Geophysical Research Abstracts, Vol. 7, 02326, 2005
SRef-ID: 1607-7962/gra/EGU05-A-02326

Reanalysis and reforecast of three major European storms of the 20th century using the ECMWF forecasting system

T. Jung (1), E. Klinker, (1), and S. Uppala (1)

(1) ECMWF, Shinfield Park, Reading RG2 9AX, United Kingdom
(jung@ecmwf.int/00441189869450

In this study recent versions of the ECWMF Integrated Forecasting System (IFS) are used together with historical observational data to carry out reanalyses and deterministic as well as probabilistic reforecasts of three major north-west European wind storms of the 20th century.The storms considered are the Dutch storm of 1 February 1953, the Hamburg storm of 17 February 1962, and the British October storm of 1987 (Great October Storm). Common to all these storms is their severity that caused large loss of life and widespread damage. 20th century.

It is shown that the basic characteristics of the Dutch and Hamburg storm that gave rise to the storm surge are well predicted by the single deterministic forecasts up to about 48 and 84 hours, respectively,in advance. Our capability to predict the Great October Storm is more difficult to assess. On the one hand, even recent versions of the ECMWF IFS underestimate the severity of the storm in the very short-range (12–24 hour forecasts. On the other hand, the high-resolution version of the ECMWF IFS provides excellent deterministic forecasts of the track and intensity of the storm up to 96 hours in advance. However, there are errors in the timing of storm (12 hours for the 96 hour forecast).

From these results it is concluded, though keeping in mind the limited number of cases considered, that with the current ECMWF forecasting system reliable deterministic predictions of some European wind storms are possible several days in advance.

Finally, the importance of Ensemble Prediction Systems as a crucial component of every reliable early warning system is demonstrated for the three wind storms.