Added Value Products by Forecasters

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There was much discussion at ECAM 2001 about accuracy of numerical weather prediction products and whether the forecaster can add sufficient value to direct model outputs. Automated products are almost adequate and convenient for many clients. The role of the forecaster in the future is providing the added value of final products. It is necessary to demonstrate the importance of forecasters in the production line of value added products and to search for ways of measuring the added value (see report on the 7th meeting of the WGCEF, Hungary, 2001). Therefore it is needed to develop methods of verifying the meteorologist's final forecast.

ZAMG, Vienna, have been developing an optimisation procedure to add value to automatically generated final products since 1999. The basis of this optimisation is a so-called 'result archive' which covers the predicted sensitive weather in the form of weather symbols and maximum and minimum temperatures, up to D+10 for several locations over the territory of Austria. These locations represent small forecast areas. The input to this 'result archive' is done by the forecaster in accordance with direct model output from a global and a mesoscale model, model output statistics (MOS), Kalman filtering, an Ensemble Prediction System (EPS) and pseudo-temperatures of the ALADIN Lace model. The final product should contain the added value. A number of products are automatically based on the 'result archive' in order to optimise the production of weather forecasts.

To define the role of the forecaster in the context of providing added value products it is necessary to find verification schemes to measure added value. Figure 1 shows the performance of MOS, the direct model output of the ECMWF operational model and the final product by the forecaster (MET) relating to forecasts of maximum temperature. The values predicted by the forecaster compared to the output of MOS and ECMWF show the improvement of the final product achieved by the application of the optimisation method. Figure 2 demonstrates the added value for minimum temperature. The verification scheme is based on the bias. Finally the added value clearly shows the important contribution of the forecaster and his/her future role in using objective methods to provide added value products.

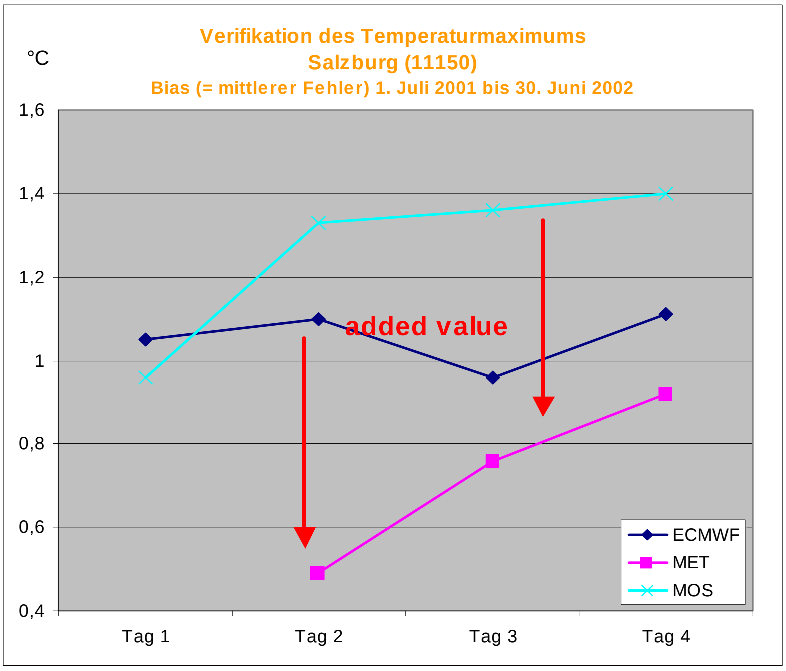

Figure 1: Bias of maximum of temperature and added value by the forecaster of the location Salzburg (11150)

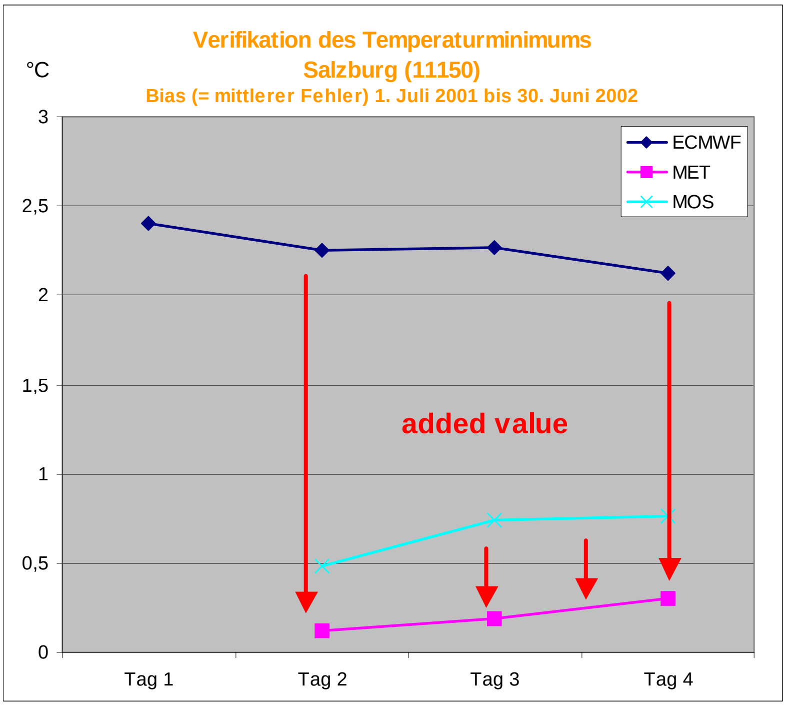

Figure 2: Bias of minimum of temperature and added value by the forecaster of the location Salzburg (11150)

This verification has been working operationally since 2002. The optimisation method provides a feedback not only to the added value, but also to the behaviour of the models, the statistical methods and finally to the forecaster improving NWP products.

It is important for all National Meteorological Services to set up verification schemes on all outputs in order to improve forecasting methods and their derived products.

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