



## Improvement of Forecast Guidance by Blending Statistical Guidance with Direct Model Output

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Since MOS (Model Output Statistics) was introduced in the 1970s, numerous studies have shown that the statistical approach outperforms the use of direct model output and is competitive with subjective official forecasts. But even well-trained MOS systems are not always superior to the dynamic model. MOS tends to remove the typical bias in the training data as MOS is trained in statistical way. Therefore MOS might not mitigate the bias, but increase it in certain weather conditions.

This study presents a method for blending statistical guidance and dynamic model outputs to mitigate the weak points of statistical guidance. The screen temperature predictions from three sources - the KMA (Korea Meteorological Administration) regional model, MOS based on the KMA model, and thecjEMS ECMWF model - were blended by a weighted average method. Previous studies on the weighted-average method were compared, and a mean square error-weighted algorithm chosen for this study. The RMSE of full MOS was  $0.5^{\circ}$  lower than that of either of the dynamic models. The screen temperature after the blending showed a 10% additional improvement compared with the full MOS prediction. In order to remove jumpiness according to model initial time, the current blended temperature prediction was combined with the previous 12 hour blended temperature prediction. This double-blending approach showed slight improvements in overall scores. The blending approach was also applied to cloud cover. However, only the double-blending showed significant improvement, because MOS for cloud cover was not greatly superior to either dynamic model.