

Subjective evaluation of different versions of ALADIN/HU

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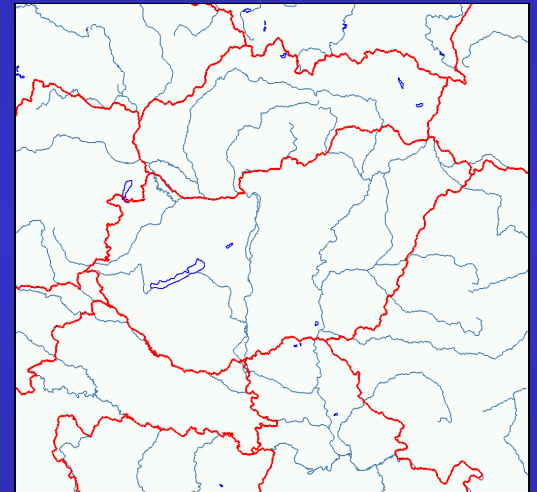
- **Motivation**
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- **Conclusions**

Motivations

- **Complex view of the models behavior in different synoptic situation**
- **Grey zone problem is exist on 6.5 km resolution, or is not?**
- **3D-VAR vs. dynamical adaptation comparison not only objectively but also subjectively**
- **To have more information about that variables which are not included in the objective verification system**

Methods

- **From 1. Febr. 2004.**
- **Subjective verification of the previous day :**
 - the Sunday fcst. on Monday**
 - the Thursday fcst. on Friday**
- **On the territory of Hungary:**
- **Discussion and classification**
(1 bad \Rightarrow 5 excellent) at 11:30 am



Methods II

- **Comparison of different models**

Previous 00 runs by:

- **ALADIN/HU dyn. ad. on 6.5 km res.**
- **ALADIN/HU dyn. ad. on 12 km res.**
- **ALADIN-3D-VAR on 12 km res.**

12 UTC run two days before by:

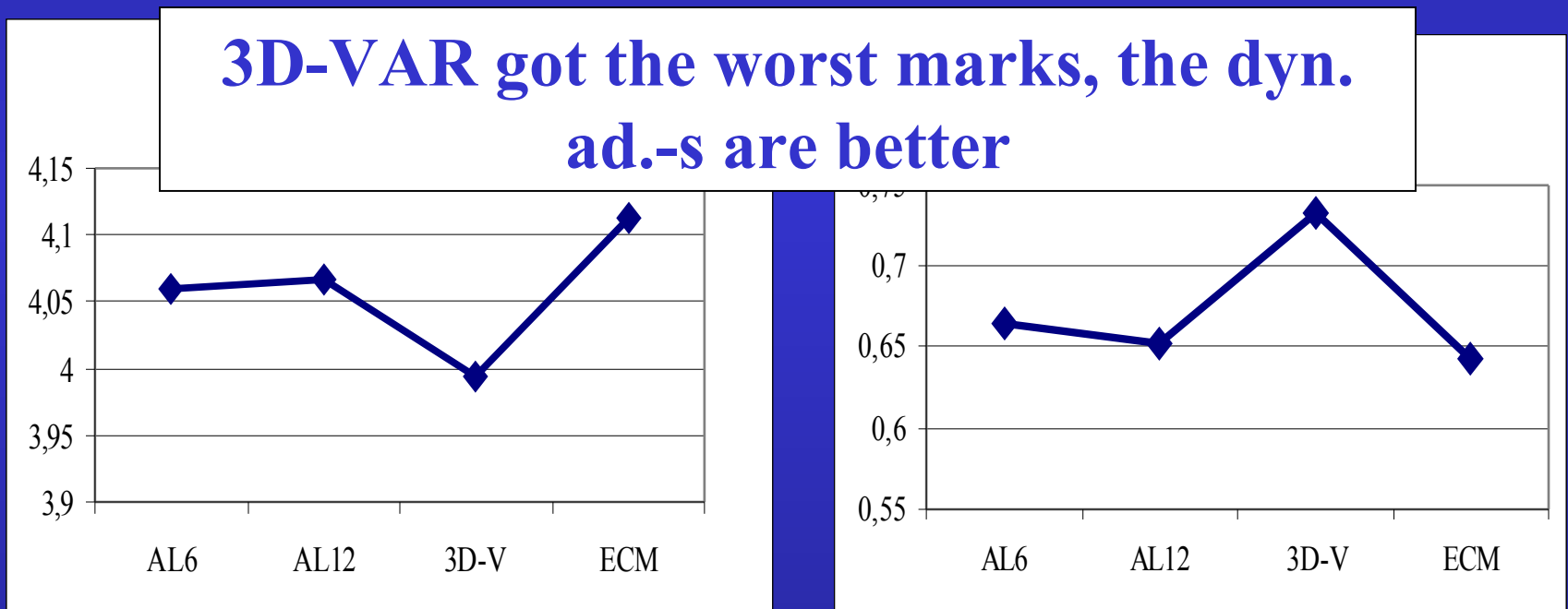
- **ECMWF**

Methods III

- **Participants: Gabriella Csima, Edit Hágel, István Ihász, Gabriella Szépszó, Helga Tóth, (Regina Szoták)**
- **Verified parameters:**
 - **2m Temperature**
 - **Precipitation**
 - **Total cloudiness**
 - **10m Wind**

Results

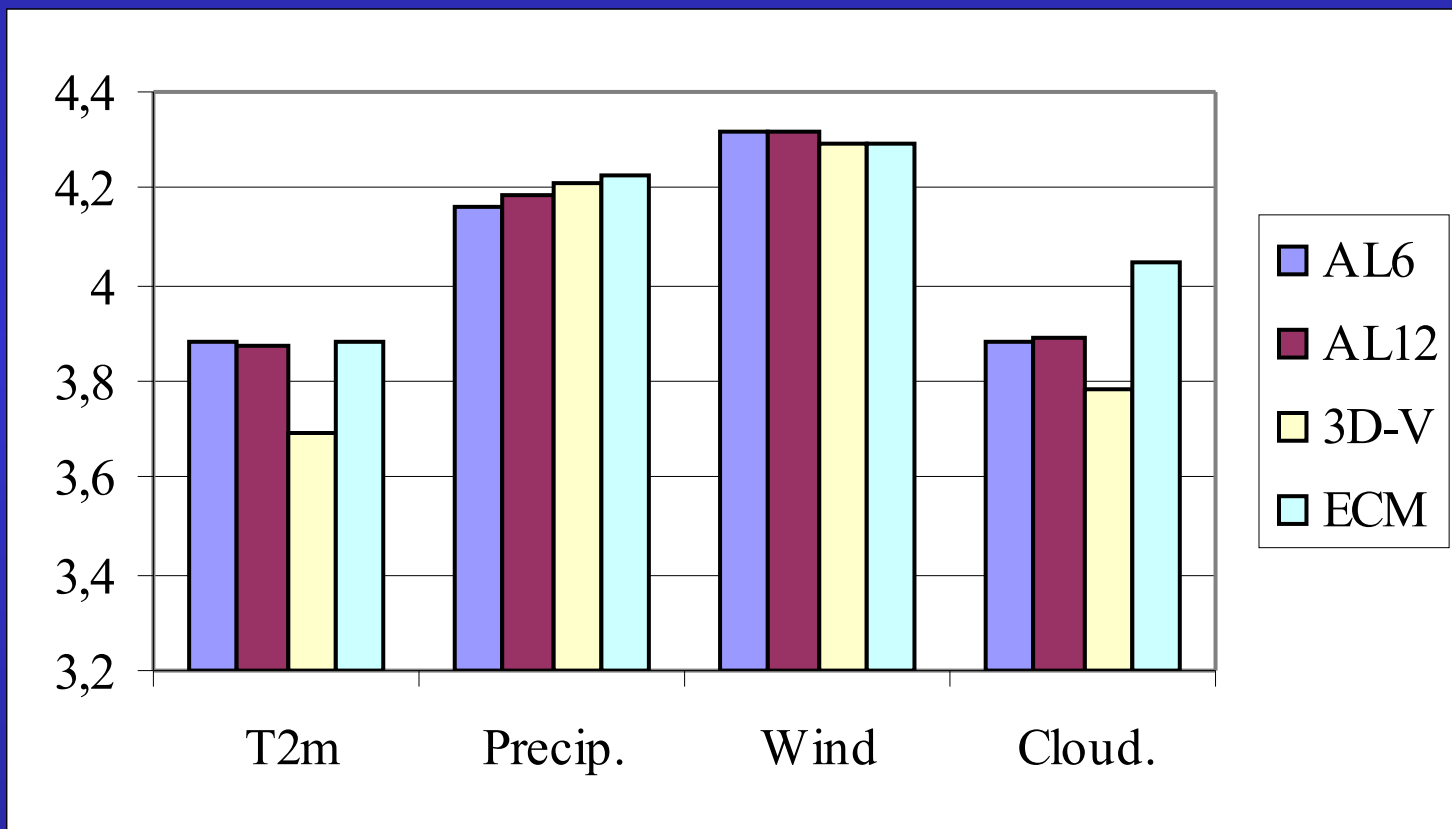
- **Total mean and standard deviation**



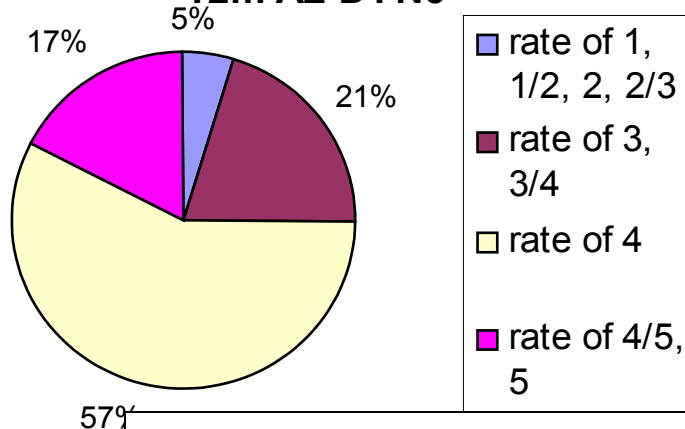
-weak forecast: - cloudiness: for all ALADINs

- T2m: for 3D-VAR

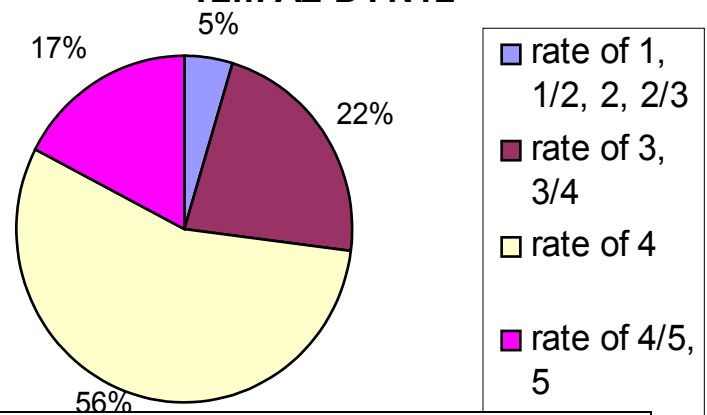
-good and similar: Wind and the precipitation



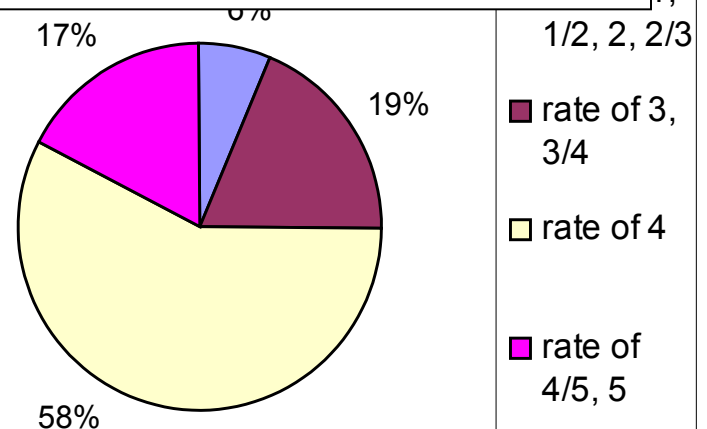
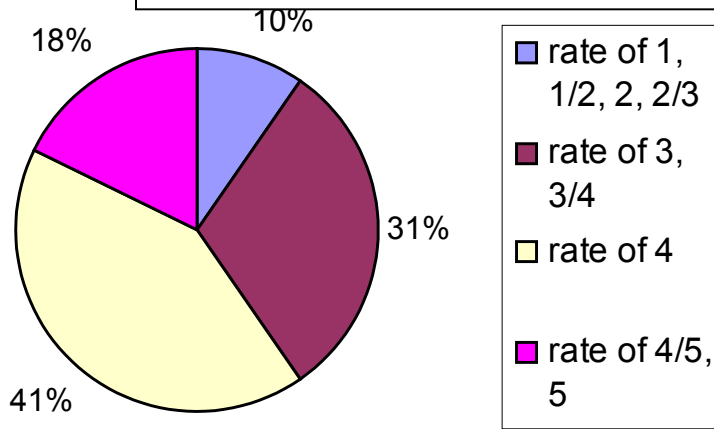
T2m AL-DYN6



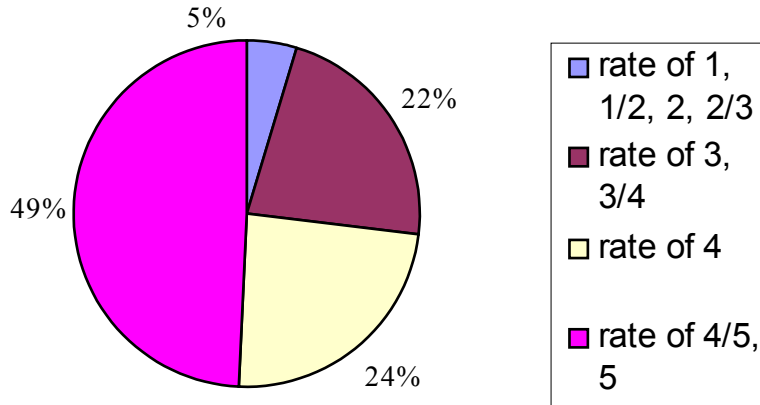
T2m AL-DYN12



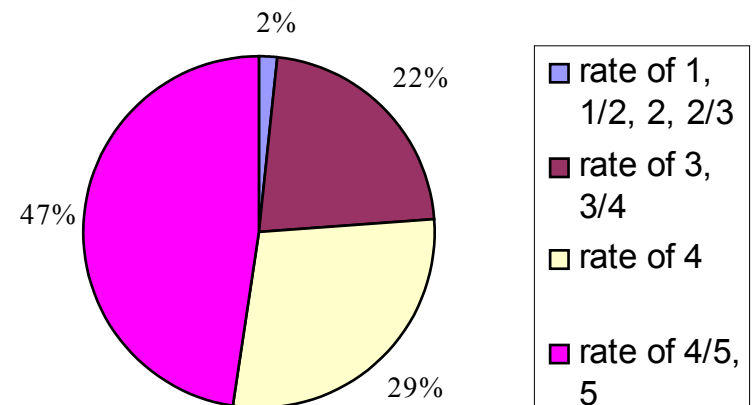
3D-VAR produced 2 times more middle-class 2mT forecasts than the others



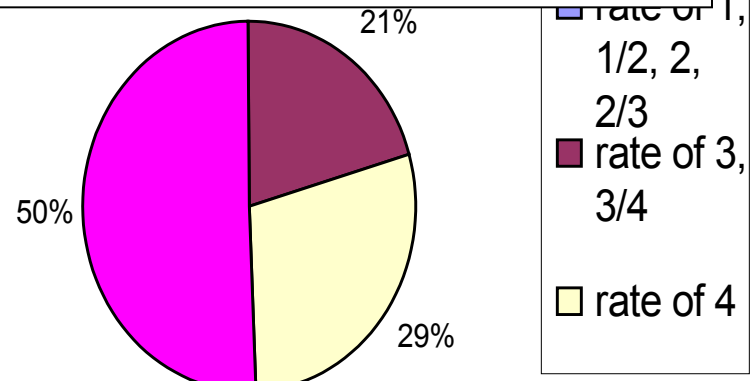
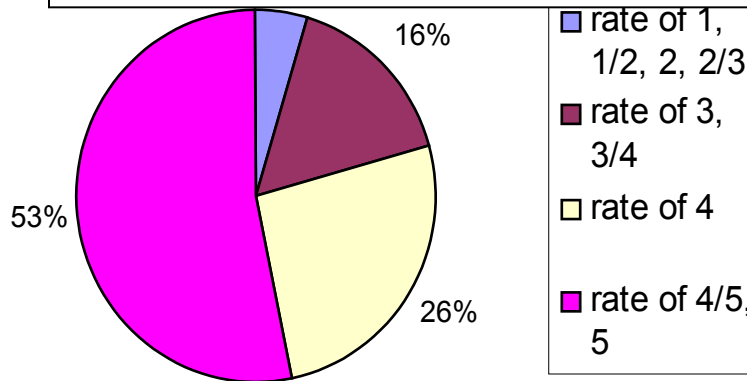
Precip. AL-DYN6



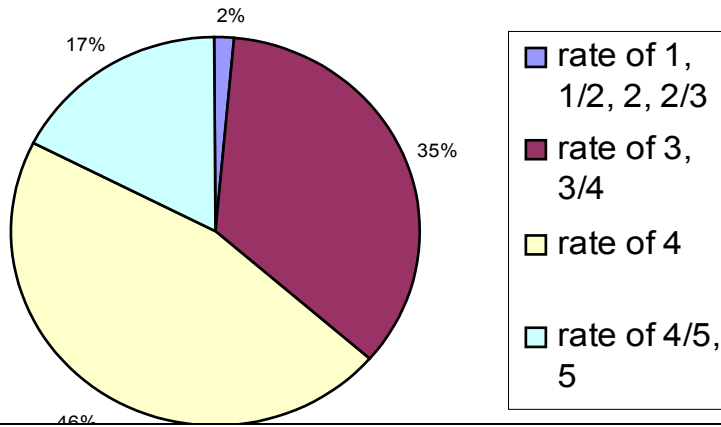
Precip. AL-DYN12



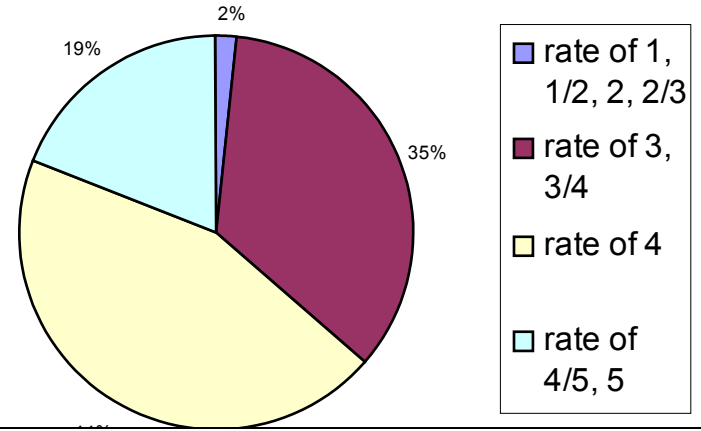
3D-VAR got the most excellent marks and the least middle-class



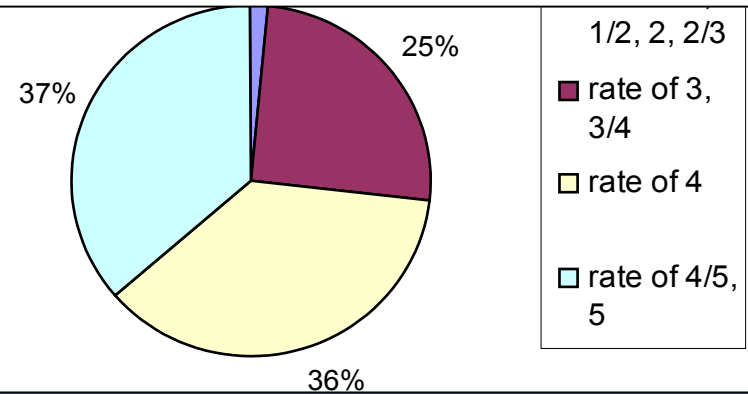
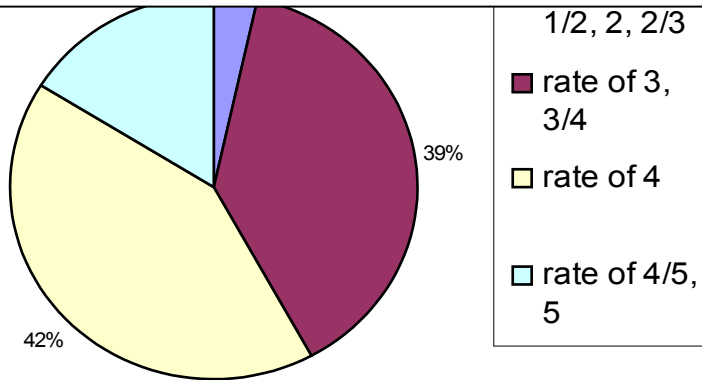
Cloud. AL-DYN6



Cloud. AL-DYN12



**Too many middle-class forecasts of ALADINs and
Too few excellent**

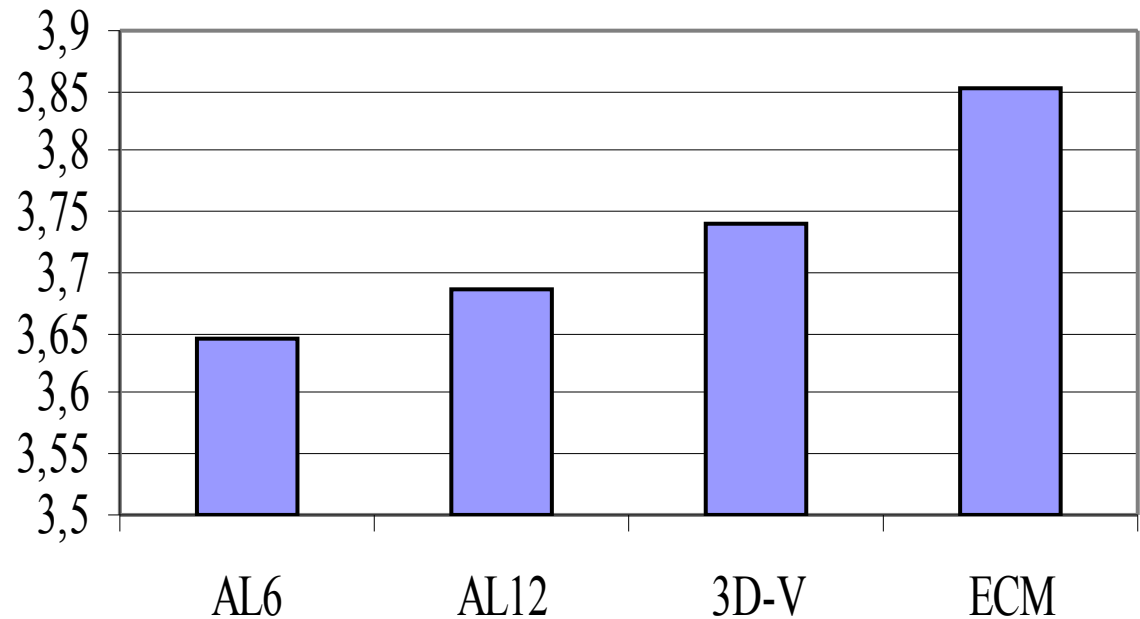


- rainy day > 5mm
(~23 days)

- Order is the same as
the for the full period

- Not neglectable diff.
AL6 and ECMWF

Mean precipitation-mark on rainy days

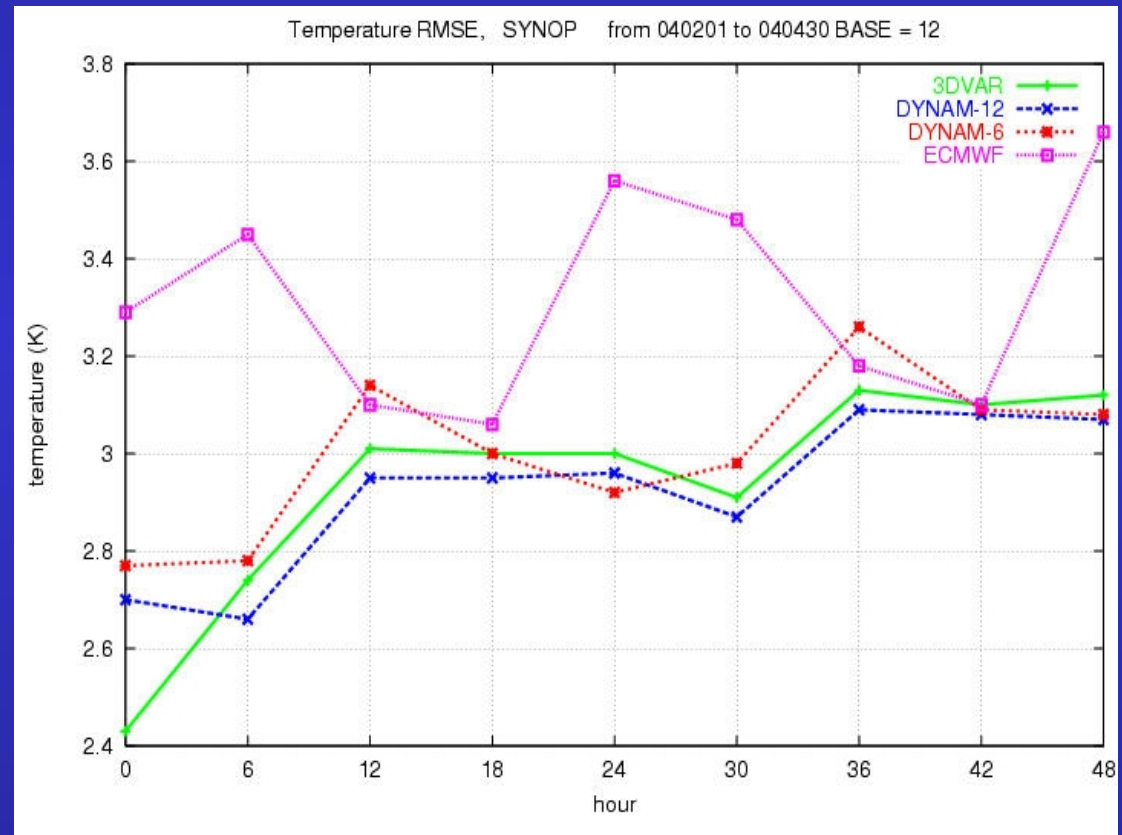


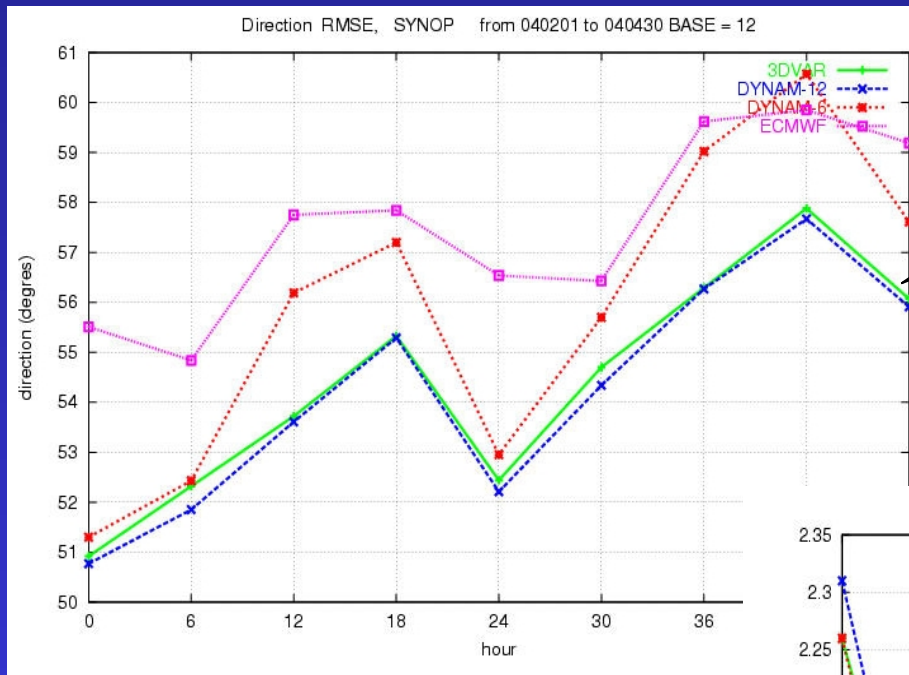
Objective scores on the surface

-Opposite results
for some
parameters than
got by the
subjective
evaluation

- But the the
scores are
calculated on the
whole domain

2mT

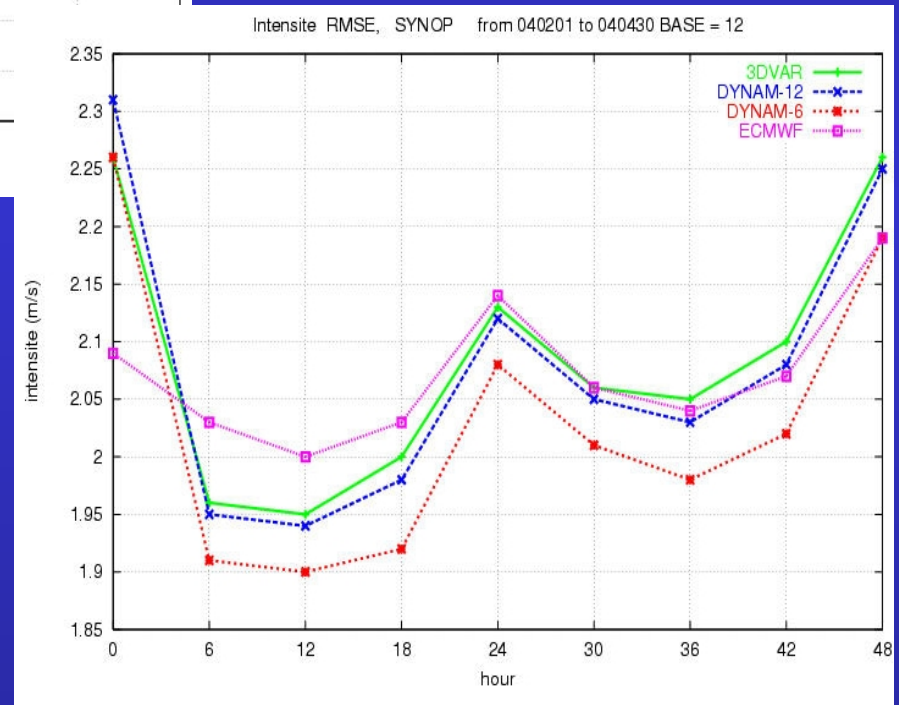


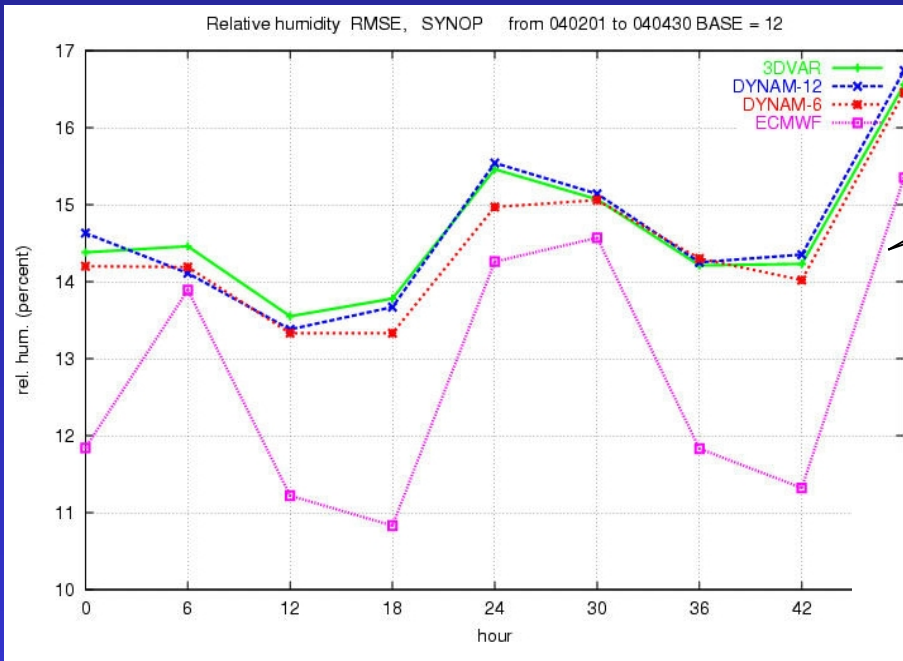


Wind direction

Wind speed

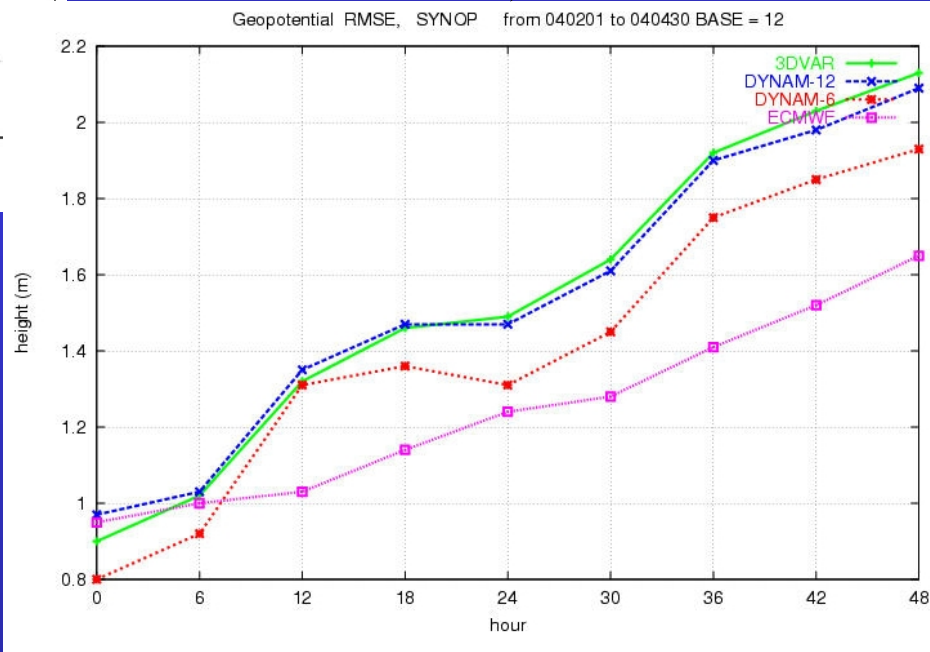
Subjective and objective verif. gave similar results for wind





rel.hum

Geopot.



**ECMWF
produced better
scores for the 2Rh
and geopot.**

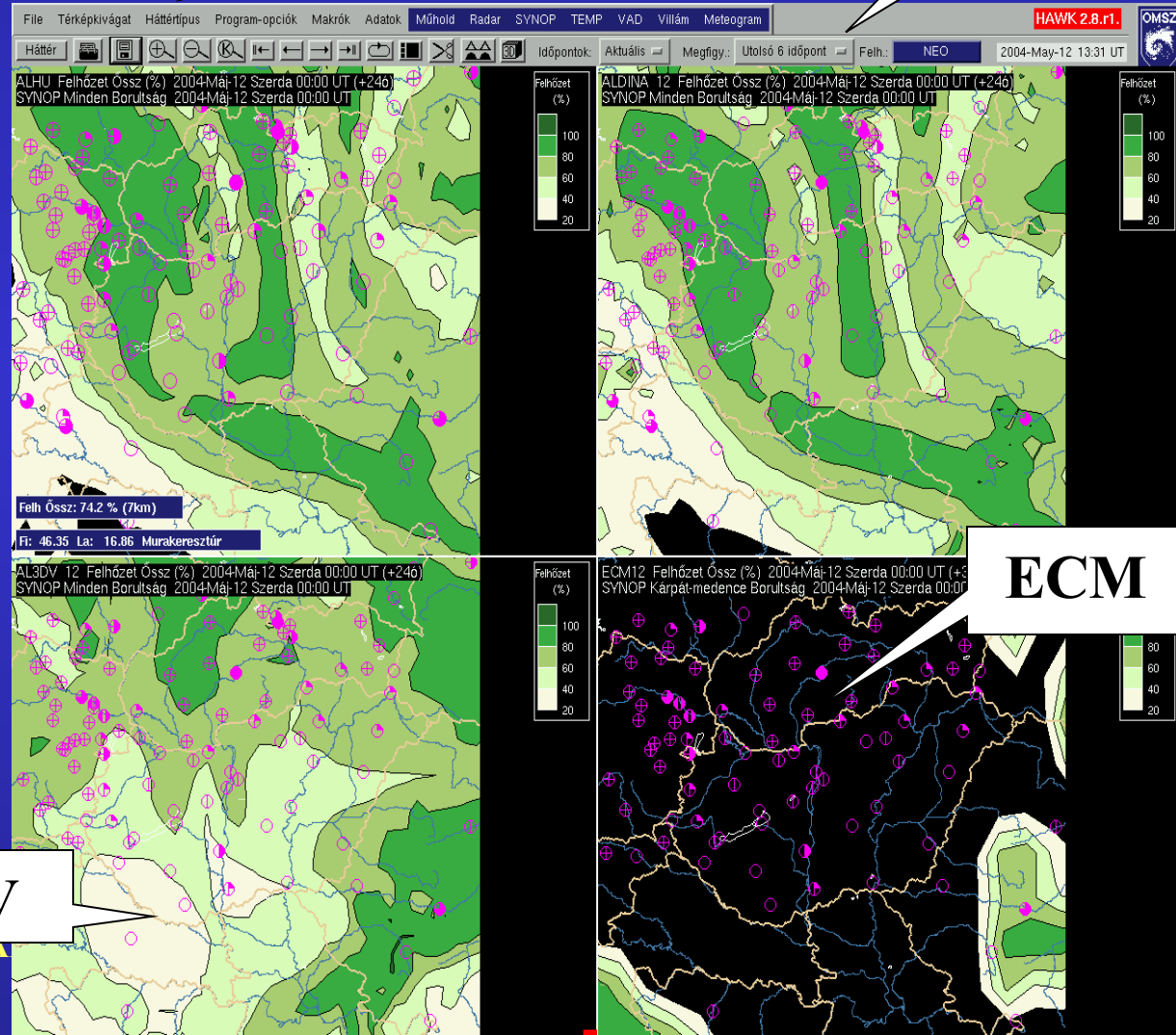
Regular deficiency

- **Cloudiness**

DYN. 6.5

DYN. 12

ALADIN models generally forecast to much total cloudiness, which is not informative in the oper. practice.



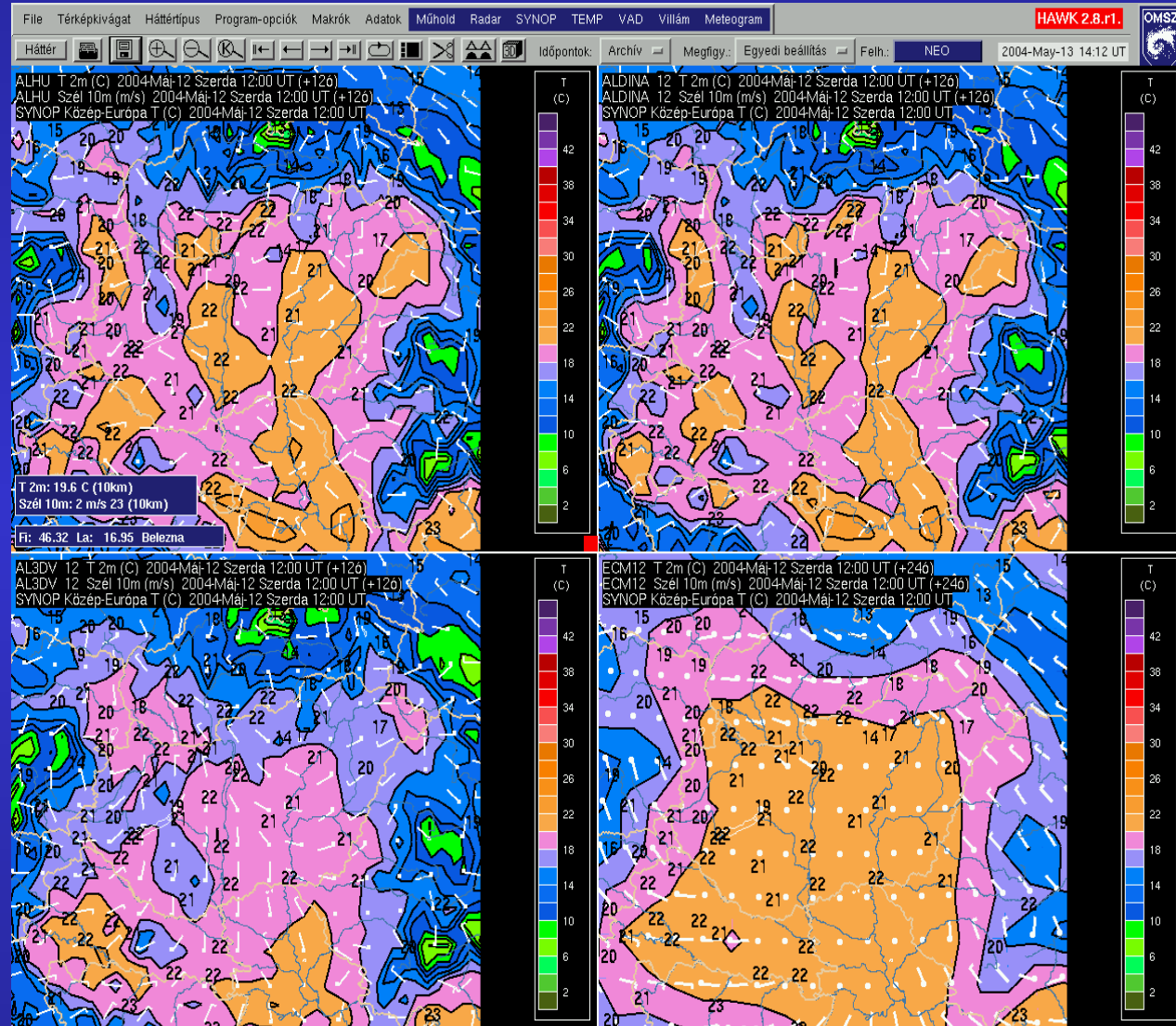
3D-V

ECM

• Temperature I

- Smaller max. temperature in ALADINs on the spring time

- 3D-VAR the coldest model



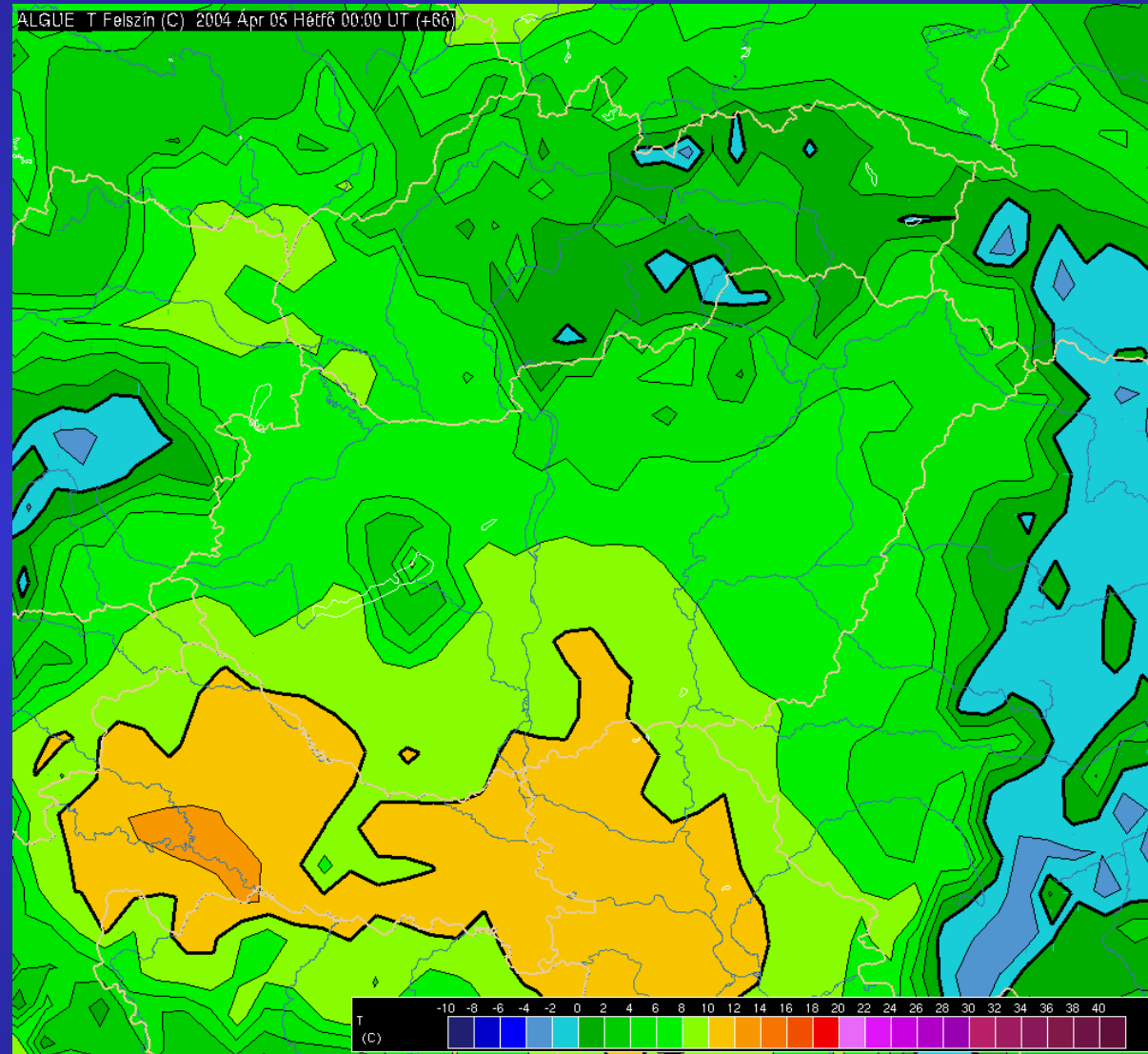
• Temperature II

‘Bean-shape’ cold spot in the 2mT and Tsurf in 3D-VAR and the guess

⇒ after a time disappeared

? modification in 3D-VAR

? By accident

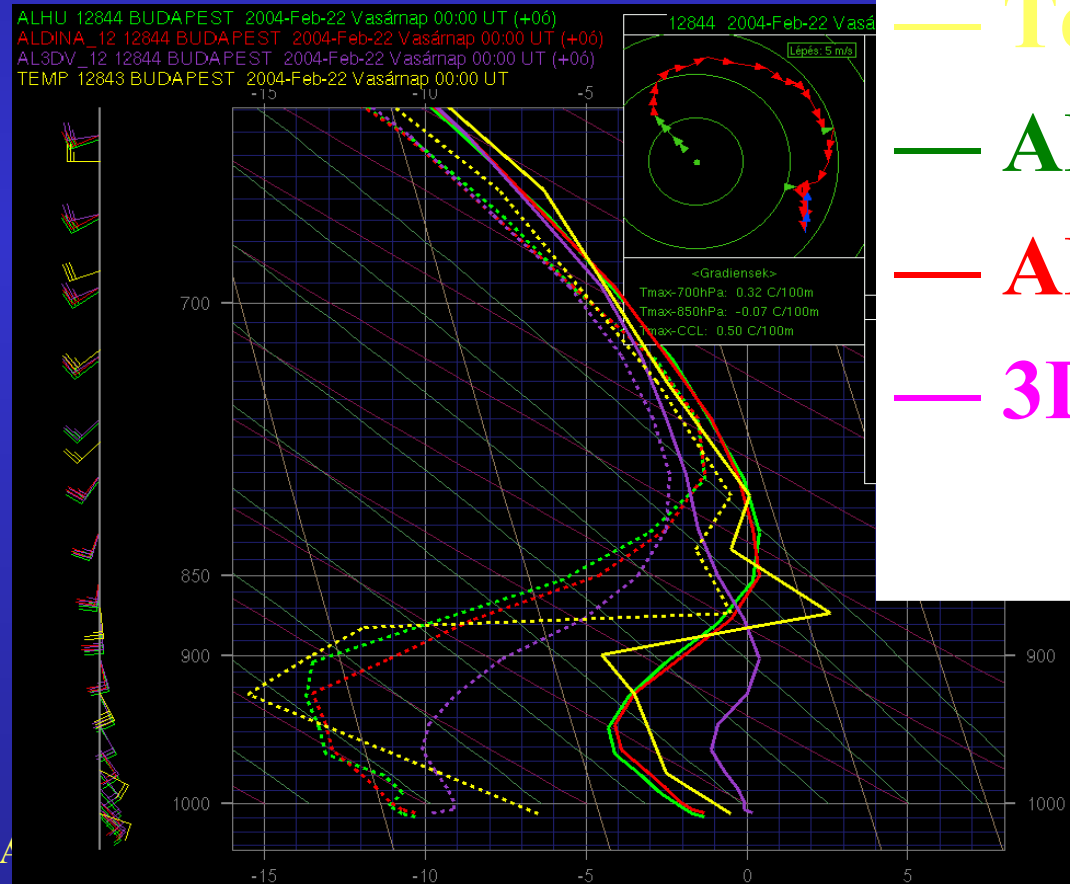


Case study (2004. 02. 22)

- Strong inversion \Rightarrow sleet
- Temperature structure at the initial time:

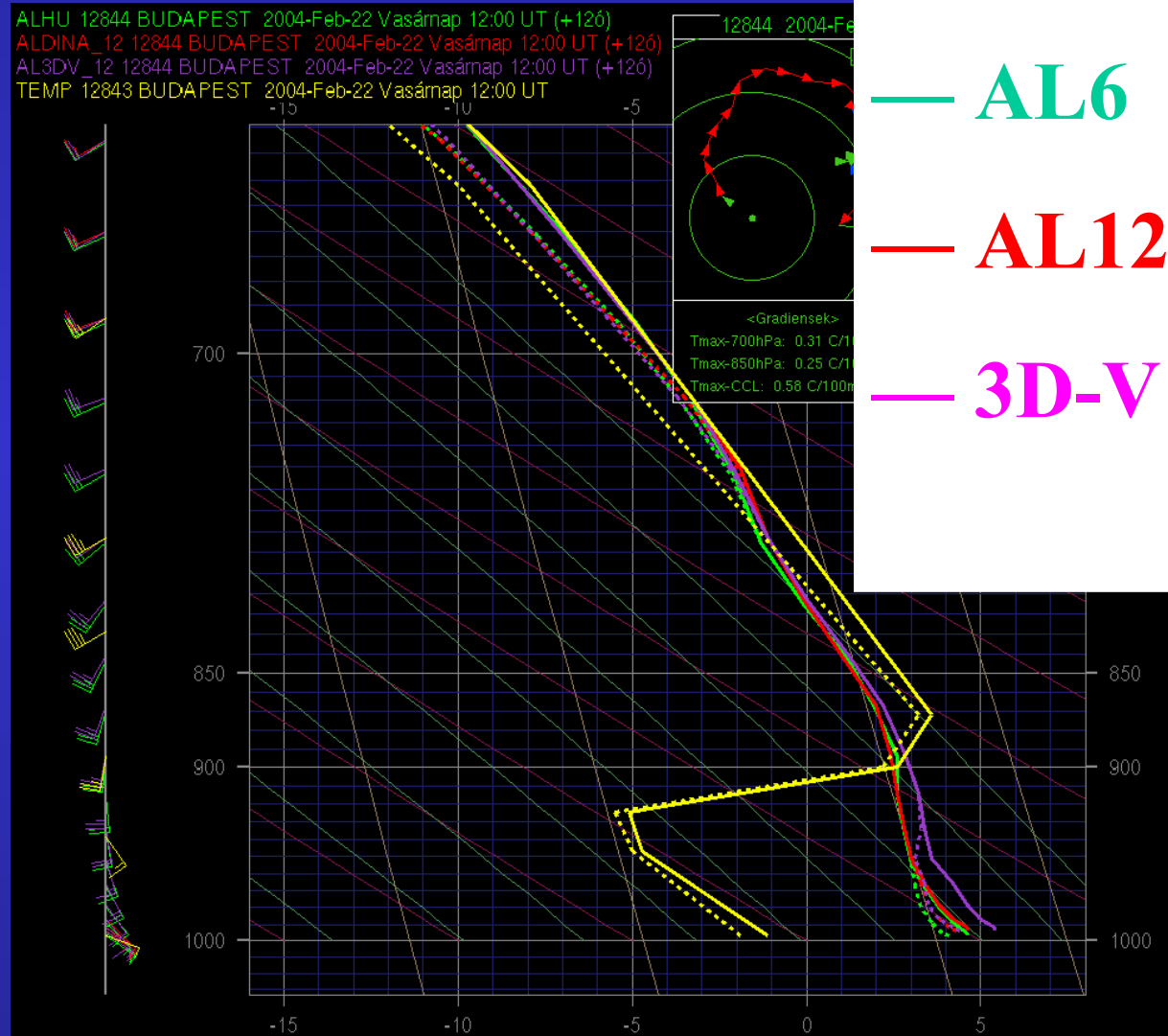
- DYN. AD-s
contain the
inversion

- in 3D-VAR
too weak
(nothing in the
guess)



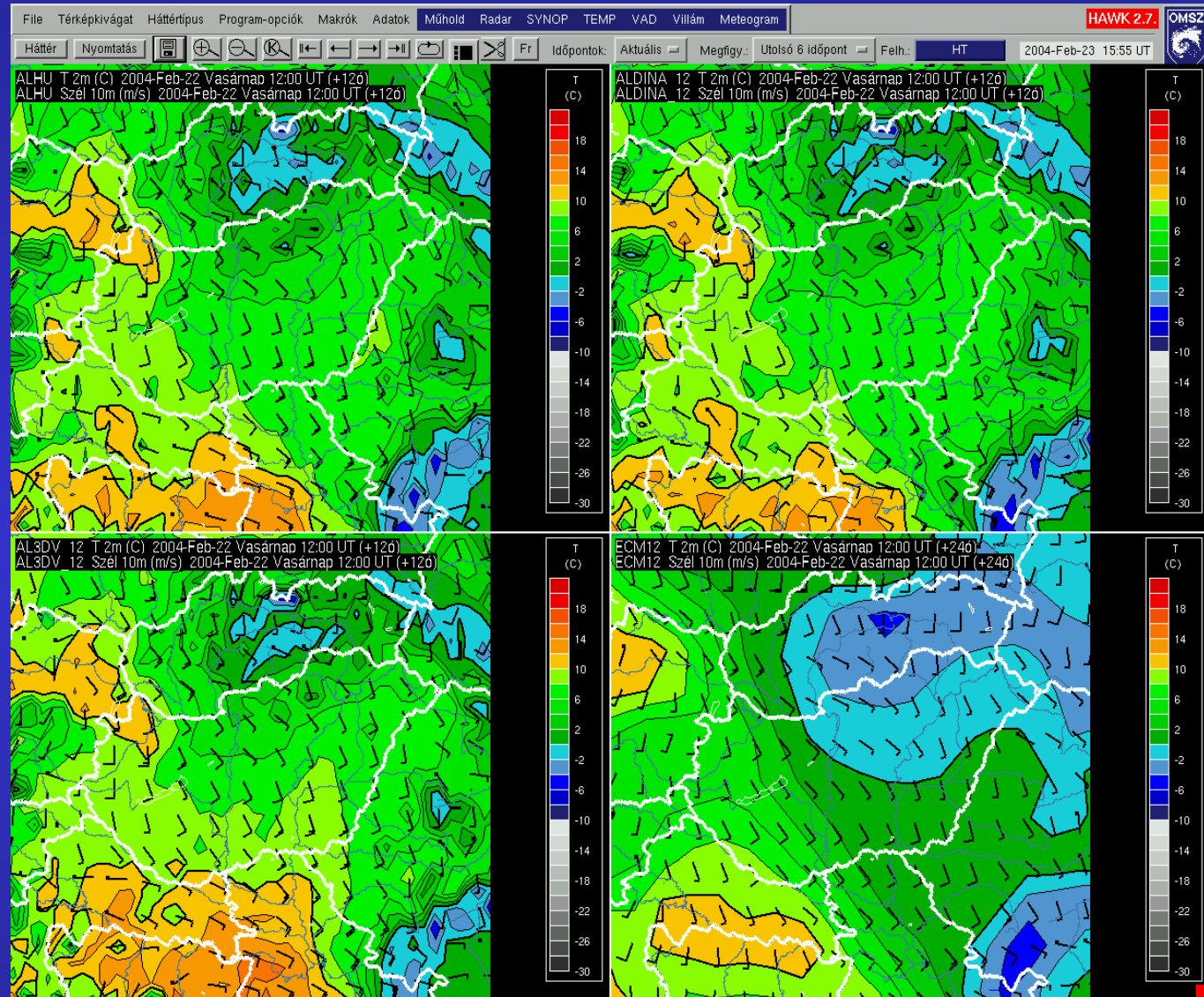
•Temperature structure after 12 h integration:

No inversion at all



**-Too warm
2mT,
ECWFMF is
better (below
0 in the North
few degree
SE)**

**- Few degree
wind-direction
error which
can be the
reason of the
misfcst.**



Conclusion

- **Small differences between the two kind of dynamical adaptation (no grey zone?)**
- **3D-VAR has a positive impact on the precipitation, but negative on the 2mT and cloud.**
- **Inconsistency between the subjective and objective evaluation maybe because of the domain differences \Rightarrow Scores on Hungarian territory by the help of Slovenian colleague**