# Comparing the Skill Displayed by Two Statistical Schemes that Interpret the ECMWF Ensemble Prediction System Control Model and the NCEP Global Forecast System (GFS) Model

***Harvey Stern[1]***

*[1]School of Earth Sciences, University of Melbourne, Parkville, Australia, e-mail: hstern@unimelb.edu.au*

Weather forecasters have access to a number of numerical weather prediction (NWP) models and a range of statistical systems to interpret their output. The primary purpose of the current paper is to compare the relative skill displayed by statistical systems used to generate predictions for Melbourne, Australia, when applied to the output of two NWP models.

The two NWP models subjected to this evaluation are the *ECMWF Ensemble Prediction System Control Model* and the *NCEP Global Forecast System (GFS) Model*.

The predictions evaluated are, for the *Melbourne City* observation site:

- estimates of the inter-diurnal change in minimum and maximum temperature (Temp); and,
- the amount and probability of precipitation (Precip);

in addition to, for the *Melbourne Airport* observation site:

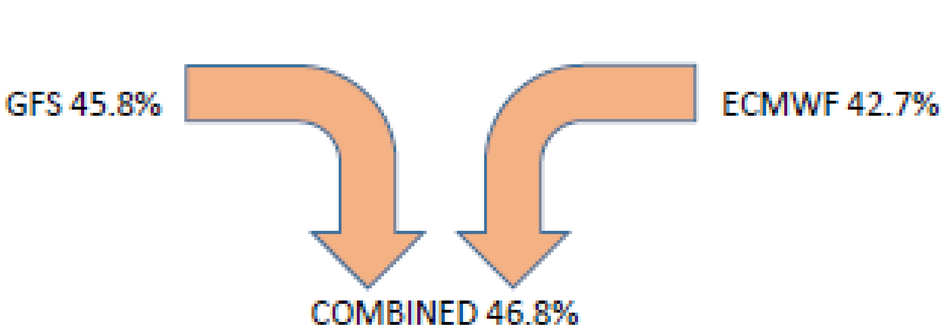
- estimates of the 9am and 3pm inter-diurnal change in wind direction and speed (Wind).

The ECMWF Model (as interpreted) is found to produce better wind forecasts than the GFS Model, whilst the GFS Model is found to produce better temperature and precipitation forecasts than the ECMWF model.

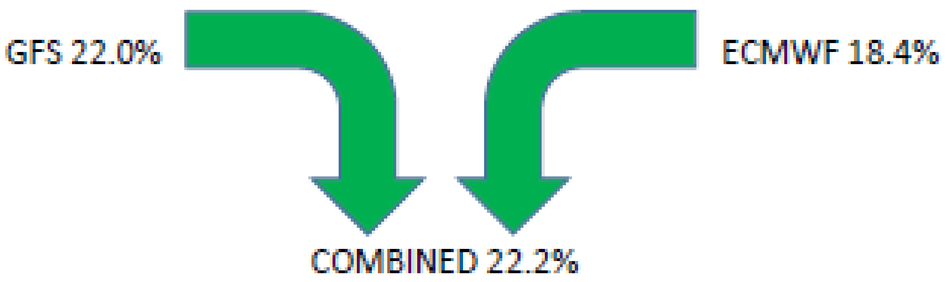
Combining predictions is shown to lead to forecasts of greater overall skill (Temp, Precip, Wind) than the individual sets for most lead times between Day-1 & Day-10 (the exception being Day-1). Combining predictions leads to forecasts of greater overall skill (Temp, Precip) than the official set for most lead times between Day-1 & Day-7 (the exception also being Day-1)[2,3].

*[2] The raw ECMWF & GFS predictions involve the official forecasts in their generation*
*[3] Official wind forecasts were not readily available for this evaluation*

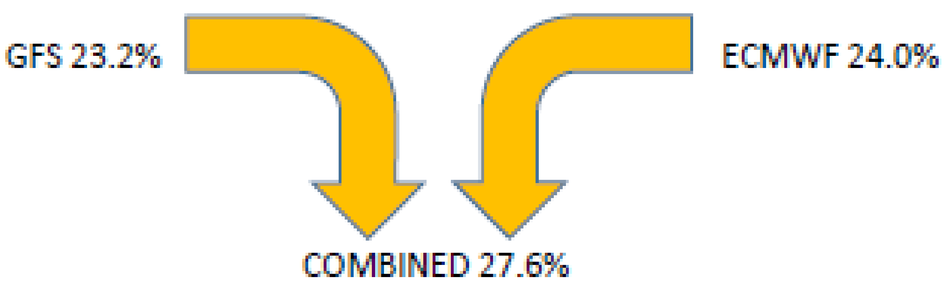
% VARIANCE EXPLAINED: DAYS 1-10 TEMPERATURE FORECASTS

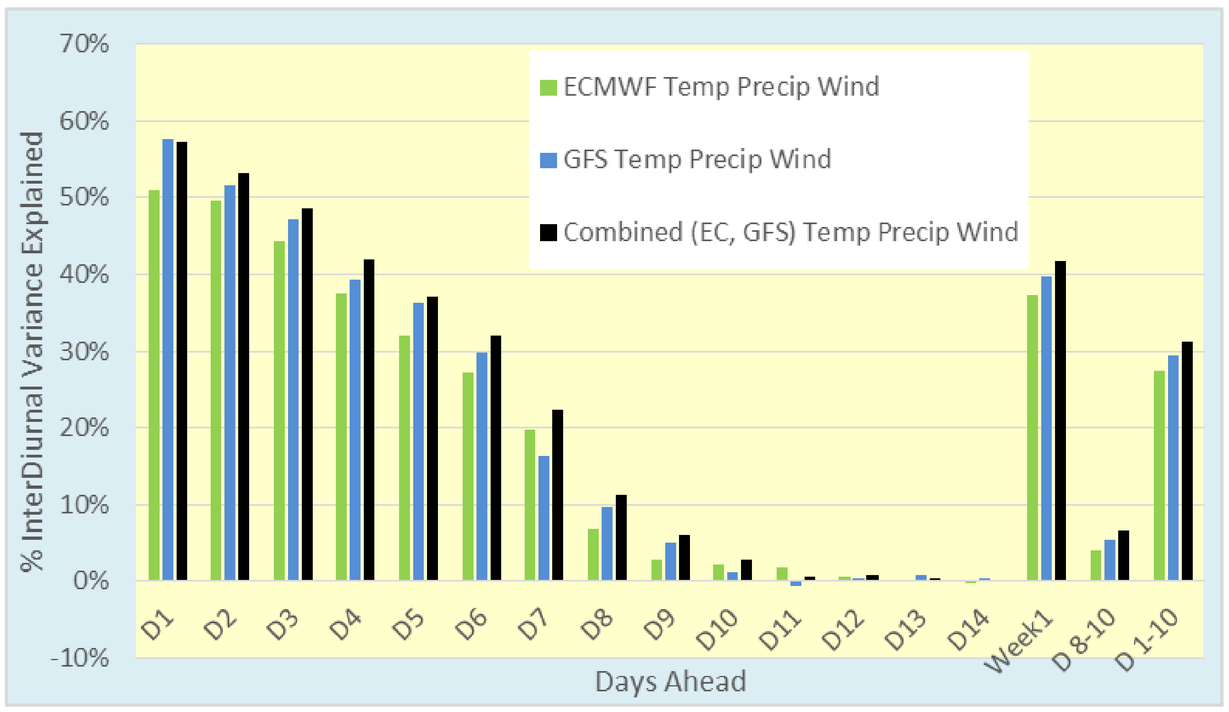


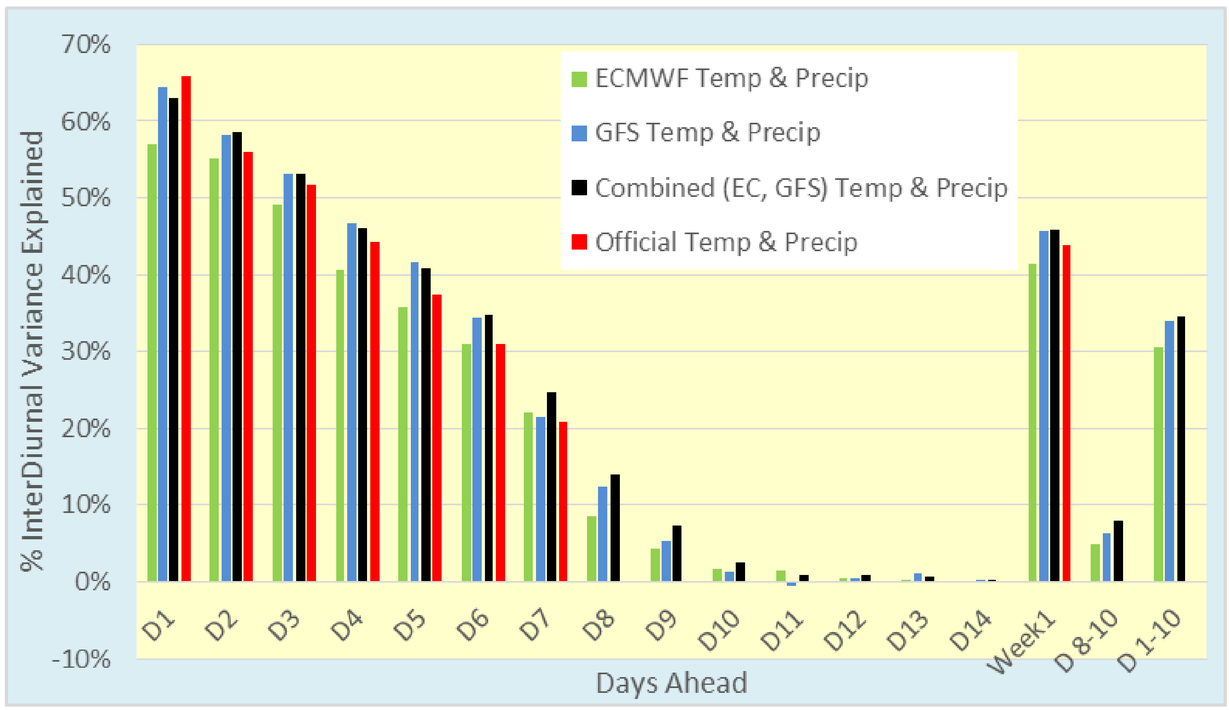

% VARIANCE EXPLAINED: DAYS 1-10 PRECIPITATION FORECASTS




% VARIANCE EXPLAINED: DAYS 1-10 WIND FORECASTS




**FIGURES** Illustrations of how combining sets of predictions from NWP models may lead to sets of forecasts of greater skill than that possessed by the individual sets.