



Verification of area-based probabilistic first-guess severe weather warnings from MOGREPS

R. Neal and K. Mylne

Met Office, United Kingdom (robert.neal@metoffice.gov.uk)

The Regional component of the Met Office Global and Regional Ensemble Prediction System (MOGREPS-R) has been used to produce an area-based probabilistic first-guess warning system for severe weather (MOGREPS-W). MOGREPS-W produces severe weather warnings for all 147 county/unitary authority areas in the UK, using criteria from the National Severe Weather Warning Service (NSWWS). The aim is to give forecasters advanced warning of upcoming severe weather, offering the opportunity to increase the lead time of publicly issued weather warnings. This presentation focuses on the verification of the area forecasts, and in particular the affects of area size on forecast accuracy. MOGREPS-W area forecasts are defined as the probability that the event will occur at any model grid-point within the county area. Forecasts are verified against a 2km model analysis, whereby a forecast event verifies if it is observed in $\geq 1\%$ of the analysis grid-points within the same area. Considering the area probability definition and verification methodology, there should be minimal difference in forecast accuracy of large and small counties, assuming the model has good spatial accuracy. To test this assumption, three groups of counties (large, medium and small) have been verified individually for both wind gust forecasts $\geq 40\text{mph}$ and 6hr precipitation forecasts $\geq 8\text{mm}$. Relatively low threshold events for severe weather have been used in an attempt to increase the number of forecast and observed events. Results (reliability, resolution, brier score and ROC area) show that larger counties have better forecast accuracy than smaller counties. The affects of county size are an important consideration for forecasters when making area forecasts.