Status and activities in the frame of APSU-PP in IMGW

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1. Job done

2. Examples

3. To-dos and Conclusions

T1.3 Perturbations based on adapted Random Number Generator (RNG) – for the years 2011 – 2014, comparison (already operationally running) the "new" RNG with regular one as before.
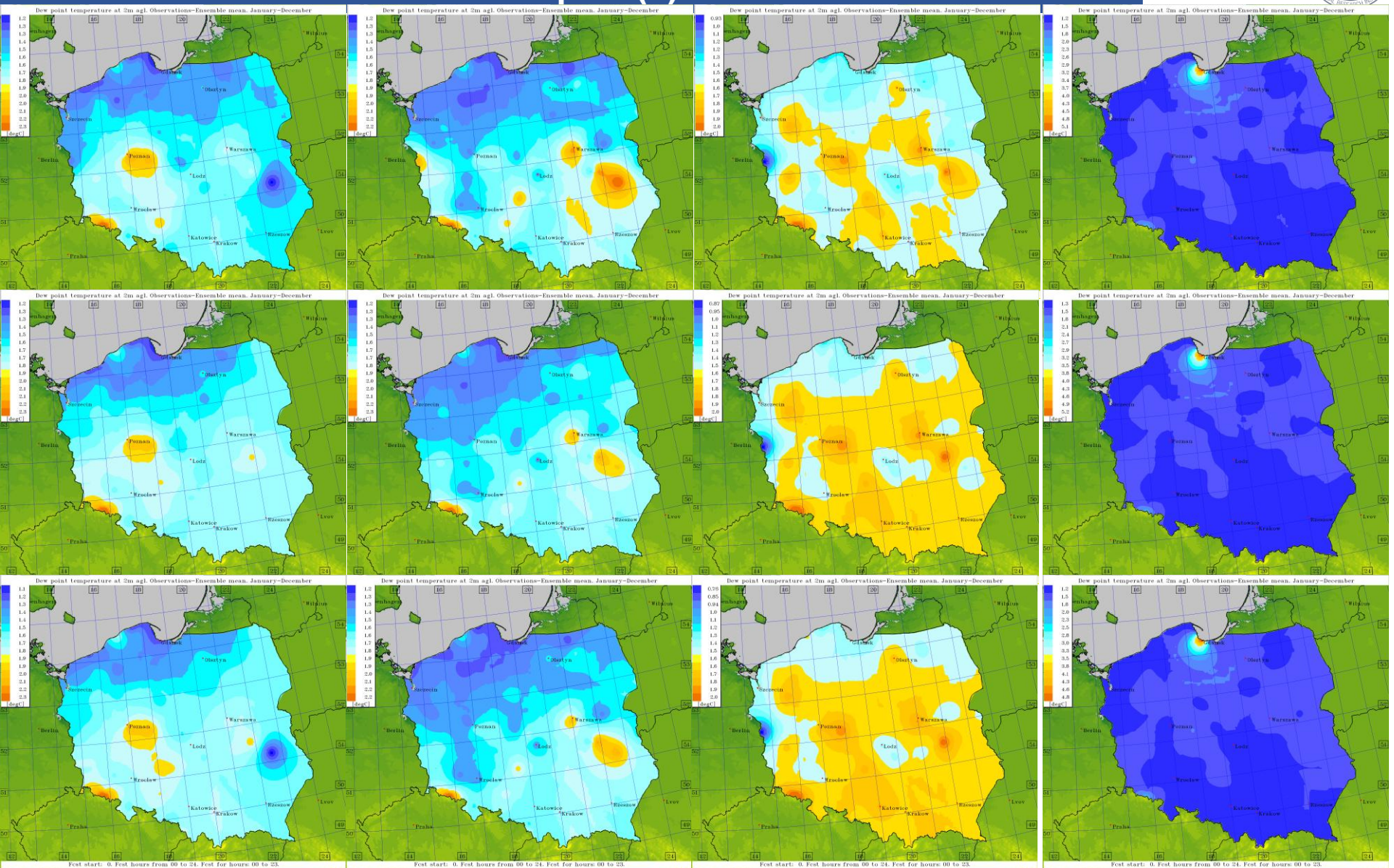
T3.1 Perturbation of soil surface temperature and

T3.3 Combination of soil and upper air perturbation – further comparison of various perturbation methods vs. operational EPS vs. reference ("deterministic") forecasts and vs. measurements over the entire domain, for the years 2011-2014. Selected results presented in paper submitted to JCR journal

Examples (1)
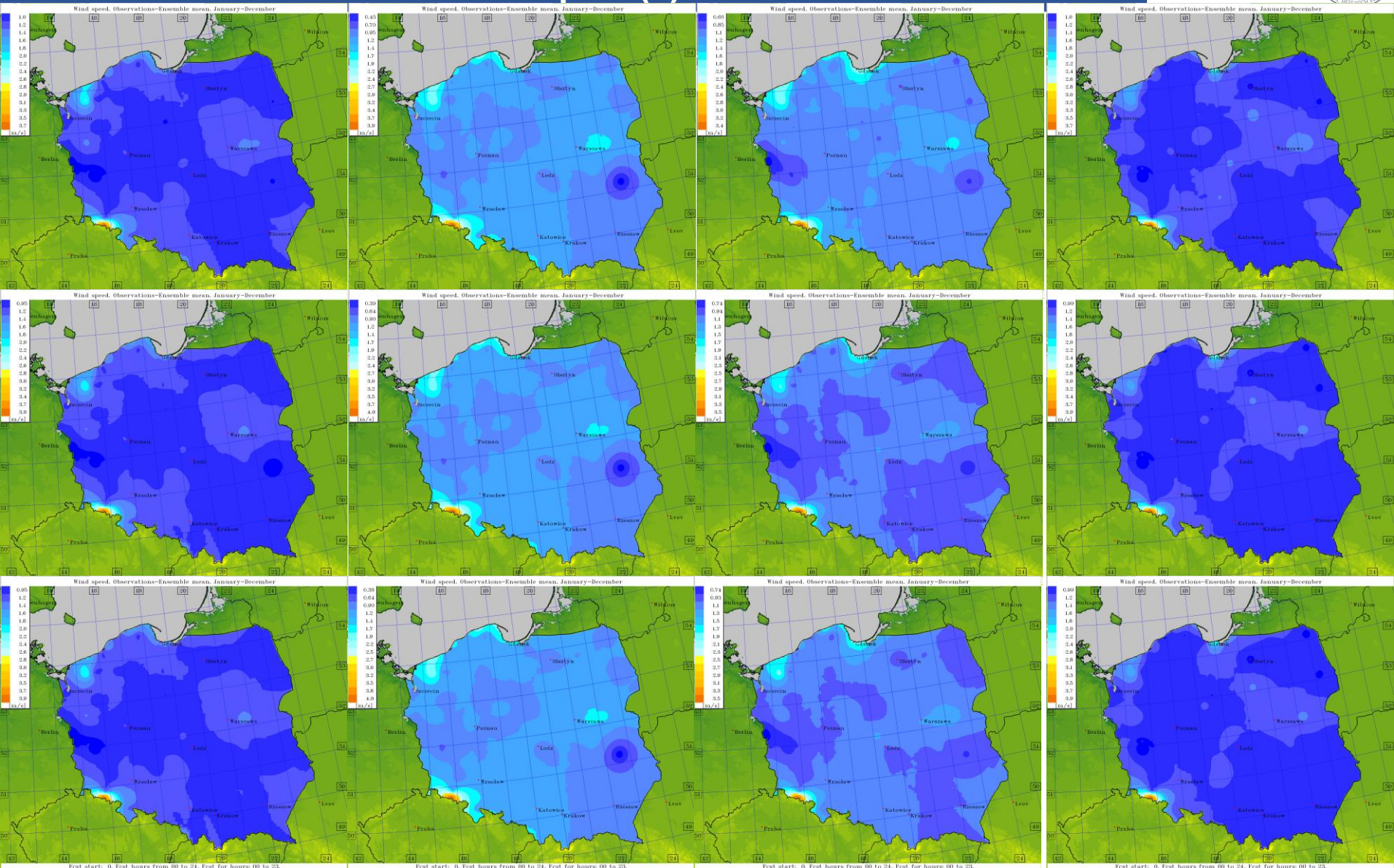
Spatial distribution of skill for wind speed. Left to right: years 2011 to 2014, top to bottom: *efco* perturbation, *laf* perturbation and operational perturbation.
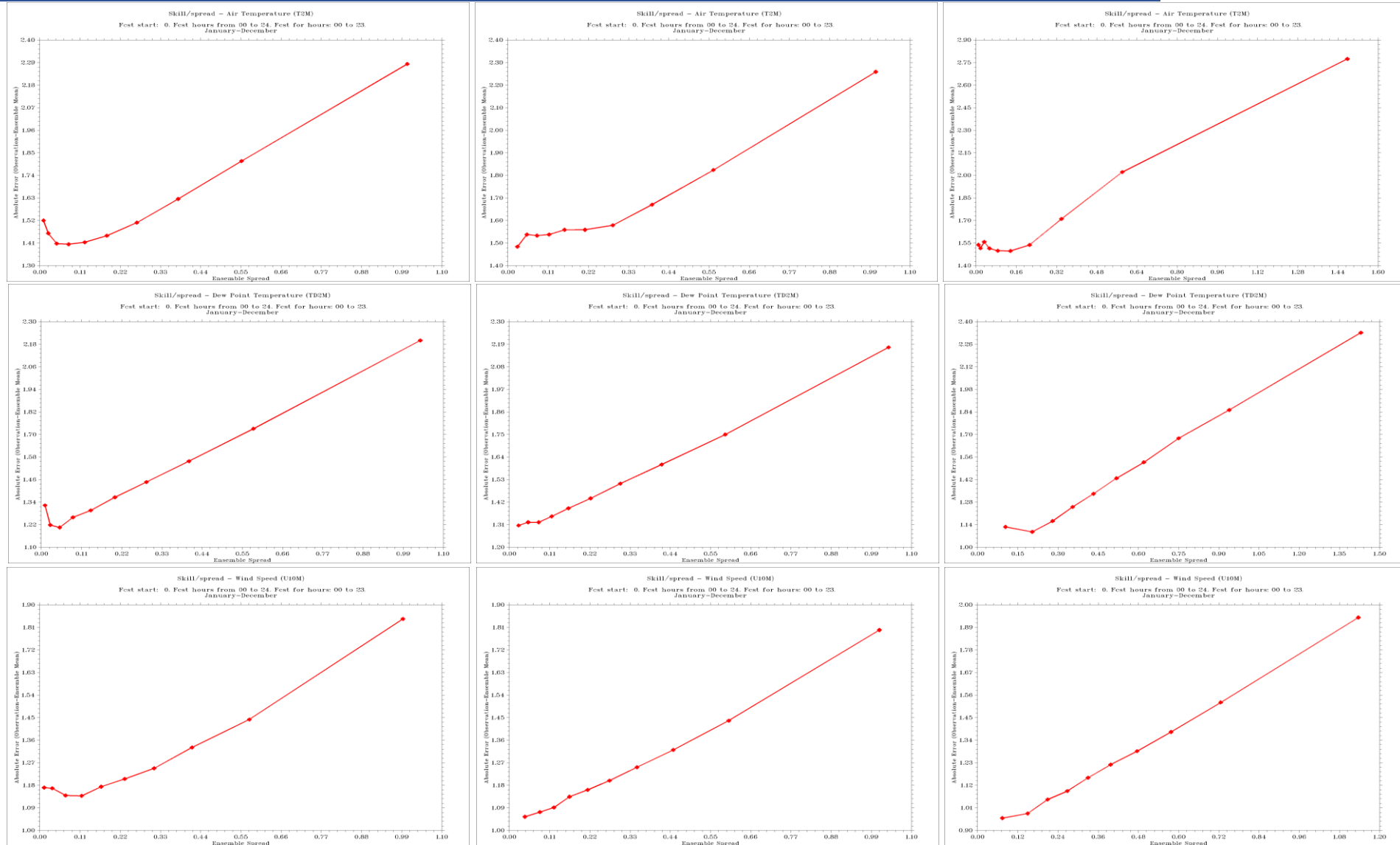
Spatial distribution of skill for air temperature. Left to right: years 2011 to 2014, top to bottom: *efco* perturbation, *laf* perturbation and operational perturbation.

Spatial distribution of skill for dew point temperature. Left to right: years 2011 to 2014, top to bottom: *efco* perturbation, *laf* perturbation and operational perturbation.

Spread/skill charts. Top to bottom: air temp., dew point temp., windspeed. Left to right: *efco* perturbation, *laf* perturbation and operational perturbation (2011-14).

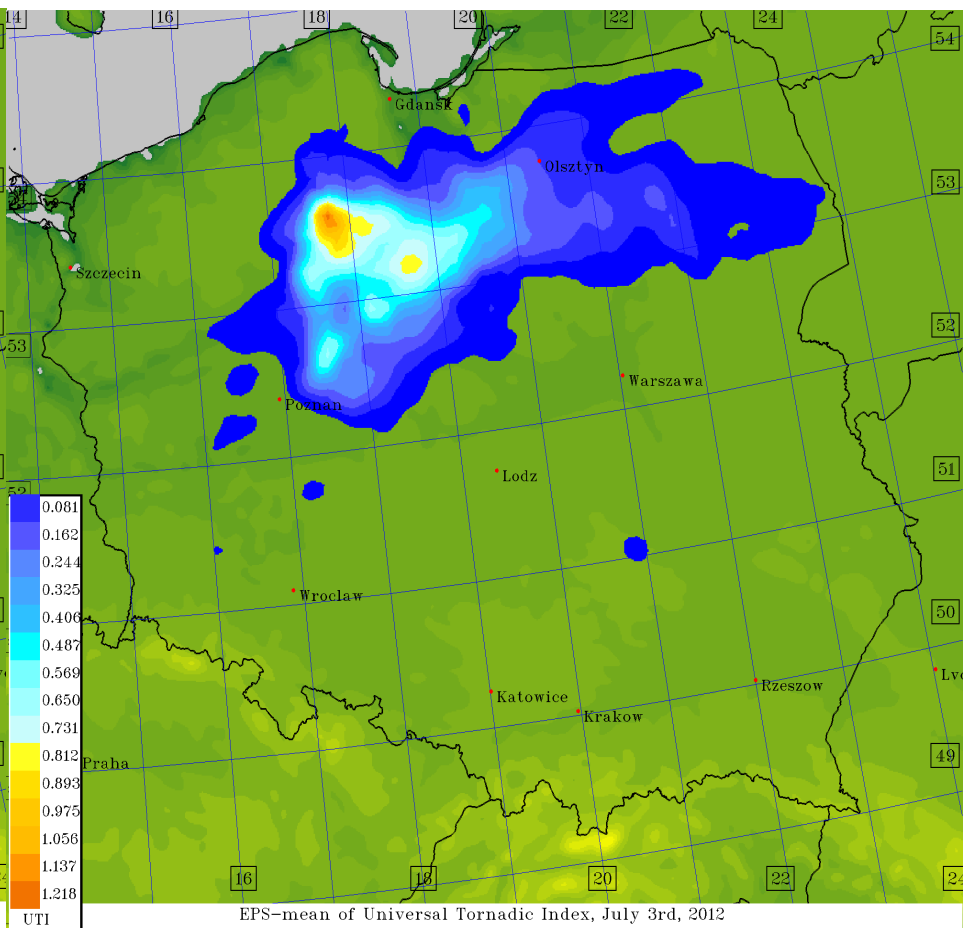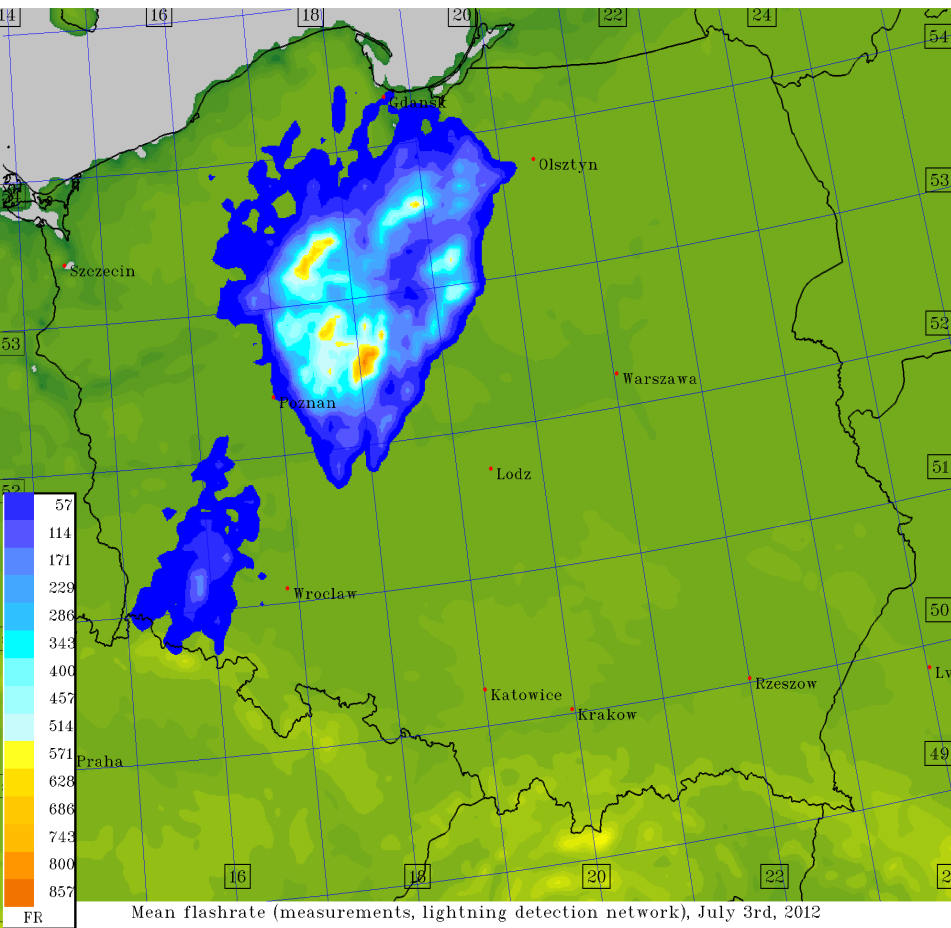T4.1 Calibration (**shown – Machine Learning presentation**) and

T4.2

• Specific products from ensemble outputs – further computations and continuation (for operation perturbation method and actual current forecasts) of assessment of effectiveness of ANN method;

• skill/spread computation for 2013 and 2014 in terms of flashrate/thunderstorms and visibility range as non-standard products from EPS;

• new indicator (UTI) as a possible candidate for thunderstorm recognition and forecasts – verification against lightning detection network "PERUN" in Poland.

• **Assessment of feasibility of space-lag (or cross-) correlation method for both "basic" elements, like T2M, U10M, TD2m** etc. and HIW (visibility range, flashrate...)
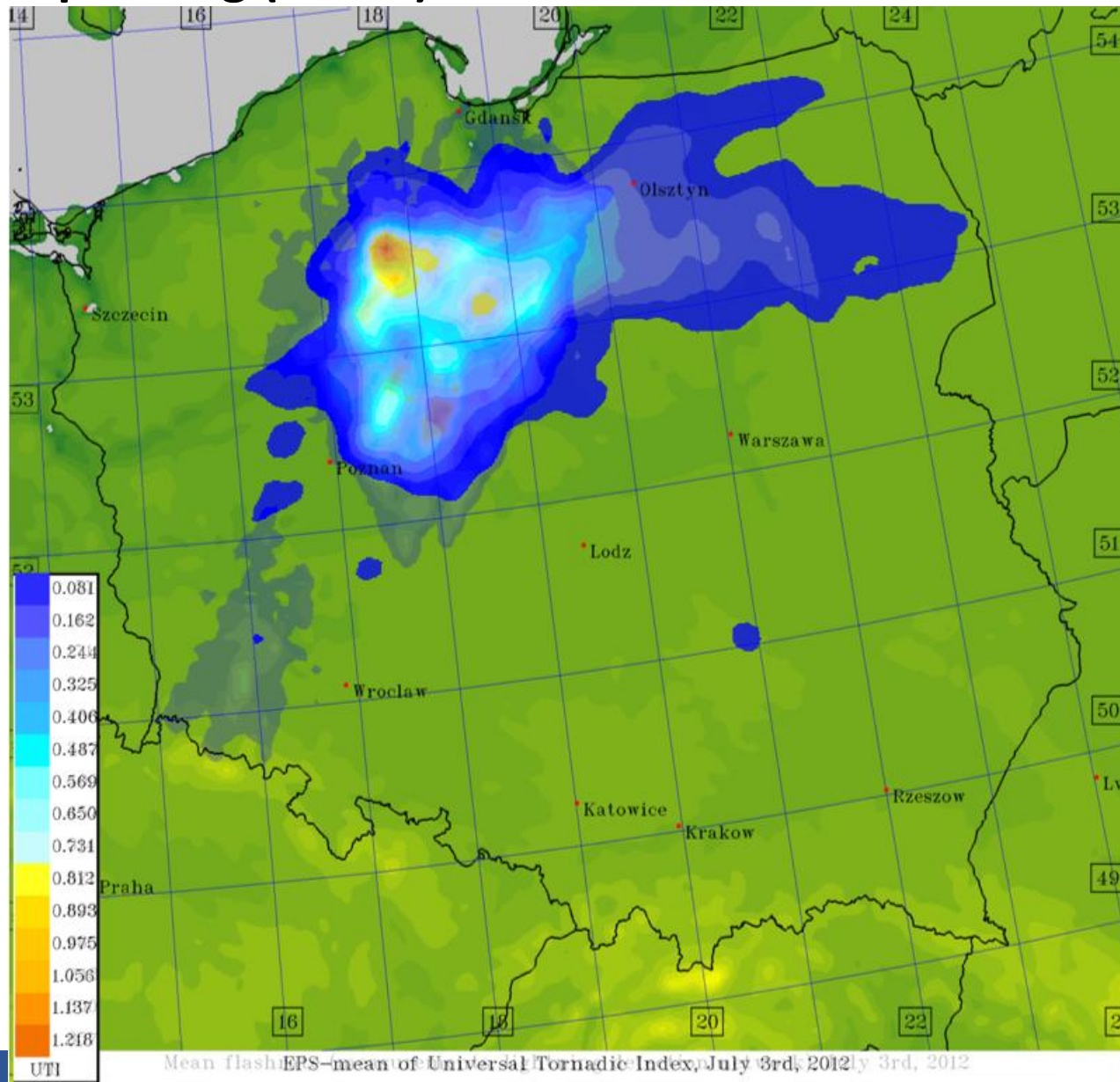
In T4.2 – summing up single case study of serious HIW event in Poland August 11th, 2017. Paper submitted to JCR journal.
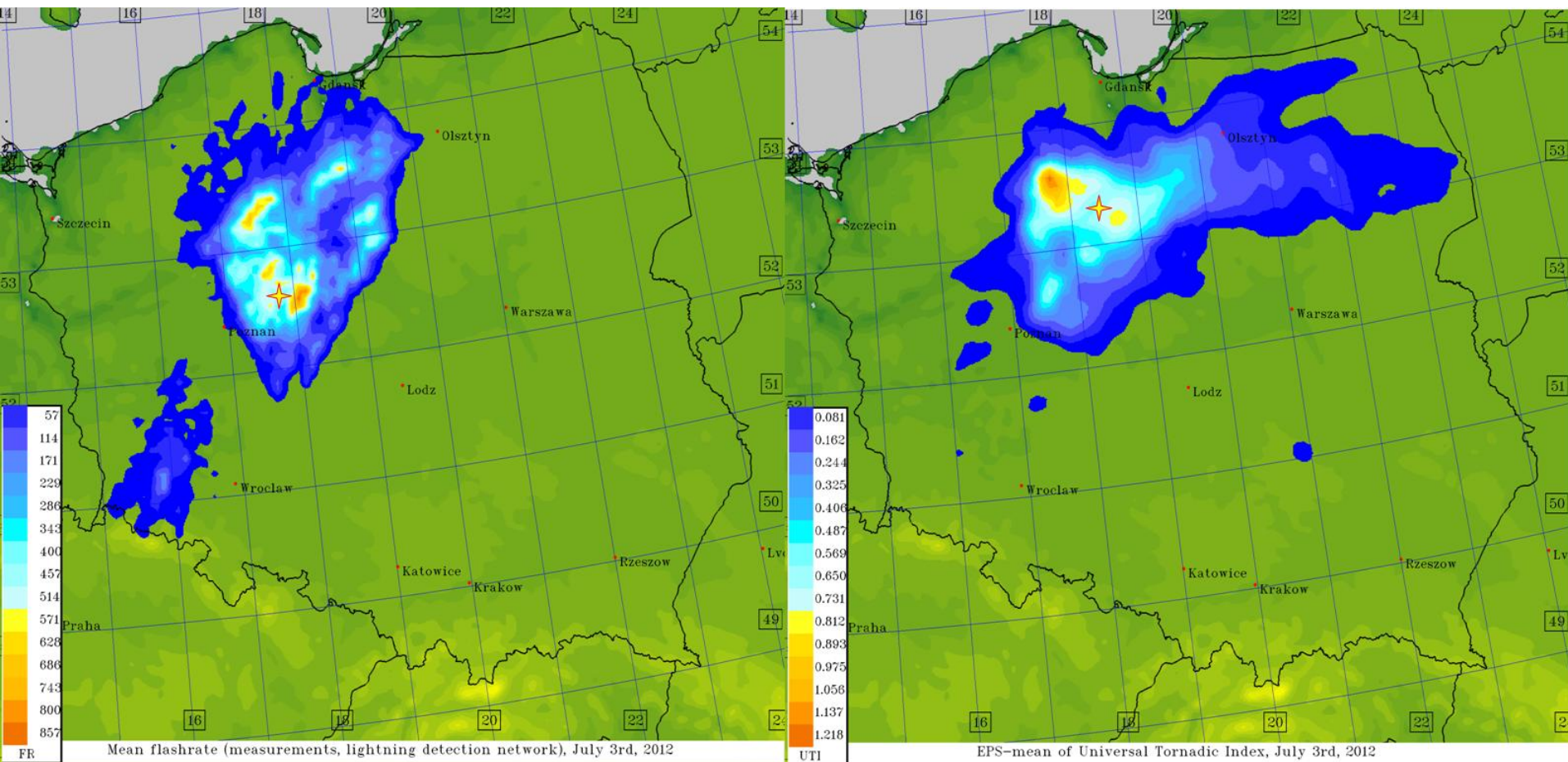
Space lag (cross-) correlation – reminder

Mean flashrate (measurements, lightning detection network), July 3rd, 2012

EPS−mean of Universal Tornadic Index, July 3rd, 2012

## Space lag (cross-) correlation – reminder

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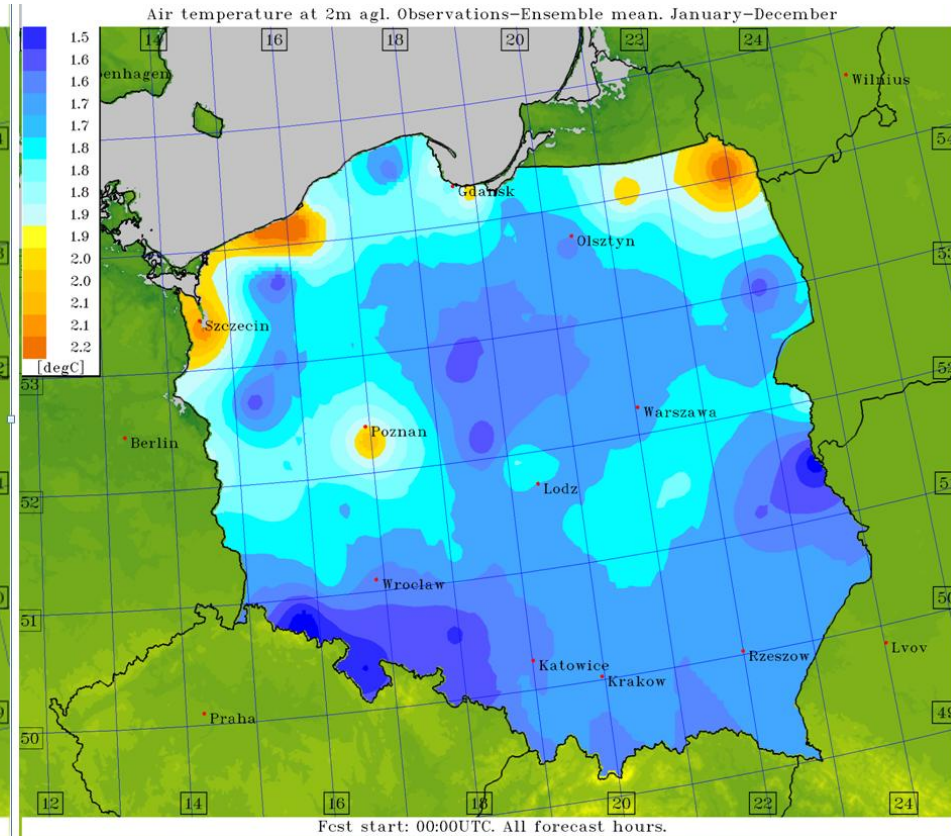## 1. Calculate coordinates of "centres of mass" (asterisks) for both distribution patterns (obs. vs. fcst)
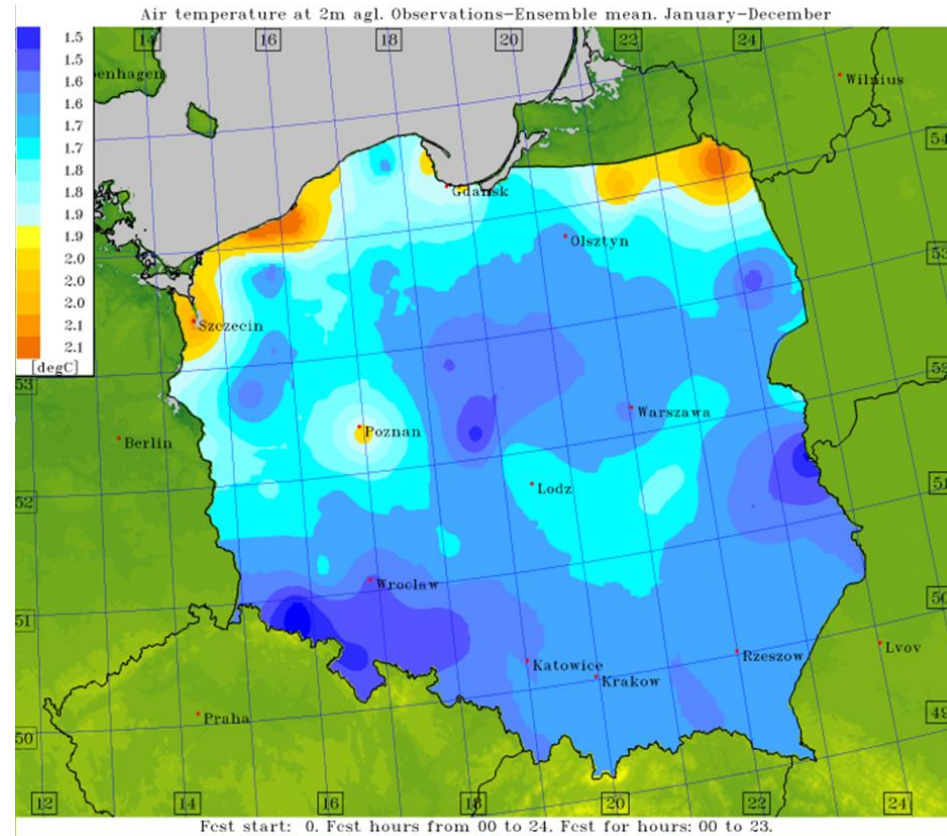

Mean flashrate (measurements, lightning detection network), July 3rd, 2012

EPS−mean of Universal Tornadic Index, July 3rd, 2012

## Space lag (cross-) correlation – reminder
2. Compute vector of displacement of fcst to obs. as a difference of the two above
3. Displace linearly every value of fcst by the vector of displacement

Mean flashrate (measurements, lightning detection network), July 3rd, 2012
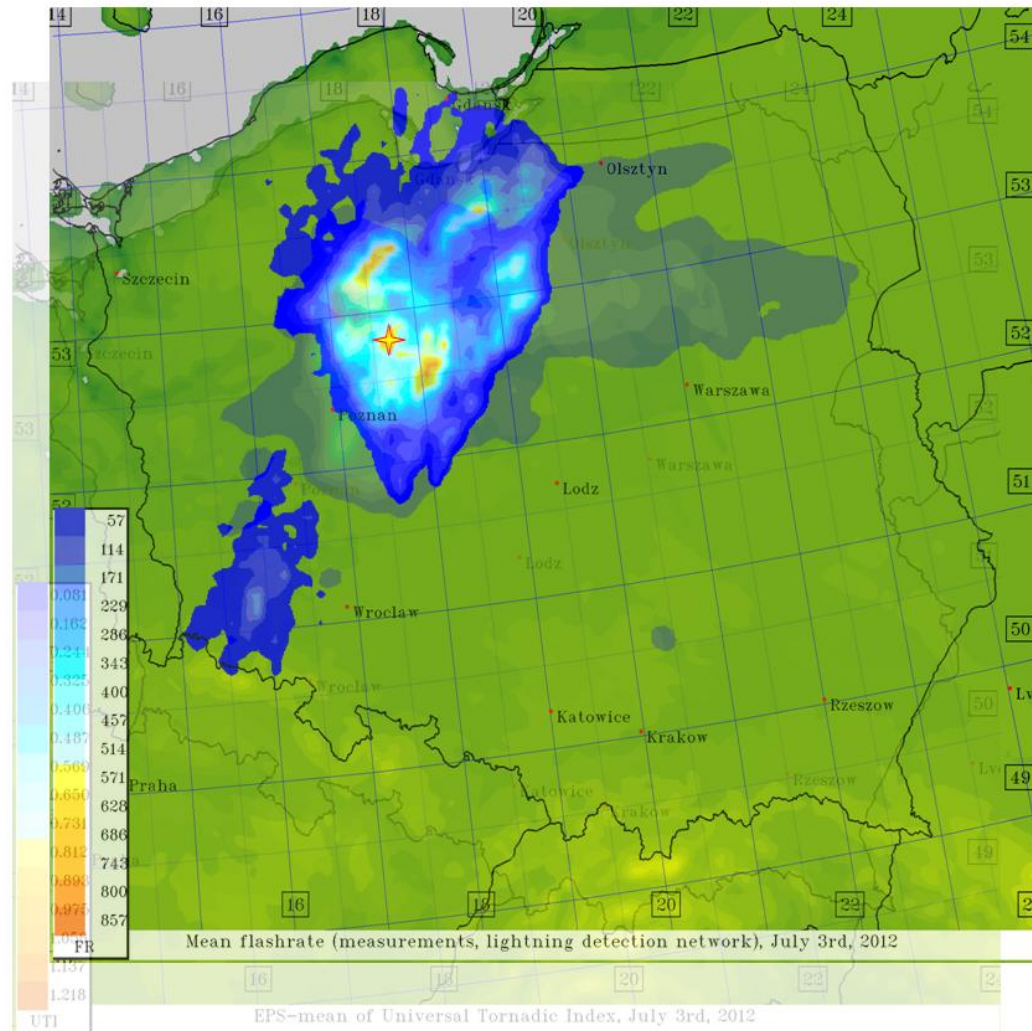
EPS-mean of Universal Tornadic Index, July 3rd, 2012

Spatial distribution of skill for air temperature – DMO (left) and using VOD procedure (right), mean values for 2011-2014.
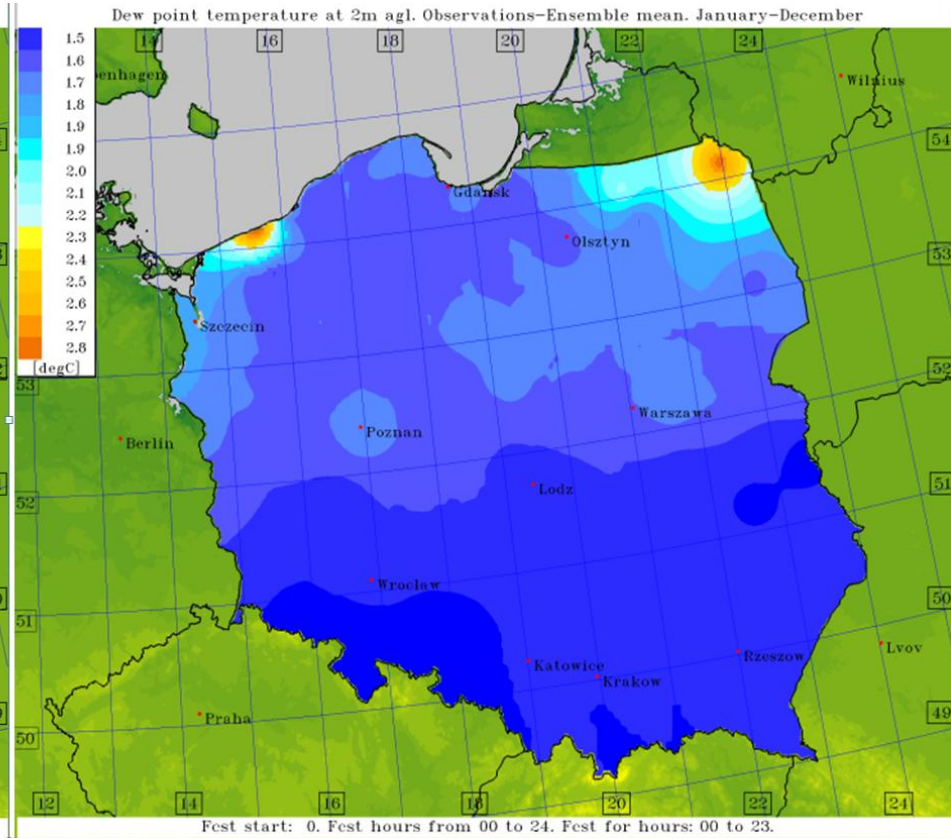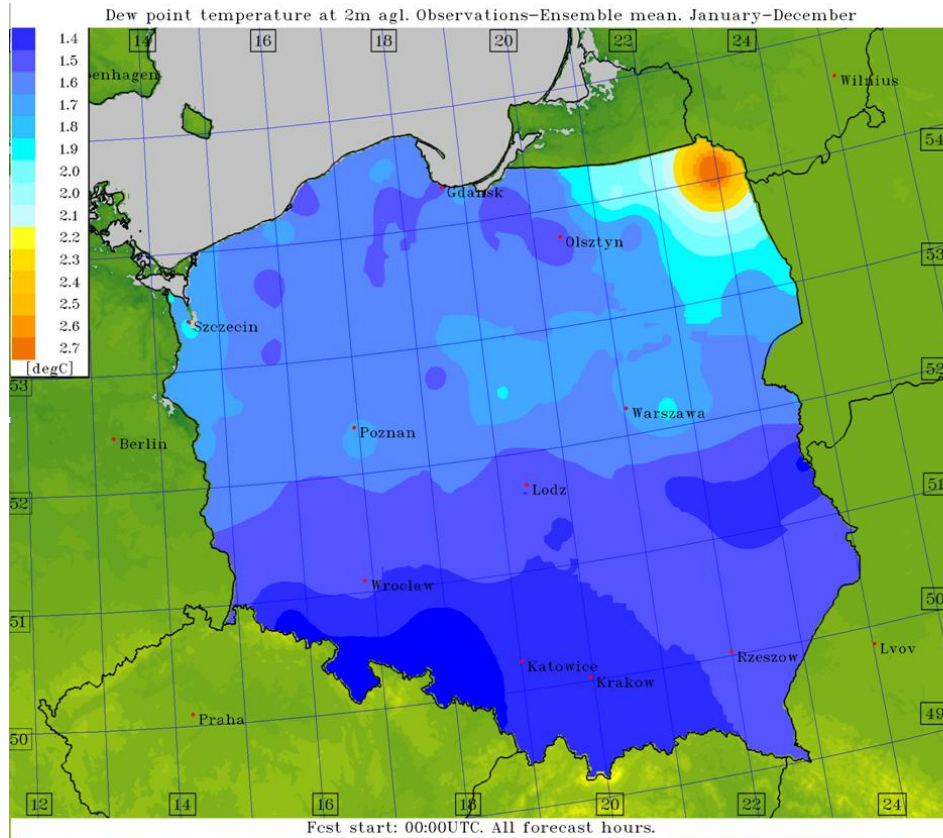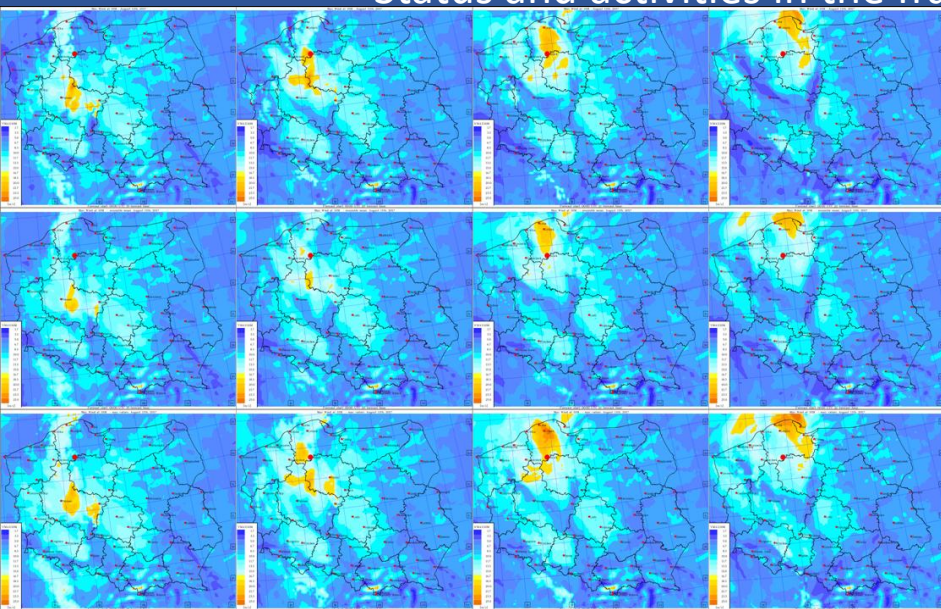
Spatial distribution of skill for dew point temperature – DMO (left) and using VOD procedure (right), mean values for 2011-2014.
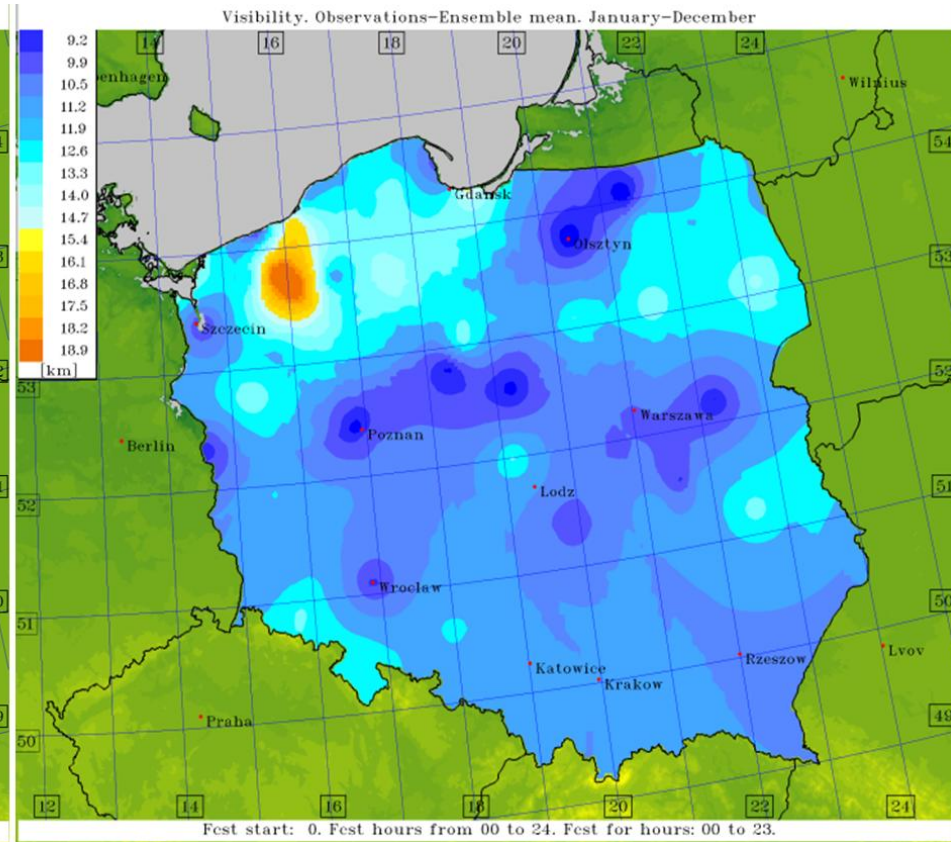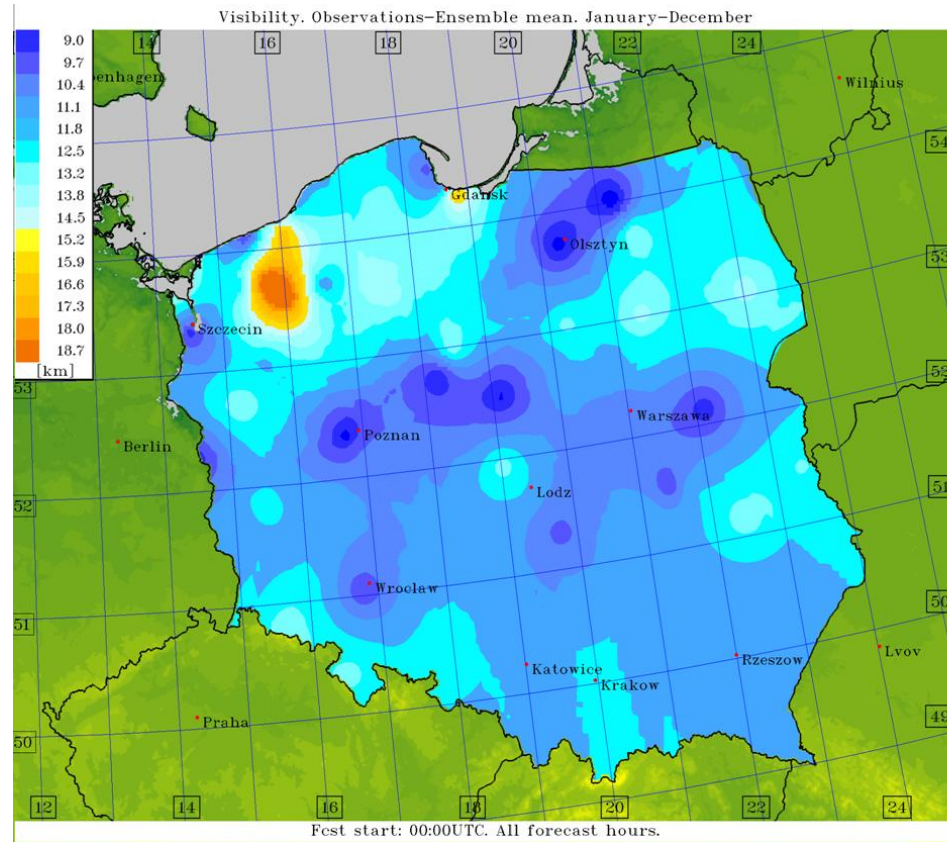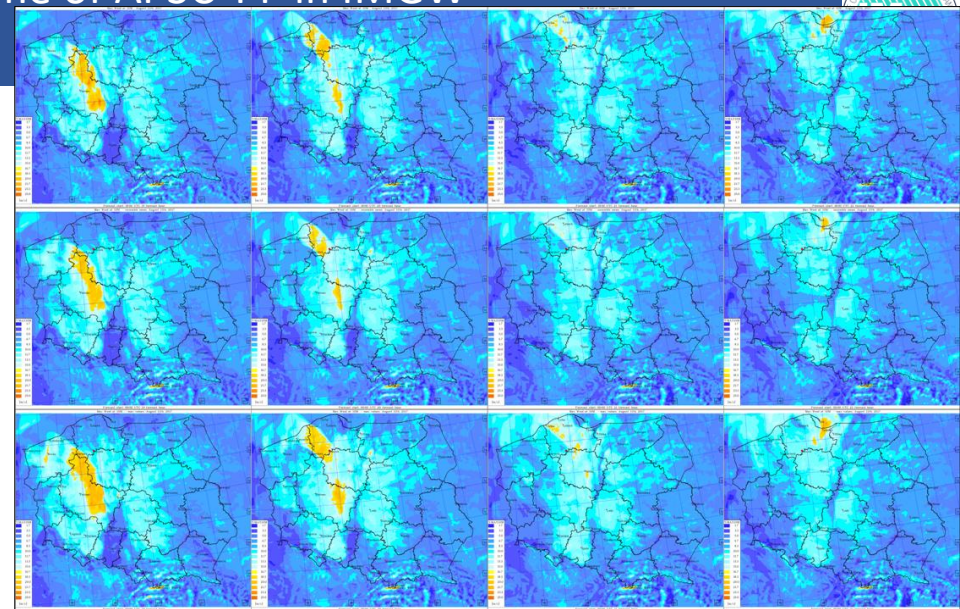
Spatial distribution of skill for visibility range – DMO (left) and using VOD procedure (right), mean values for 2011-2014.
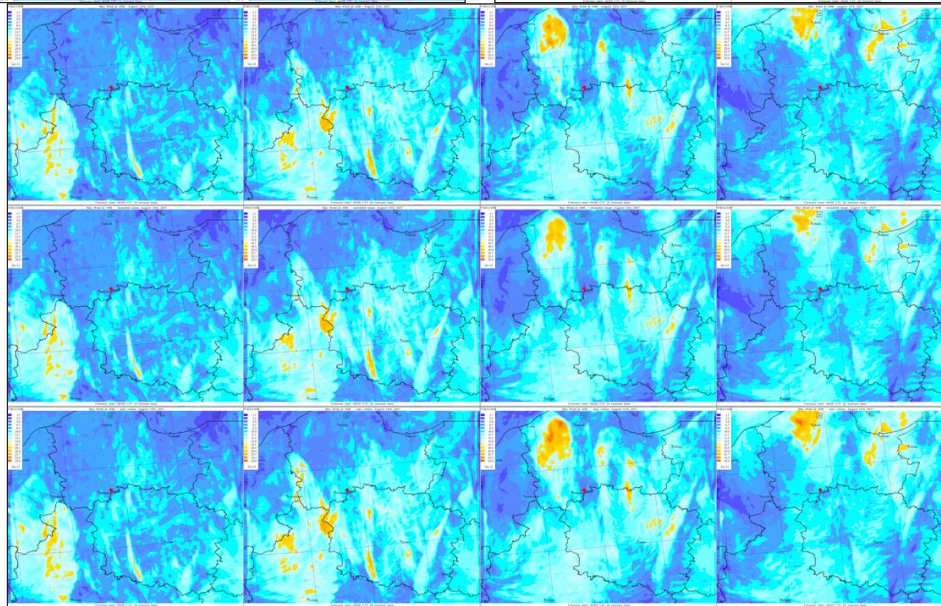
Destruction at the scout camp, Suszek, after a storm of August 11th, 2017
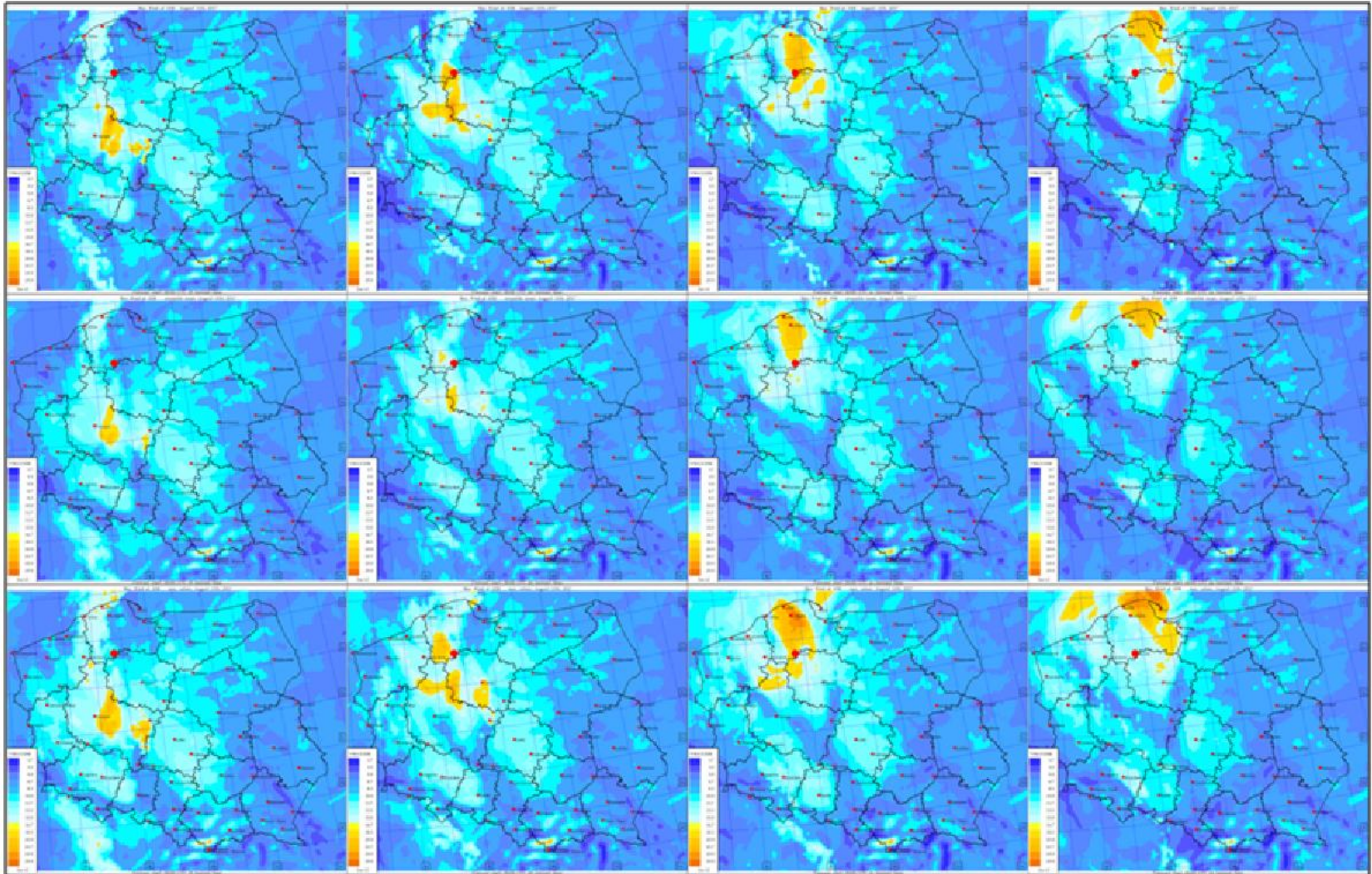
Resolution 7km

Resolution 2.8km

Resolution 0.7km

VMAX forecasts from 19:00 (leftmost) to 22:00 (rightmost) UTC. Top to bottom: deterministic forecast, ensemble mean, ensemble maximum values.

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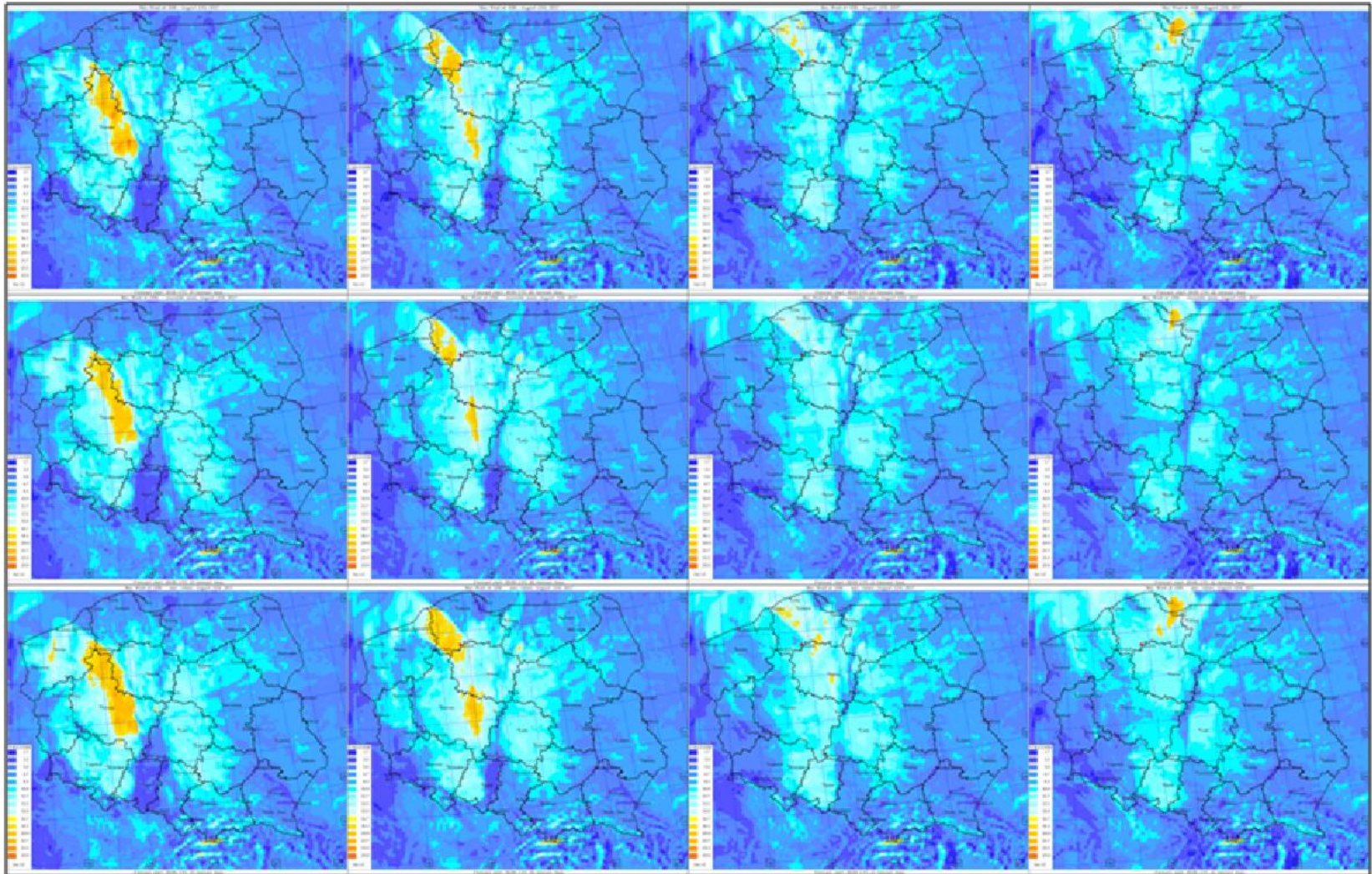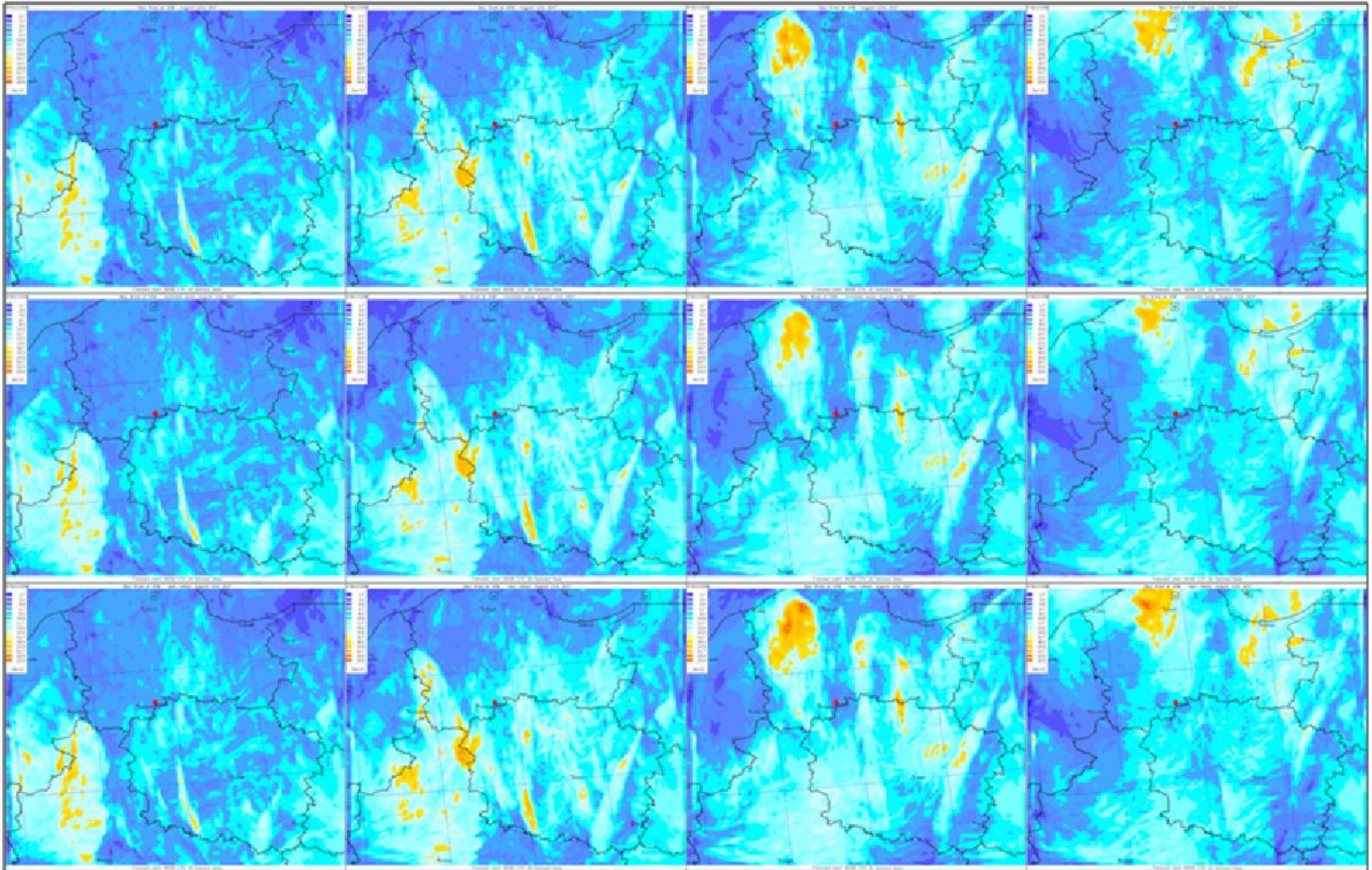
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VMAX forecasts from 19:00 (leftmost) to 22:00 (rightmost) UTC. Top to bottom: deterministic forecast, ensemble mean, ensemble maximum values.

First, complete the calculations for 2015, thus the entire period 2011-2015

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All of the above for the entire period of 2011 – 2015.

Conclusions to be drawn afterwards… ☺

You can worry about irrelevant things…
or you can focus on what's ahead of you
and drive fast like hell.

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