Operational ALADIN configuration

Main features of the ALADIN (ALR) model:
- Model version: CY47R1 (ALR) – baseline physics.
- Initial conditions: global weather model analysis, satellite, surface observations (OS).
- Four runs per day: 06 UTC (08 UTC, 12 UTC, 18 UTC).
- Lateral boundary conditions from the ECMWF global model.

Assimilation settings
- Model geometry:
  - Grid: ECMWF resolution (0.25° × 0.25°).
  - Configuration of the observational network (including theievability, and preprocessing).
- Data assimilation:
  - Data: Satellite, surface observations, and weather model analysis.
  - Data format: Generally raw, after being quality-controlled (Q control) and then assimilated.
  - Linear analysis method: Least square method.

Forecast settings:
- Data assimilation:
  - 3 to 5 times (two level bias selection scheme).
  - LAC coupling every 3 hours.
- Output data:
  - Forecast: 48 h.
- Final product:
  - Continuous monitoring and support to the web-based system.

Operational AROME ensemble system

The main characteristics of the operational ensemble based area prediction system at HDS is listed below:
- The system is based on the ALADIN limited area model and its 11 members.
- For the first time, the system performs a downsampling, no local perturbations are generated.
- The initialized output is contaminated by model errors and the forecasts ensemble (and not to a model composition of idealized, ALADIN ECMWF).

Operational AROME configuration

Main features of the AROME-HU:
- Model version: CY47R1
- 2.5 km horizontal resolution (502 m points).
- 40 rectangular vertical levels.
- Final products at a step: 3 h (UTC), 12 h (UTC), 18 h (UTC).
- Initial conditions: 502 m grid, interpolated ALADIN surface analysis, pilot and control run.
- Lateral Boundary conditions from ALADIN with 11 coupling frequency.
- To calculate the cross-sections, we use the ECMWF scheme over entire region.

As a general conclusion, our experience in using the AROME model gives the operational meteorologists and civil authorities on the simulations that follow here it also captures the size of the precipitation objects only. It has not (yet) fulfills to incorporate precipitation threshold and apply it to the straining convective cells (see also the ECMWF training on right).

Test of Ensemble Data Assimilation (EDA) with AROME-EPS

Since 2012 Hungarian Meteorological Service (HMS) is a participant of an ERA40 special project called Continental ensemble weather prediction with the AROME model. The project aims to identify and develop an ensemble EPS which can be used efficiently the ensemble of the convective especially in such weather situations which are frequency problematic for the convective in low clouding. The project focuses on ensemble design, implementation and reliable and good performance EPS solutions. During the 15 days simulation less parameterization is made for the most part. The model can be used or not used for ensemble design and the evaluation of the ensemble-based EPS model approach.

Assimilation of GNSS ZTD data in AROME

The assimilation of GNSS ZTD data in the operational AROME model is using only SINEX TEMP and AMV data. Which is a number of conventional and GNSS ZTD data are not sufficiently covered in assimilation system. Hence the importance of bulk assimilation down approach (BCAS) of the assimilation of GNSS ZTD data assimilation was tested.

The ZTD observations from SINEX TEMP and AMV networks which can bring a good data coverage over Hungary. The assimilation of ZTD data is very well known to work in well with GNSS ZTD data. The ZTD observation network is waiting to be improved. The impact of ZTD observations on the predictive system is shown with a further impact analysis. The impact of ZTD observations on the predictive system is shown with a further impact analysis. The impact of ZTD observations on the predictive system is shown with a further impact analysis.