



Objective verification of manual, automated and harmonised forecasts of cumulonimbus clouds from the World Area Forecast Centres

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The two World Area Forecast Centres (WAFCs) are responsible for providing meteorological hazard forecasts to aviation customers around the world. The forecasts are presented in graphical format as Significant Weather (SIGWX) charts.

The desire from the international aviation community for a gridded product, more suitable for ingestion into flight planning systems, led to the development of automated gridded forecasts produced in gridded binary (GRIB) format. These have been distributed on a trial basis by the two WAFCs for several years.

An objective verification scheme was developed using the UK Met Office Lightning Detection System – ATDnet. The system detects the vertical component of electromagnetic radiation generated by a lightning discharge at around 13 kHz (VLF) received at a number of ‘sensor’ sites. The system provides good coverage for an area comprising approximately 40% of the earth’s surface.

This paper uses the objective verification scheme to assess the skill in the operational SIGWX and the GRIB Cb forecasts from both WAFC London and WAFC Washington and the new trial product of the WAFC harmonised forecast of Cb extent introduced in November 2011. Results are presented for WAFC forecasts for summer 2011, 2012 and winter 2011. The results show that the automated forecasts are at least as skilful as the manual forecast, and the harmonised forecasts are more skilful than the automated forecasts issued from each centre.