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Radar based rainfall nowcasting for hydrological applications over river catchments in Germany

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Radar rainfall nowcasting at short lead times plays a vital role in the fields of weather prediction and flood forecasting. Since the predictability of rainfall events can vary significantly within time and space it is crucial to get insights about the scale dependence of the analyzed systems.

To tackle this need a scale based rainfall tracking algorithm is introduced for flood forecasting. The algorithm is based on radar composits from different sources, namely the X-band radar operated by the University Bonn and the C-band radar network of the German Weather Service. The spatial resolution is set to 1 km. The results from the tracking algorithm are utilized for forecasting the observed precipitation field following the motion of the field by advecting only those fields that are persisting during the last analyzed time steps. The gathered information about sources and sinks is utilized to judge the uncertainty of the produced nowcast. Since it cannot be expected that the approach is skillful at the grid scale, first ideas are shown how to perform a skillful verification to better judge the accuracy taking the scale dependence into account.