

Calibration and Verification of Three Seasonal Forecast Models

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A comprehensive calibration and verification study of three seasonal probability forecast systems by the World Climate Service (WCS) and Prescient Weather Ltd provides considerable guidance about the value of these forecasts for users. The models studied are the National Weather Service Climate Forecast System (CFSv2), the European Centre for Medium Range Forecasts Seasonal Forecast System (ECMWFv4), and a WCS Multi-Model Forecast System constructed from the CFSv2 and the ECMWFv4.

The quality of the models is judged by comparing success ratios, fractions of correct forecasts, and reliability diagrams for a variety of seasons and geographical locations with a strong focus on North America and Europe. As a summary, the WCS Multi Model ranks highest in overall performance followed by the CFSv2 and ECMWF models, which are generally comparable. But the forecasts for all three models would have produced reasonable profits in trading hypothetical options on above and below normal seasonal temperature anomalies.

The models exhibit surprising asymmetries in the number and quality of forecasts for above and below normal seasonal temperature anomalies, which seem to indicate difficulties and inconsistencies with the resolution of decadal trends in both the prediction models and the verification data.