# Using time-lag ensemble techniques to assess the behaviour of high-resolution precipitation forecasts

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High-resolution forecasts can vary considerably from run to run. Excessive inconsistency is undesirable, especially for the forecaster, who seeks out similarities between successive runs to gain confidence in model guidance.

The Met Office 4-km Unified Model runs every 6 hours out to t+36h. Five member time-lag ensembles are created for the most recent 6-h period to study these inconsistencies between forecasts. Mean, maximum and Probability of Precipitation (PoP) forecast fields are generated and compared with the verifying radar accumulation. Each of the individual forecasts are also evaluated. We attempt to assess the contribution of each forecast to the ensemble, and in particular whether the number of misses are reduced. We also want to understand the high incidence of false alarms and if anything can be done to reduce their impact on forecaster confidence.

In tandem with this ensemble diagnostic approach, both conventional and newer spatial-based verification methods and measures are used to further help isolate the forecast signal. Initial results would seem to suggest that there may be real benefits in harnessing the inconsistencies (as a positive) by considering them as "spread", and, in so doing enhancing skill, at or near the grid-scale. It is speculated that the process of temporal aggregation acts in a similar fashion to spatial upscaling, all be it in a dynamically flow-consistent manner.