# **CFSv2 performance in the International Multi-Model Ensemble**

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Through an agreement of cooperation between NCEP and the participating institutions of the EUROSIP project, the CFSv2 forecasts are being combined with one-tier coupled seasonal prediction systems from ECMWF, Meteo-France, and Met Office; all integrated in a common framework referred to as the International Multi-Model Ensemble or IMME. The participating groups exchange both hindcasts and real time forecasts of a set of variables.

The rationale of creating a multi-model forecasting system is that research has consistently shown that combining the outputs from several models results in more reliable seasonal forecasts. Also, in many cases the multi-model combination is more skillful than the best single model. These benefits have been attributed to the differences in errors among the models comprising the multi-model ensemble, which by averaging across the models a significant part of them is reduced. Providing that the model errors among the models are independent, the multi-model approach should be a practical way to improve forecasts.

Forecast performance evaluations have been carried out using the hindcast datasets revealing the value added of the CFSv2 forecasts to the EUROSIP forecasts. Since December 2011, IMME products have been incorporated into the set of forecast guidances at CPC to help forecasters produce the operational U.S. seasonal forecast. New products are been created and gradually added into the set of guidances for NCEP users and posted on the web for external users.