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A scheme to conserve climatologically consistency of precipitation over different temporal scales for radar-derived precipitation rates

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The processing of quantitative precipitation estimates (QPE) obtained from radar-derived precipitation rates reached in most national weather services an operational level. Nowadays, a growing number of operational questions and decisions in the fields of flood risk forecasts, sewer and water management rely on these QPE products.
The main goal of the QPE processing is to improve the quality of radar-derived precipitation rates to a respectable representation of precipitation in time and space. Mostly this processing focuses "only" on the suppression of the well known radar artefacts at the measuring scales of 5 minutes to 1 hour. Seldom climatological aspects of precipitation are considered in the operational processing which makes a post processing of the QPE for climatologically applications necessary.
We present a simple approach to derive precipitation fields from radar and gauge measurements. The resulting QPE are considered as consistent over different temporal scales and with minimized errors at each scale. The scheme consists of two steps. The first step is to achieve climatological reasonable precipitation fields for precipitation sums of one month or for longer periods.
In the second step a temporal disaggregation is applied at the scales at which gauge measurements are available.
We used the RADOLAN rw-product from the Deutscher Wetterdienst as a first test dataset. The scheme was applied for an extended region around the Free State of Saxony, Germany.
We compared our results to the daily gauge-based raster datasets REGNIE and RaKliDa.
Our results are promising in regard to the complexe issues of suppression of radar artefacts at certain temporal scales and to achieve simultaneously a good representation of the precipitation field.