Application and verification of ECMWF products 2007 in Czech Republic

Czech Hydrometeorological Institute (CHMI)

1.   Summary of major highlights

The Centre's products have been widely used by the Central and Regional Forecasting Offices in the Czech Hydrometeorological Institute for medium-range weather forecasts and to some extent also in short-range forecasting. The clusters, tubes, plumes and EPS-grams are considered in order to evaluate the credibility of the main deterministic forecast as well as to prompt for possible scenarios in situations of low determinism. Extreme Forecast Index and other probabilistic products have been especially used in severe weather forecasting. The Centre's graphical products available on the web server are used also by the Weather Service of the Czech Army.

2.   Use and application of products

2.1.1   Statistical adaptation

No statistical adaptation of ECMWF products is carried out.

2.1.2   Physical adaptation

No limited area modeling using ECMWF products is carried out.

Three-dimensional wind forecasts over the Northern Hemisphere up to +120 hrs are used as the input to the trajectory model used for the assessment of risk to the civil safety from remote nuclear or other great accidents.

Experimentally we began to use prediction of precipitation and temperature of deterministic model as an input to hydrological model to predict water levels in the rivers up to ten days ahead. These predictions were also used during spring floods linked with melting snow and rain at the end of March and the beginning of April 2006. Although the results were not very successful, it is possible to use them qualitatively. Next time we plan to use 25% and 75% percentiles of precipitation from EPS to estimate the range of probable discharges in the rivers.

2.1.3   Derived fields

No derived fields are calculated out of ECMWF products.

2.2   Use of products

The final medium-range forecasts produced by forecasters are currently used in the general weather forecasting for public and state authorities and in the national Warning and Alert Service. Warning system is becoming the most important component of our service. Both probabilistic products and extreme forecast index are used to issue warning information. Ensemble products are considered in order to evaluate the credibility of the main deterministic forecast and to issue weather forecasts more than approximately 5 days ahead.

The seasonal and monthly forecasts are consulted in the long-range forecast process. Currently the results of both deterministic and ensemble forecasts up to 15 days ahead and monthly forecasts are used in the identification of the weather type for the weather-analogue-based forecasting method for monthly forecasting.

3.   Verification of products

There is currently no objective or systematic subjective verification of ECMWF products carried out. The general scores calculated and published by ECMWF are considered informative. For now we also use verification of ECMWF products from the Green Book. Considering the character of medium-range weather forecasts, the verification scores from neighboring countries are well applicable also for our service.

3.1   Objective verification

3.1.1   Direct ECMWF model output (both deterministic and EPS)

3.1.2   ECMWF model output compared to other NWP models

3.1.3   Post-processed products

3.1.4   End products delivered to users

3.2   Subjective verification

3.2.1 Subjective scores (including evaluation of confidence indices when available)

3.2.2 Synoptic studies

The seasonal and monthly forecast products are considered as having some informative value. The frequency of "no signal" of these forecasts is considered as still too high.

4   References to relevant publications