order to mitigate flood risks. Additionally their risk management activities also address assessment of low flow situations (droughts) and freshwater resources availability. Hydrometeorological services for these hydrological applications are operationally provided by the Deutscher Wetterdienst (DWD) and comprise: High spatially and temporally resolute observational monitoring products and quantitative predictions of precipitation, evaporation and snow cover (storage and melting).

The DWD hydrometeorological services processing chain spans from in situ and remotely sensed observations via numerical weather forecast to runoff models. The best precipitation analysis for Germany is achieved by combining weather radar and in situ observations; this QPE product 'RADOLAN' is available near-realtime on an hourly basis. It is currently being spatially extended to cover transboundary river basins in the hydrological catchment area of Germany and will also be used in nowcasting mode.

The NWP model COSMO-DE uses RADOLAN precipitation analysis products and provides precipitation forecasts in 2.8 km spatial resolution. Ensemble based weather predictions providing forecast uncertainty information are more and more accepted by hydrological users. The model SNOW uses precipitation observations in order to improve snow melt forecasts. Time series of precipitation and extreme value statistics complete the hydrometeorological services supporting risk management and climate change assessment in Germany.