

Application and verification of ECMWF products 2016

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1. Summary of major highlights

ECMWF products are the main source of information for medium and long range weather forecasts at national service in Slovakia. Our forecaster use EcCharts to access EFI product, but due to limitations in our www connection the usage is not as smooth as we would prefer (this is in solution).

We are downloading operationally LBC from ECMWF for LAM ALADIN –SLOVAKIA. But they are not used for operational purpose. They serve rather as a backup.

In the case we case when our customer require weather forecast for more than 72h ahead, we use ECMWF products as the main source to cover required forecast range.

National project POVAPSYS (Flood warning and forecasting system) was finished last year. We provide all forecasts products (EPS + deterministic) as an input to the system. They are used as input into rainfall runoff models.

2.1 Post-processing of ECMWF model output

2.1.1 Statistical adaptation

There is no statistical adaptation of ECMWF products at SHMI.

2.1.2 Physical adaptation

Air quality department ad-hoc uses ECMWF model data as input for WRF model and results are input for CMAQ model. SHMI participates in development and research of LAM EPS (ALADIN-LAEF), which uses ECMWF model outputs.

Our operational hydrological department run operationally rainfall-runoff models using ECMWF deterministic and EPS products. They compute expected discharge for approx. 200 river profiles. Example of water level EPS prediction is on Figure 1.

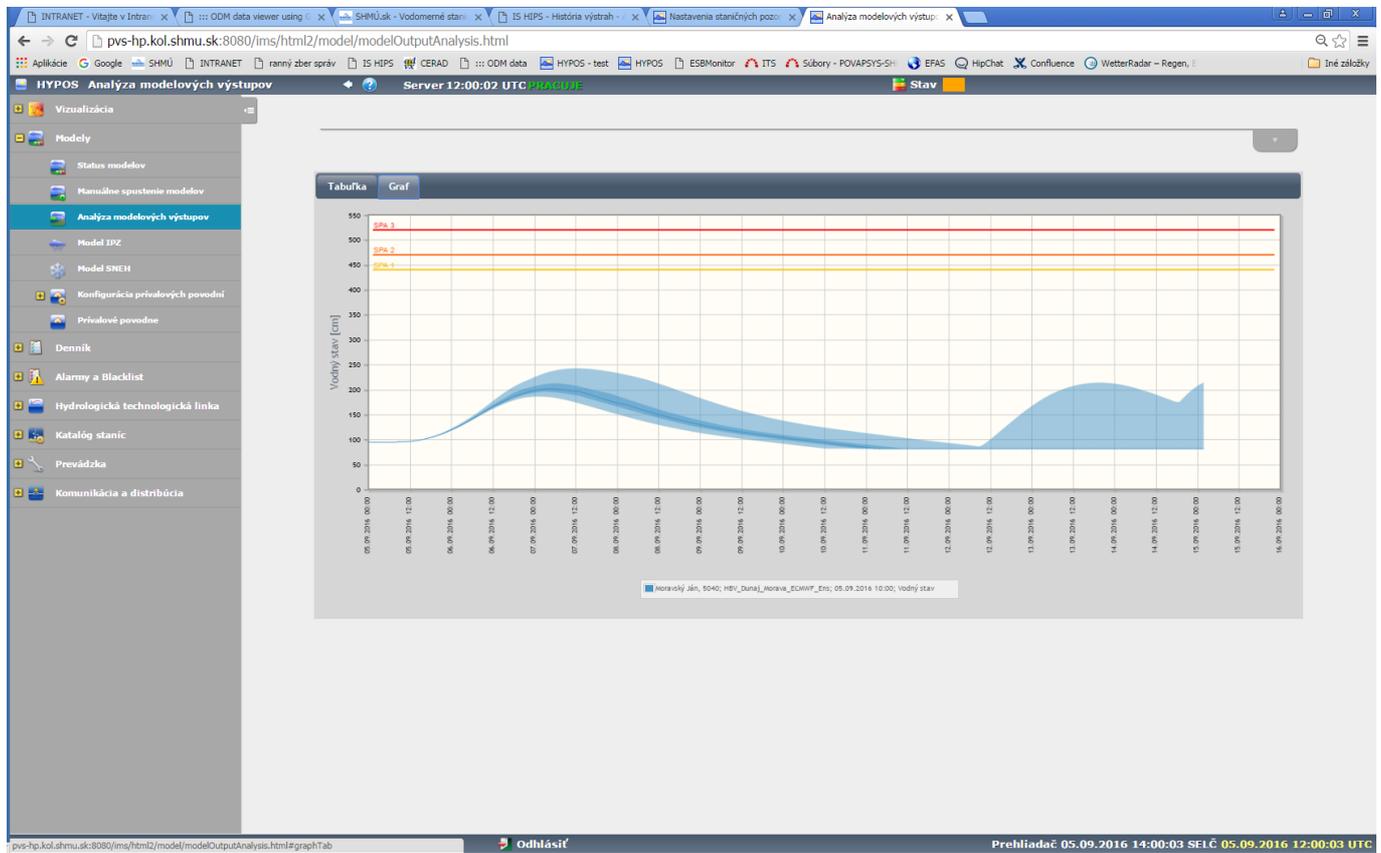


Fig 1 Water level prediction based on ECMWF EPS from 5.9.2016 00UTC. The location of prediction is Moravský Svätý Ján, river Myjava.

2.1.3 Derived fields

No derived fields are calculated from ECMWF products.

2.2 Use of ECMWF products

ECMWF products are the main source of information for medium and long range weather forecasts at national service in Slovakia. Our forecaster use EcCharts to access EFI product and web page for EPSgrams.

The monthly forecasts are based on ECMWF monthly forecasts. The seasonal forecasts are preparing very rarely, but are again based on ECMWF seasonal forecasts.

2. Verification of products

We exploit HARMONIE scripting system verification feature for LAM modes evaluation. It uses standard observations from GTS, or from databases available from ECMWF. We do not use Harmonie package regularly for verification of ECMWF products. We expect verification scores are very similar to scores computed by ECMWF because of using of identical observation databases.

3.1 Objective verification

3.1.1 Direct ECMWF model output (both HRES and ENS)

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 *Case studies*

3. Feedback on ECMWF “forecast user” initiatives

Please comment on whether you use the following, on how useful you find them, and on any changes you would like to see. The “[known IFS forecast issues](https://software.ecmwf.int/wiki/display/FCST/Known+IFS+forecasting+issues)” page – (see: <https://software.ecmwf.int/wiki/display/FCST/Known+IFS+forecasting+issues>) and the “[severe event catalogue](https://software.ecmwf.int/wiki/display/FCST/Severe+Event+Catalogue)” (see: <https://software.ecmwf.int/wiki/display/FCST/Severe+Event+Catalogue>).

We have to promote previous information pages between our forecasters and ECMWF data users. So far we have no feedback from them.

4. References to relevant publications

Martin Bellus, Yong Wang, and Florian Meier, 2016: Perturbing Surface Initial Conditions in a Regional Ensemble Prediction System. *Mon. Wea. Rev.*, 144, 3377–3390