

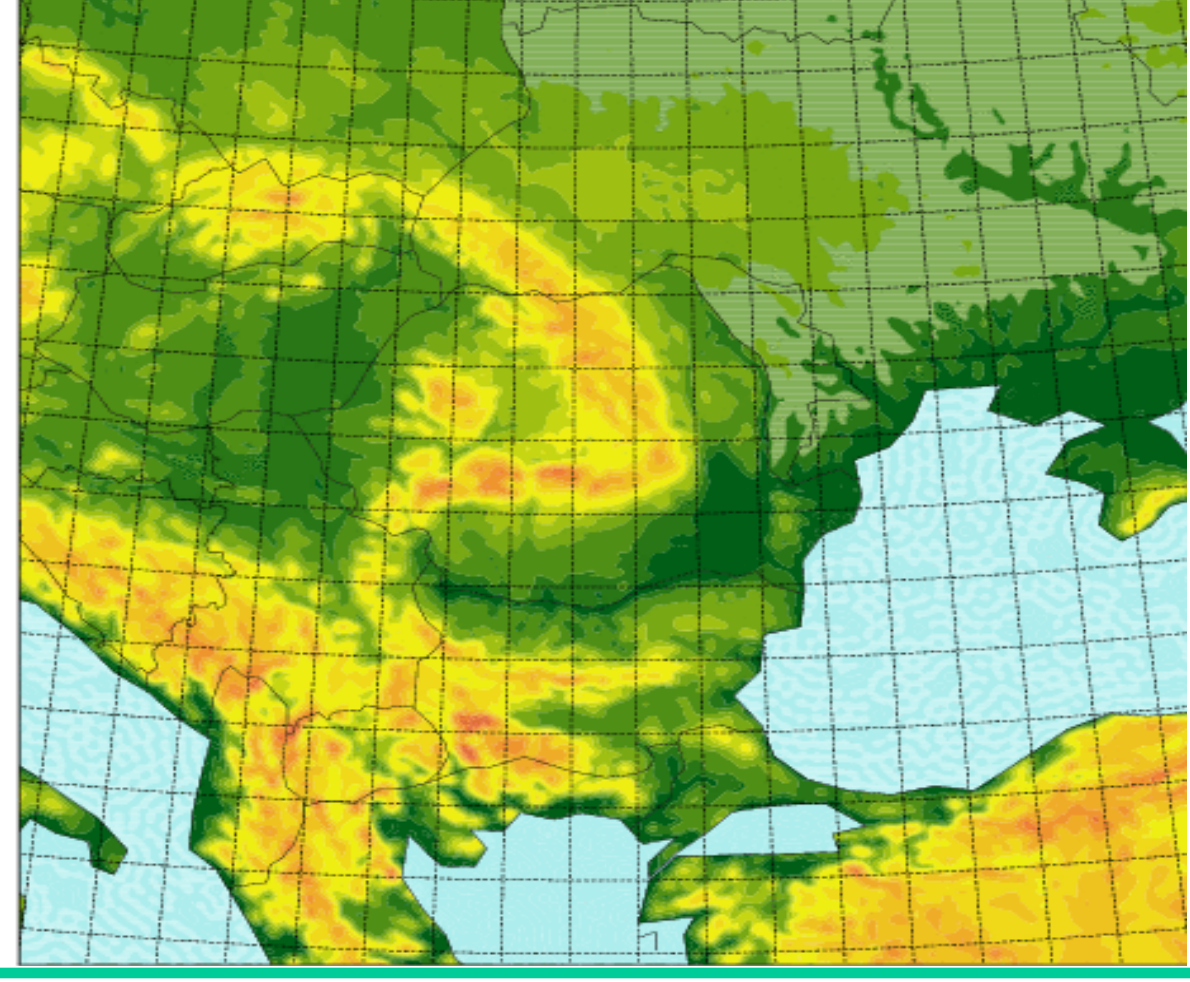
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ALARO Operational Suite



Characteristics

- cy40t1 - **ALARO-0 baseline**;
- semi-implicit semi-Lagrangian 2TL, $\Delta t=240$ s;
- $\Delta x=6.5$ km, 240 x 240 points, 60 vertical levels, linear grid, Lambert projection;
- LBC from ARPEGE (3h frequency), DFI Initialization;
- 4 runs /day 00, 06, 12, 18 UTC - no DA;
- forecast range: 78/54/66/54 hours;
- physical parameterizations : ALARO-0 including developments concerning thermodynamics adjustment, microphysics, moist deep convection.

Downstream applications

- Atmospheric input from ALARO for:
- hydrological model
 - wave model

Post-processing

FULLPOS in line - geographical grid (0.06° x 0.085°)

Visualization

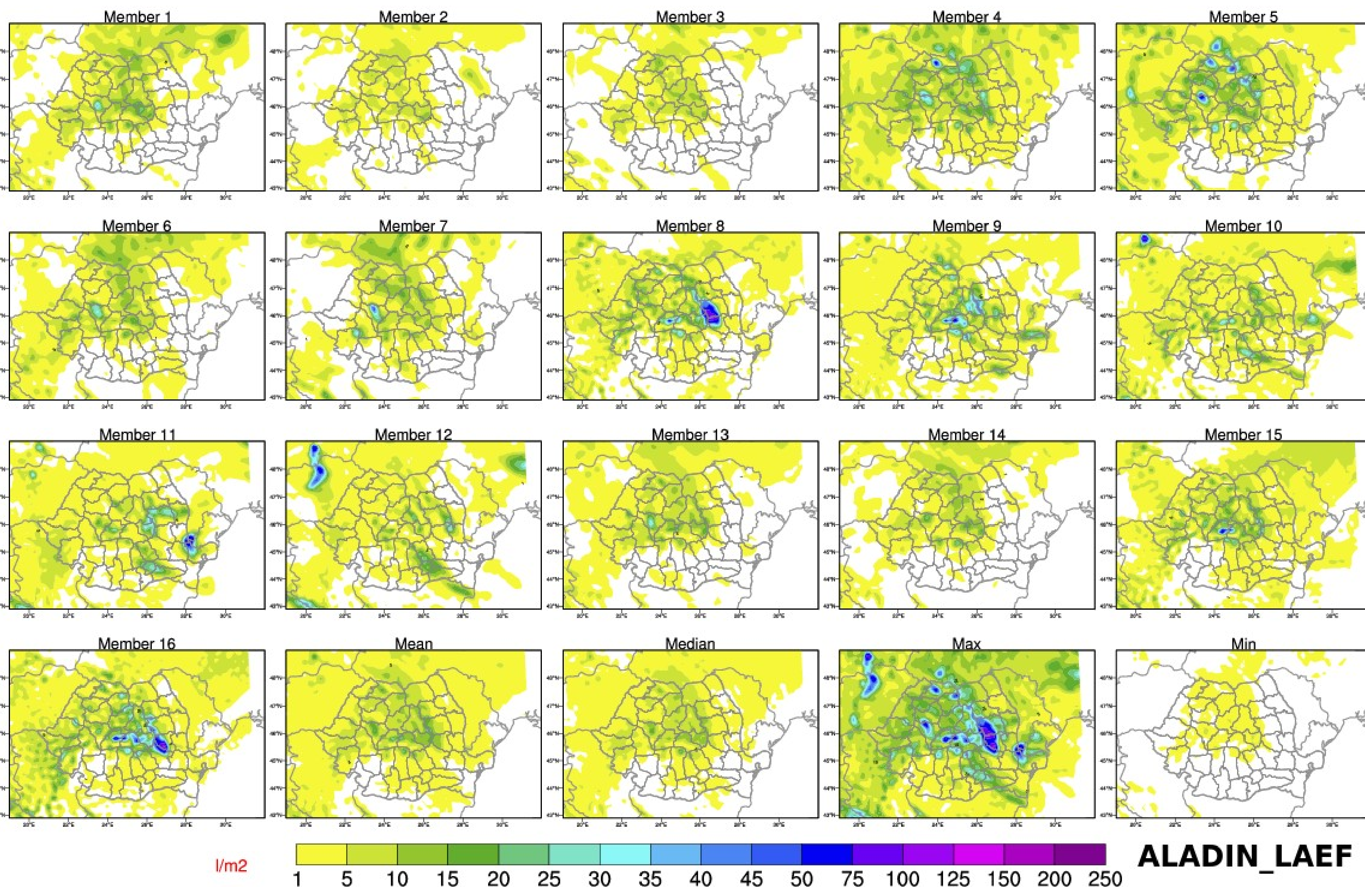
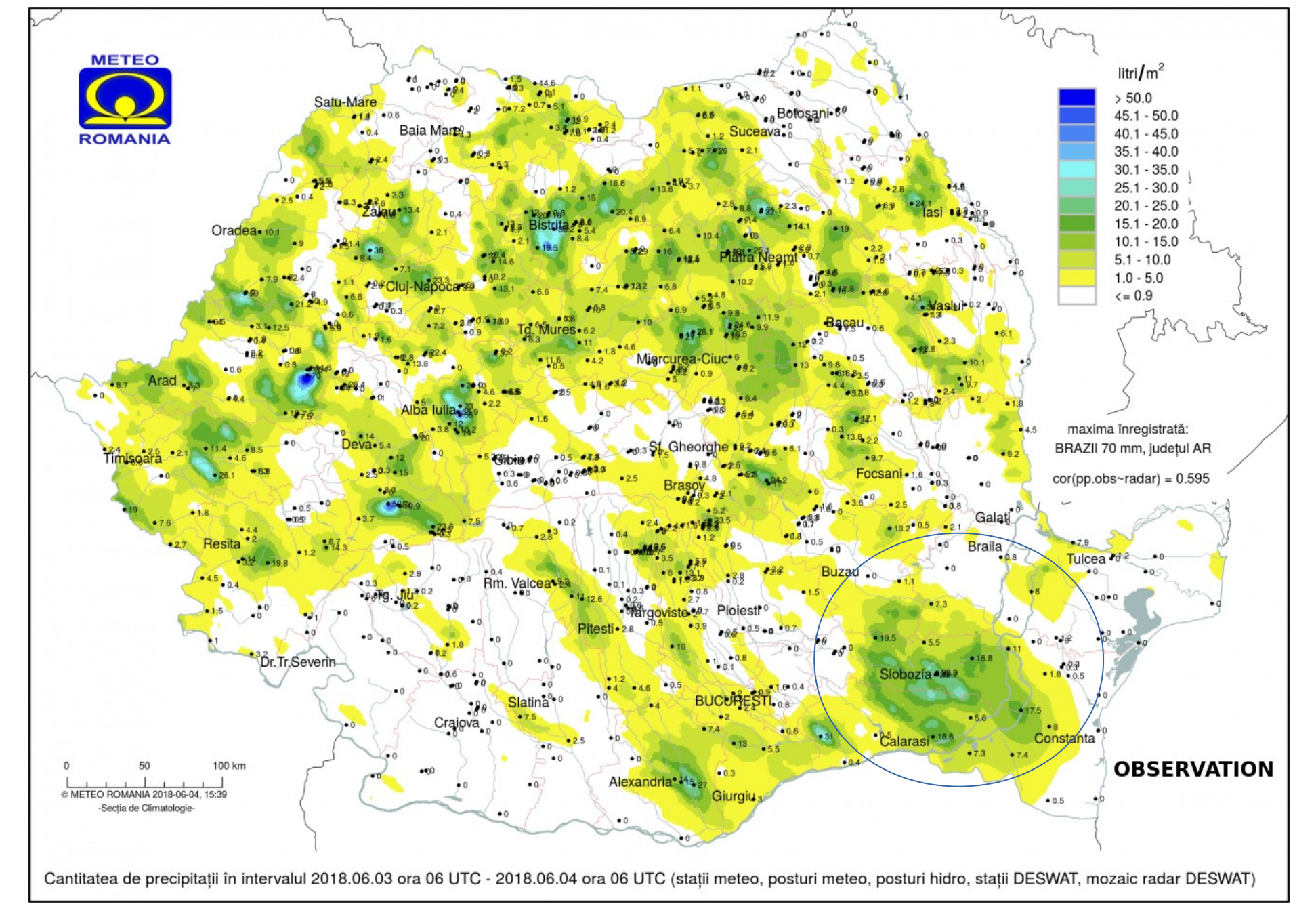
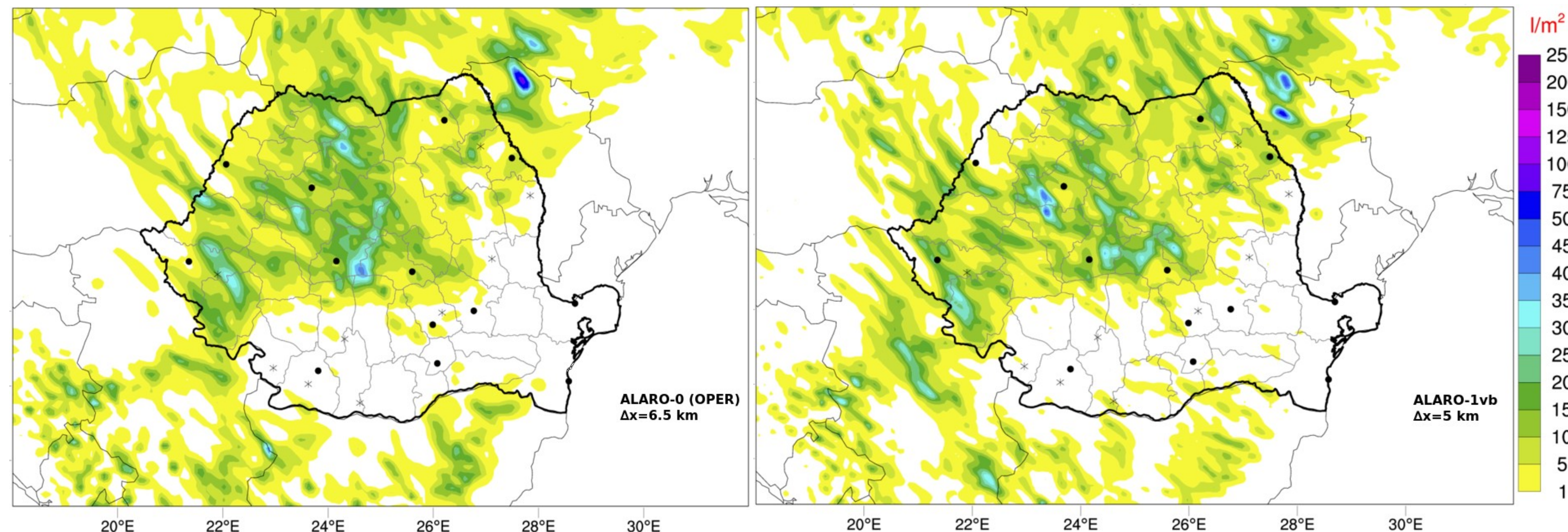
- Graphics based on package developed within NMA and RC-LACE, based on grib_api, perl and NCL-NCAR

Statistical Adaptation Verification

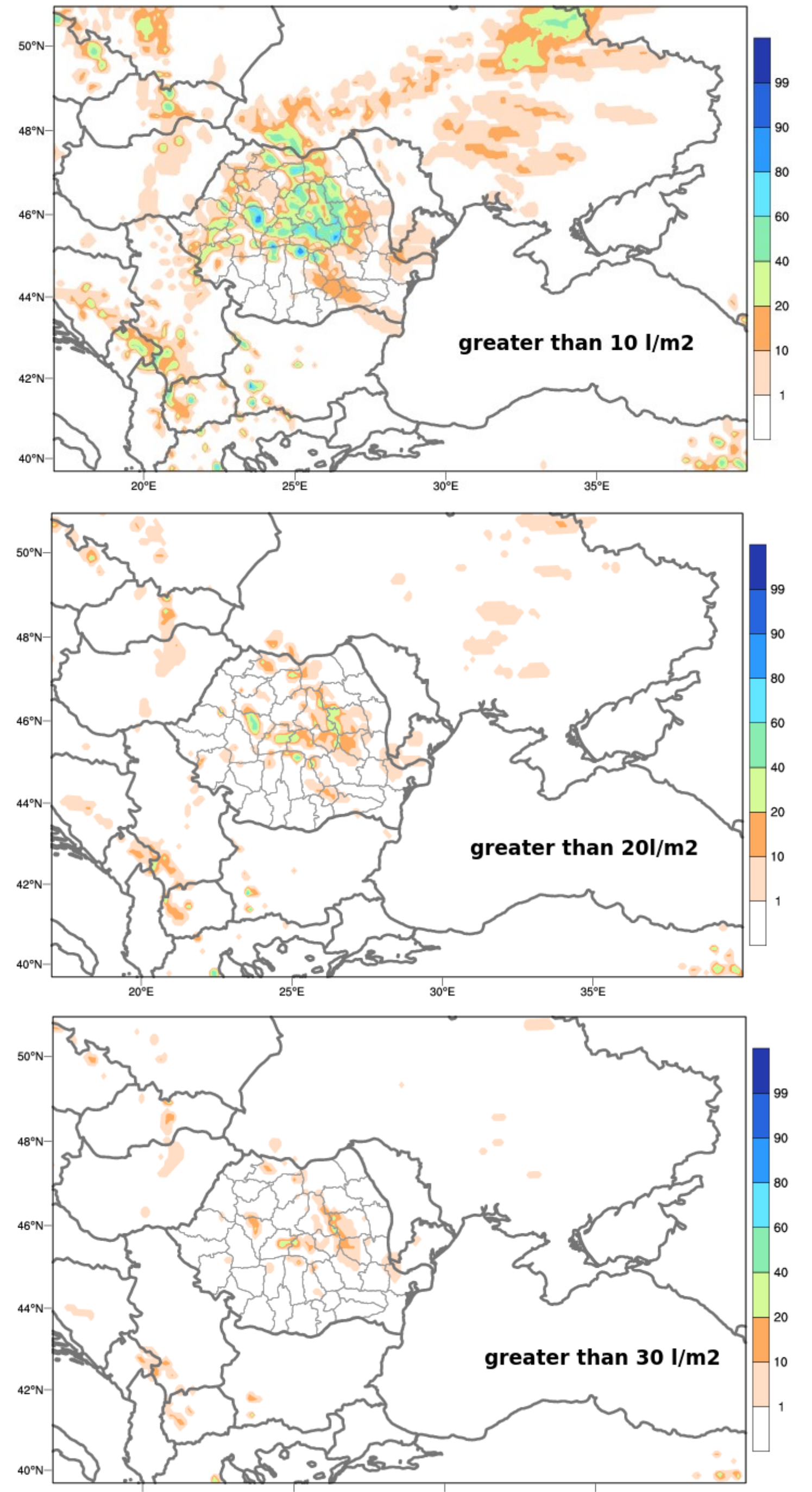
Case study: 3th of June 2018

- mesoscale convective system developed due to the intrusion of cold air masses from the North
- **24-hour cumulated precipitation: 03.06.2018, 06 UTC - 04.06.2018, 06 UTC**

- ALARO-OPER and ALARO-1vb failed to simulate the precipitation amount in the SE region; still the operational version completely missed the area



- the probabilistic approach: 10 out of the 16 members simulated the precipitation area from the SE region; members 9 and 10 are the most skillful and predicts more than 10 mm of rain at the specified location

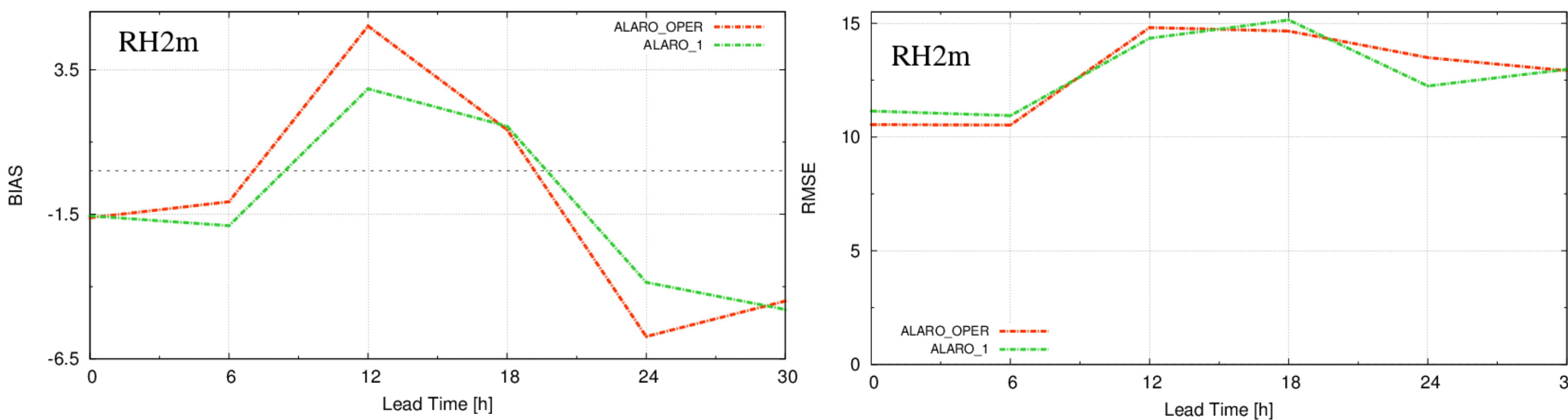


- the behaviour of the ALADIN-LAEF system is also investigated considering the probability forecast of the event 24-hour cumulated precipitation exceeding 10 mm, 20 mm and 30 mm; the probability maps show the occurrence of the event in the SE region (areas where the precipitation was observed)

Comparison of ALARO-0 (OPER) and ALARO1-vb during the 2018 convective season

- standard statistical scores (BIAS and RMSE) were computed for the surface parameters: 6h precipitation (RR06), 2m relative humidity (RH2m), 2m temperature (T2m), 10m wind speed (W10m) and mean sea level pressure (MSLP)

- the forecast frequency is 6-hour and the verification length is up to 30-hour lead times, 00 UTC



ALARO1-vb:

- some improvements for RR06, RH2m and MSLP for the first day
- slight degradation for the W10m and T2m
- concerning the W10m, for the first 6 hours, there is quite a difference in BIAS between the two versions
- in terms of RMSE, the two versions have the same pattern

