WGNE assessment of Quantitative Precipitation Forecasts from Operational Numerical Weather Prediction Models over the U.K.

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Having recognised the insufficient representativity of precipitation observations available via the GTS, in 1995 the WGNE initiated the verification of QPFs from operational NWP models against high quality precipitation observations over different areas of the globe. First results of this exercise have been obtained for Australia, Germany and the USA (McBride and Ebert (2000), Ebert *et al* (2002)). Here, up to 3-day forecasts of daily precipitation accumulation from the 12 UTC run of 6 global, operational numerical weather prediction models were verified over the U.K. for more than one year (slightly different samples between models because of transmission problems). The model data were up/down-scaled by box-averaging to a common resolution of $96 * 96 km^2$. The forecasts were compared against upscaled daily accumulations derived from quality controlled and corrected radar observations (Harrison *et al* (2000)) comprising the British Isles and adjacent waters.

Statistics of events in certain categories was computed on the basis of monthly and total contingency tables, respectively. Plots are presented of the frequency bias (number of forecast events to number of observed events irrespective of concurrence) and Equitable Threat Score (ETS, accuracy measure of the number of hits larger than expected randomly, relative to the sum of hits, false alarms and misses).

Fig. 1 shows that most models have a tendency to overforecast the number of events. They all do the most accurate forecasts for accumulations of about $2mm\,day^{-1}$ (maximum ETS) and offer less skillful forecasts below and above that threshold. These findings are similar to earlier studies, e.g. Ebert *et al* (2002). The following graphs of the time evolution of the monthly scores show a substantial variability of the monthly performance of the models themselves and between the models.

References

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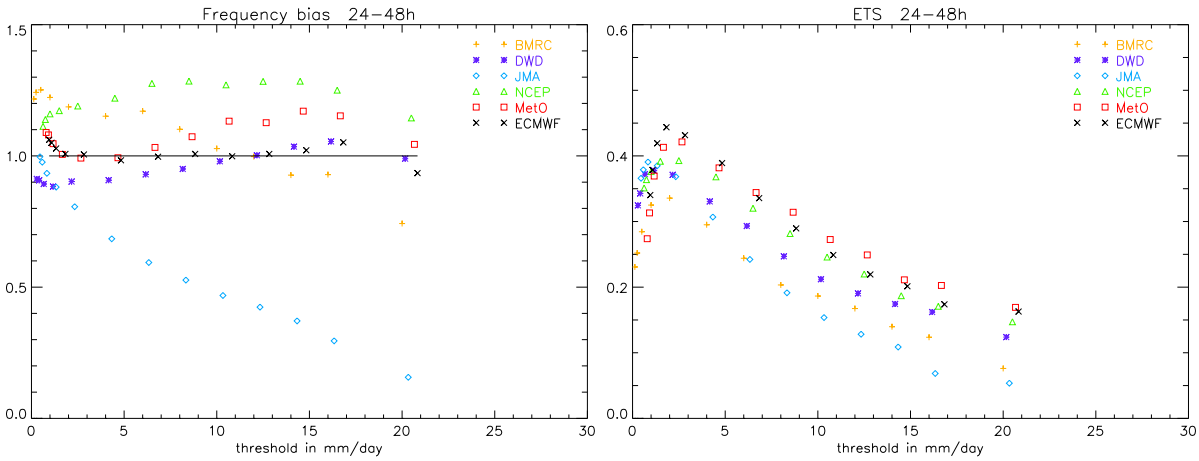

Figure 1: Frequency bias (left) and Equitable Threat Score (ETS, right) as a function of precipitation threshold for daily accumulations 2 days into the forecasts.

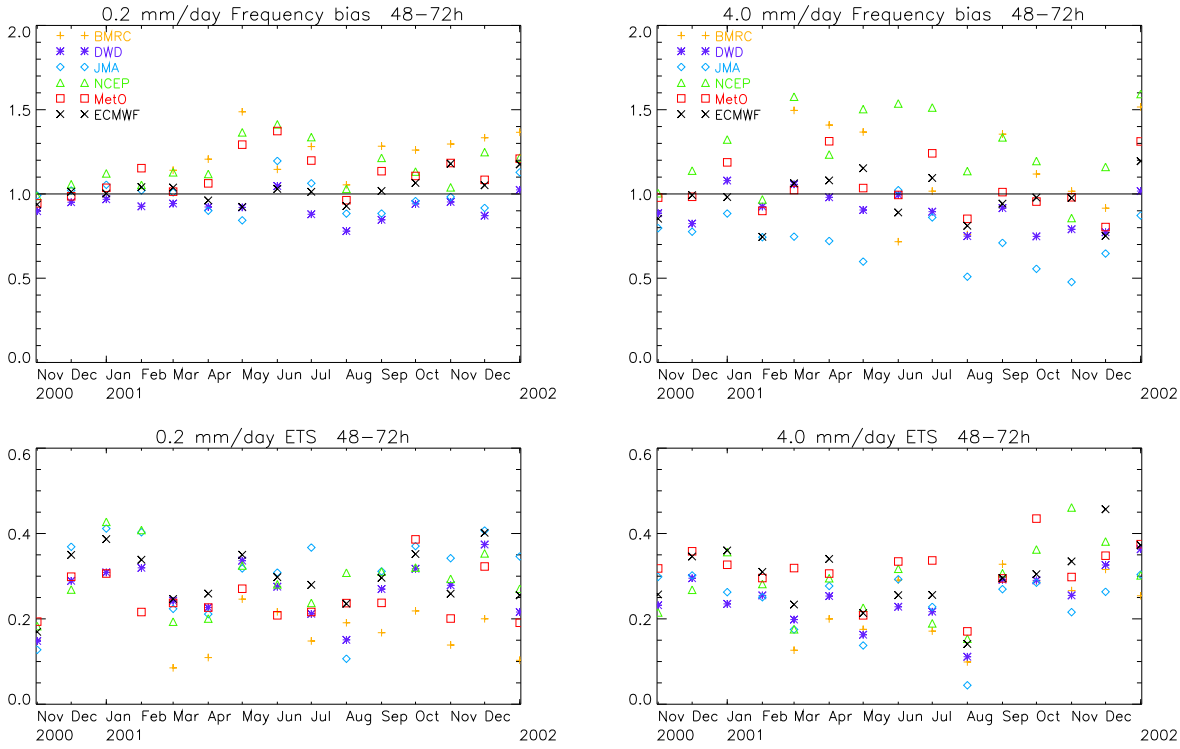

Figure 2: Monthly time series of frequency bias (upper panel) and ETS (lower panel) for daily accumulations of more than 0.2mm (left) and more than 4mm (right) of day three of the forecasts.