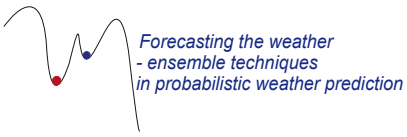
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-23, 2011
11th EMS / 10th ECAM



Increasing Certainty - Combination methods for reliable probabilistic wind production forecasts

B. Greaves, J. Collins, J. Parkes, and L. Landberg
GL Garrad Hassan

Previous work in forecasting has shown that intelligent combination of the outputs from multiple deterministic forecast models can give a final deterministic forecast that is significantly more accurate than any of the constituent members. In this study, the application of existing forecast combination methods to probabilistic wind forecasts is considered.

Building on previous work in the areas of ensemble numerical weather prediction (NWP), forecast uncertainty and forecast combination, this study looks at methods for post-processing the output from deterministic and ensemble NWP models to obtain probabilistic wind speed forecasts, and then combining these forecasts and their associated uncertainties in order to produce accurate power production forecasts with good estimates of uncertainty.

The forecast methods are assessed on their ability to generate not only accurate central "best estimate" forecasts of wind speed and power but also valuable information about the confidence with which those forecasts are being made.

It is demonstrated that through using appropriate methods for post-processing weather forecast data from both deterministic and ensemble NWP models, it is possible to obtain accurate probability distribution estimates for the model outputs and, using these, to provide accurate and valuable uncertainty information about the energy production forecast to the end-user.