



## **The potential for long-term monitoring of precipitation forecasts against radar data**

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At the Met Office the Fraction Skill Score (FSS) is a routinely computed spatial verification metric that enables the comparison of forecasts of different resolutions against a common spatial truth (radar rainfall analyses). This means that high-resolution forecasts are not penalised for representativeness errors that arise from the double penalty problem, and allows any inherent uncertainty of small scales to be taken into account. Spatial methods enable close forecasts to receive some credit, instead of none. They also allow higher thresholds, that are potentially associated with high-impact, to be assessed.

The presentation will provide an objective critique of FSS results to date comparing three model configurations: 12, 4 and 1.5 km. A recent study of 6-h precipitation showed that the convection-permitting (4-km) Unified Model (UM) forecasts are better than the 12-km UM, and that the spatial scale at which the models have sufficient practical skill is typically 10 km better for the high-resolution forecasts. The diurnal cycle of convection was studied and it was found that km-scale models are superior for forecasting afternoon convection, especially for accumulations exceeding 4 mm/6h. Hourly accumulations from the nowcasting system are now also being analysed.

The presentation will also highlight the difficulties of using radar as a long-term baseline (as compared to gauges) for monitoring model forecast performance and improvements, and suggest some options for mitigating the impact of a fluctuating baseline.