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Accounting for temporal phase errors in the verification of surface parameters with the HARMONIE-AROME model

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Fuzzy verification techniques are a well established tool to verify spatial forecasts.
Among these methods upscaling and neighbour-based verification approaches have been applied
to give credit to "close" forecasts and avoid the double penalties commonly seen in traditional verification methods (Ebert, 2008).
However, there is a lack of studies that consider discrepancies in the time domain (e.g. phase shifts) between forecast and measurements.
In this contribution we implement a simple method to account for phase errors in time for the verification of surface parameters with the verification software MONITOR in the HARMONIE-AROME forecast system, used operationally at DMI.
A neighbourhood approach in the time domain is considered, in which forecast and observations are matched inside a relaxation time window.
A local network of high-frequency (10 min) observing stations is used, covering most of mainland Denmark and parts of Greenland.
Different neighbouring intervals are considered, ranging from 30 min up to 3h. Operational forecasts from DMI (Yang et al, 2017, 2018) and ECMWF for Denmark and Greenland are examined. From case studies and monthly statistics, we investigate the usefulness of the approach in revealing the true value of high resolution forecasts in the prediction of severe weather events such as storms.

References:

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