Geophysical Research Abstracts
Vol. 20, EGU2018-14836, 2018
EGU General Assembly 2018

Efficient spatial interpolation of point MOS forecasts

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Most statistical post-processing techniques are based on point-wise observations and the results are defined either point-wise or only near to the observing sites. For further use of the results by meteorologists, by computer algorithms, or by merely visual purposes, the processed values need to be interpolated in to a regular geographical grid. When the post-processing is done for model forecasts that are originally presented in regular grid, it is natural to interpolate the point values back to the original or even to somehow enhanced version of the grid. This spatial interpolation needs to account for the natural variability and correlation structure of the post-processed variables as well as topographical features, such as altitude and land-sea masks. We will describe methods for gridding point MOS forecasts back to the forecast grid, as well as the use of gridding in defining optimal model blends based on point verification measures. In addition, we describe the fast gridding algorithms for operational use at Finnish Meteorological Institute based on hierarchical linear models and regression Kriging.