



Pattern Recognition for Radar Data

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Flash floods are usually caused by convective cells which have small horizontal extension but high gradients of rain rate within a short range. Even though radar measurements have the highest potential for cell recognition and identification, calculating rain rate from radar reflectivity is a problem, as is well known, especially if only one mean Z-R-relationship is used for a whole radar image. Very often convective cells are embedded in stratiform fields. A comparison of their drop size distributions, which are responsible for the Z-R-relationship, can show extremely different results. In a first step, we wish to distinguish whether a rain field is convective or stratiform. To this end a pattern recognition algorithm has been developed which uses the volume scan every 15 minutes from the weather radars of the DWD. Data is based on CAPPIs with a resolution of 1 km³ up to 12 km height, generated from the polar data. The new pattern recognition scheme uses reflectivity maxima, similarities, vertical profiles and optionally data from radiosondes which provide information of the melting level. As the transition of stratiform areas to convective cells within a radar image is not abrupt, a small ring of transition is built around each convective cell. The result is a map which flags each radar pixel as either convective or stratiform.