Use of ECMWF products at Lithuanian Hydrometeorological Service

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2. Use and application of products

Atmospheric model (deterministic). Analysis and forecast products form 00 and 12 UTC model runs. Surface – Mean sea level pressure, 2 meter temperature, 2 meter dew point temperature, 10 meter U-wind component, 10 meter V-wind component, Sea surface temperature, Sea ice cover, Total cloud cover, Low cloud cover, Middle cloud cover, High cloud cover, Convective precipitation,Large scale precipitation, Total snowfall. Multi level fields (1000 925 850 700 500 400 300 250 200 150 hPa) – temperature, u component of wind, v component of wind, geopotential, relative humidity, vertical velocity. Atmospheric model data are distributed via forecasters workstation software. Other products like ensemble forecasts, monthly and seasonal forecast are used via ECMWF website.

2.1.2 Physical adaptation

As input for limited area models (from BC project):

Boundaries for HIRLAM HL8 (60 vertical levels), utilized 4 times daily (synoptic hours 00, 06, 12 and 18 UTC).

3.1.2 Comparison of performance of ECMWF model to other NWP models used by LHMS

Comparison of ECMWF and HIRLAM HL8. Calculated values of monthly rms and bias scores, both for surface (temperature, precipitation, wind, sea level pressure, cloud cover) and upper air parameters from HIRLAM against ECMWF for the HL8 (Hirlam) area.

3.2 Subjective verification

3.2.2 Synoptic studies including evaluation of the behaviour of the model:

There were 3 hazardous meteorological events and one catastrophic event during the year 2008:

1. Strong wind (local gusts 28-30 m/s) on the western boundary of Lithuania on 22–23 of February;
2. Local large hail (diameter of ice parts 10–15 mm, locally up to 28 mm) in the central part (Kaunas city) on the 23rd of June;
3. Local heavy rain (54 mm/in 4.30h) in the southern Lithuania (Druskininkai city) on the 21st July;
4 Catastrophic heavy sleet (on the seabord (Nida resort) on 24–25th of November;

More detailed information about these meteorological phenomena:

1.1 The warning about strong wind was issued in time as forecaster has quite good information from ECMWF GM about the deepening of Atlantic cyclone and western trough already 240 h before the event. Unfortunatelly, the model was changed slightly later-before 192 h. However 144 h before the situation was predicted well and later it was corrected more accurate.

2.1 The synoptic situation at meansea level and thermal field at 850 hPa which were favourable hail to appear were predicted well by ECMWF 108 h in advance.

3.1 ECMWF GM predicted dangerous synoptic situation 96 h in advance, especially it was good prediction of geopotencial field at 500 hPa.

4.1 The first features of this extraordinary synoptic situation was predicted by ECMWF 240 h in advance. Unfortunately, it was wrong correction 216 h and 180 h before the event. 168 h forecast was good and later it was more and more precise.