Application and verification of ECMWF products 2014

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1.   Summary of major highlights

No significant changes. Medium and long-term weather forecasts at LHMS are based on ECMWF models output. Boundary conditions from ECMWF are used for local limited area NWP model – Lithuania tailored HIRLAM and HARMONIE-AROME.

2.   Use and application of products

Include medium-range deterministic and ensemble forecasts, monthly forecast, seasonal forecast

2.1   Post-processing of model output

2.1.1   *Statistical adaptation*

2.1.2   *Physical adaptation*

Boundary conditions from ECMWF deterministic suite (via optional BC project) are used in:

Hirlam HL4; 0.036 degree resolution, +54 hours forecast.

Harmonie-Arome 2.5 km resolution +48 hours forecast.

1 hourly ECMWF BC coupling in both models.

Product delivery: 4 times daily, based on 00, 06, 12 and 18 UTC data.

2.1.3   *Derived fields*

2.2   Use of products

There is no significant changes in usage of deterministic and EPS forecasts products. All medium and long-term weather forecasts are based on ECMWF models output.

3.   Verification of products

Include medium-range deterministic and ensemble forecasts, monthly forecast, seasonal forecast. ECMWF does extensive verification of its products in the free atmosphere. However, verification of surface parameters is in general limited to using synoptic observations.

More detailed verification of weather parameters by national Services is particularly valuable.

3.1   Objective verification

A system for verification of the ECMWF products has not been implemented.

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

Year 2013 in Lithuania wasn't rich with extreme weather events – just 9. In all cases ECMWF predicted situation favourable for those events in advance 72–192 h.

The situation favourable for a **severe convection** on 26 of June (in the Northern part of Lithuania tornado F0 and hail >2 cm**)** was predicted in advance 108 h. Another case of active convection and heavy rain in the Western and Southern regions of Lithuania on the 30th of July was predicted well in advance 8 days (192 h.), wrong in advance 144–156 hour and in advance 132 h. model return to the previous scenario and predict situation favourable for extreme weather events.

The situation favourable for convective storms (thunderstorms locally with squals, hail or heavy rain) on the 10h of August in the Southern, Central and Eastern regions was predicted by ECMWF model in advance 192 h.

The situation favourable for **extreme high temperature** (locally Tmax 30,5–32,6 °C) on 28th – 30th of July was predicted in advance 180 h, on the 6th–8th of August (locally Tmax 30–35 °C**)** was predicted in advance 144 h.

The **rainy period** on the 17th–21st of September in the Southern part of Lithuania (the amount of precipitation in 3–5 days reached 118–132 mm and 2,1–2,4 times exceeded monthly normal) by ECMWF model was predicted in advance 156 h.

Situation favourable for **ground frosts** (T min. -0,1...-4 °C) on the 26th of September was predicted in advance 168 h.

4.   References to relevant publications

No publications.