A new method for the evaluation of air quality forecasts

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Evaluation of air quality forecasts against observations is essential to identify model errors and define limits of predictability. Traditional grid-point verification methods, such as root-mean-square error, are not suitable for pollution fields which are often characterised by sub-grid scale structures. For example, a predicted pollutant structure may be correct in terms of its amplitude and timing but if it's position is poorly predicted it will suffer from the 'double penalty' problem resulting in a poor root-mean-square error. This problem is particularly bad for high resolution numerical models which produce structures which are of higher resolution than the observing network.

This aim of this work is to create a new method for the verification of air quality forecasts based on existing quantitative precipitation forecasting evaluation methods. A Kriging interpolation method is combined with an object-based quality measure, which considers aspects of the structure, amplitude and location of the pollutant field. Results from the quantitative evaluation of air quality forecasts using this new method will be presented.