A scale-based distortion metric for mesoscale weather verification

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ABSTRACT

Verification of high-resolution mesoscale weather forecasts has become increasingly important in recent years due to increases in model resolution and modelling of mesoscale physical processes. Traditional verification scores such as mean square error or variance have limited use in terms of assessing the value of these types of forecasts, and can actually produce misleading results. In order to get around this problem, new verification measures are currently being developed.

One avenue of verification development has been the use of algorithms based on distortion- or optical-flow. While these methodologies may show promise when applied to test cases such as those from the Spatial Forecast Verification Intercomparison Project, they may encounter less favourable results when applied to meteorological fields with field motion/placement error dependent upon scale.

This talk will address a new type of verification measure combining scale-decomposition and a distortion- or optical-flow based technique to characterize distortion error with scale. The capability of this technique to perform will be assessed using both simple and more complex idealized examples. Comparisons with existing methodologies will be discussed along with links data assimilation.