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Assessing added value of high resolution forecasts

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The merits of current high resolution forecasts seem obvious. The direct model output (DMO) has a degree of realism that is very appealing for most end-users of meteorlogical data. However, it is not at all obvious to show that the high resolution forecast really contains more information. Common verification methods tend to favour smoother forecasts, amongst others due to the double penalty problem, especially for localised phenomena such as precipitation. There are several approaches that aim to overcome this problem, either by assessing a region around the actual data point in the case of neighbourhood methods, or by considering the spatial structure of rain areas, so one can compare quantities such as the area, 'center of mass' and angle of a feature between the forecast and (radar) observation. Model Output Statistics (MOS) focuses more on the predictive potential or the information content of a forecast. This approach objectively weighs different forecast quality measures and as such can be seen as an extension of the previously mentioned fuzzy verification methods. For a suitable choice of predictors double penalty issues need not play a role.

In this study the output of a high resolution Harmonie suite (2.5 km) is compared to the current operational model at the KNMI (Hirlam 7.3) using regular station-based verification, neighbourhood and object-based methods and MOS. The information content is assessed and compared using (Extended) Logistic Regression (ELR).