Geophysical Research Abstracts
Vol. 14, EGU2012-9817, 2012
EGU General Assembly 2012


# Estimating 2m Temperature Boundaries from Ensemble Forecasts

S. Sperka and G. Spreitzhofer
Institute for Meteorology and Geophysics Vienna, University of Vienna, Vienna, Austria (stefan.sperka@univie.ac.at)

The aim of this work was, to develop a method that forecasts confidence intervals for the 2m temperature with a high spatial resolution. Using GFS ensemble prediction data, the MetGIS downscaling tool and temperature observations from the Greater Alpine Region, a verification experiment was realized to evaluate the forecast spread. All ensemble forecasts, the control run and the deterministic forecast, which make up the forecast spread, were downscaled to station locations and verified, resulting in various forecast errors for each forecast time and each station. The best forecast for each verification point and time, which is the one with the smallest absolute error, was sorted out, leading to a sample of minimum absolute forecast errors. Although it is not possible to determine which ensemble member will perform best beforehand, information about the maximum deviations of these best forecasts is important, because the forecast spread has to be enlarged by this margin.

Analysis of these errors showed that the deviations of the best forecasts are bigger at the start of the forecast range and decrease with longer forecast lead times. This means, that the forecast spread at the start of the forecast is not wide enough to take analysis, forecast and model errors into account, and this margin has to be considered in the downscaling process. In order to do so, the 90% percentile of the absolute errors derived from the most accurate forecasts at each time was estimated and found to be spatially quite constant. This minimum error was added to the downscaled forecast spread, yielding a temperature range for which the observed temperature lies outside in only 10% of cases.

Further verification proofed that this is true in a statistical sense, and a comparison with climate data showed that these temperature range forecasts can outdo climatological forecasts up to 13 days.