



Verification of precipitation from the NWP nowcasting system at the DMI for a wet summer period

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At the Danish Meteorological Institute the operational nowcasting modeling system utilizes a newly introduced nudging-based radar-assimilation technique (Korsholm et al., 2014) in the NWP model. In this method radar-derived rain-rates are used to estimate a vertical profile of horizontal divergence that the horizontal divergence in the model is nudged towards. Verification of precipitation forecasts by the nowcasting system using this technique is presented for 17 days of August 2010 and compared to a reference where the radar nudging is excluded. In Denmark this period in 2010 was particularly wet with several heavy precipitation events with observed precipitation above 36 mm of rain during one hour. Three of these events are studied in some detail. The verification is based on fractional skill scores which give scale-selective scores of the spatial skill of the forecasts based on radar-derived precipitation fields. The study shows that for precipitation values above the 95th percentile the nudging technique has a strong impact on the spatial skill of the forecast in the first 1-2 hours, and a smaller but still clear impact on the 3-4 hour forecast length where skill persists in the forecast on scales down to tens of kilometers. It is clear that the spatial smoothing of the model reduces the forecast quality, and some indications of positive bias in precipitation intensities are observed.