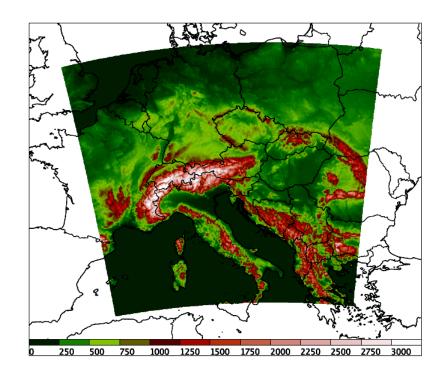
# Local data assimilation in Slovenia – 2014

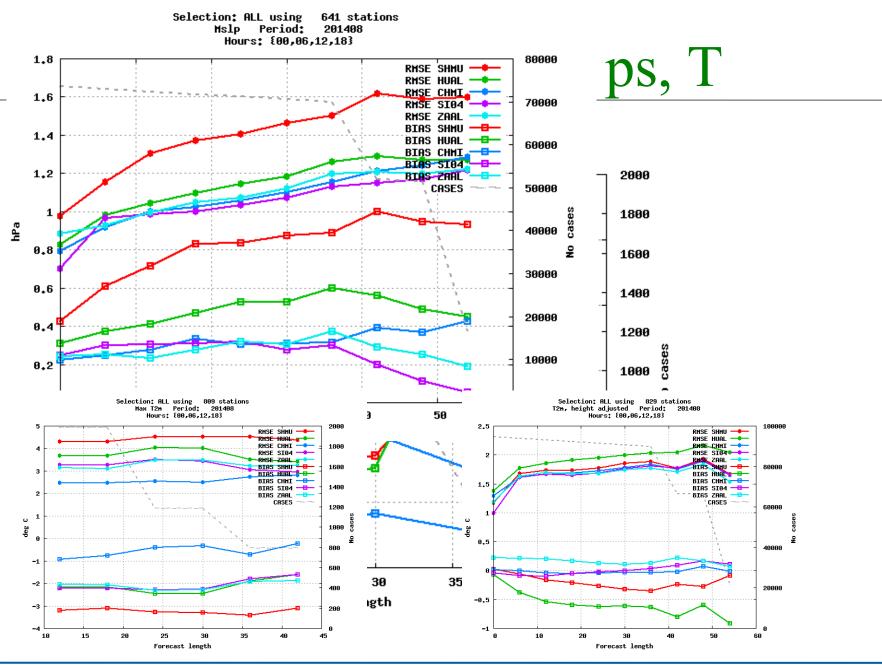
Benedikt Strajnar

### Operational data assimilation system - performance 3h 3D-Var RUC

## Operational suite

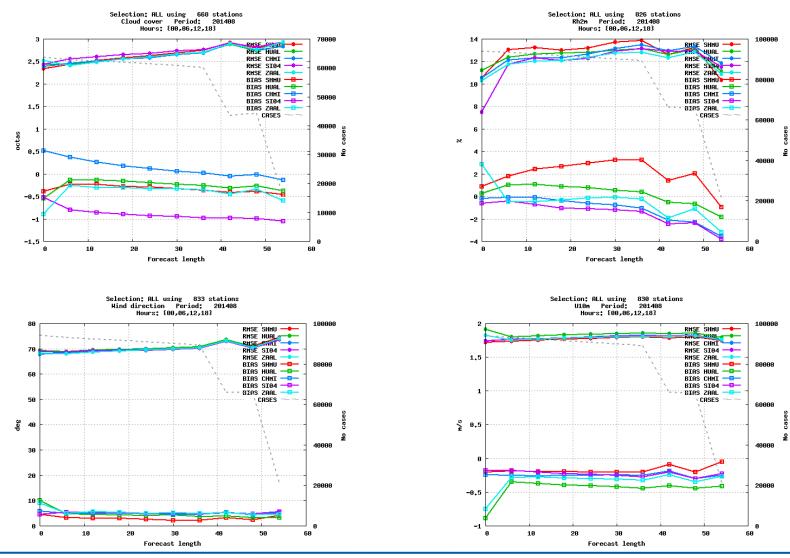
- ALARO-0 baseline (cy38t1),
  4.4 km resolution, 87 vertical levels
- 3-hourly data assimilation cycle
- 3D-Var + CANARI + SST replacement
- 8 production runs (+72,+36 h)
- Lagged ECMWF coupling (early production cycle)





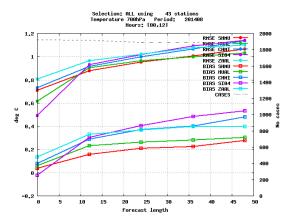
LACE DA working days 24-26 September 2014, Zagreb

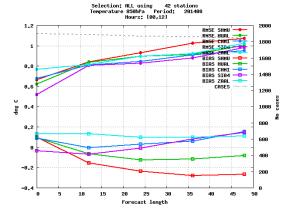
## Surface parameters - clouds, rh, winds

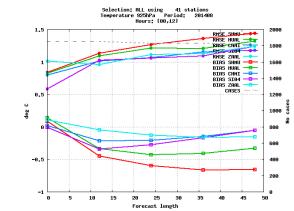


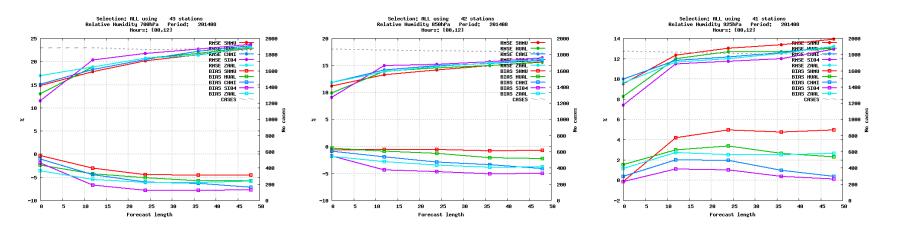
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## Upper air scores



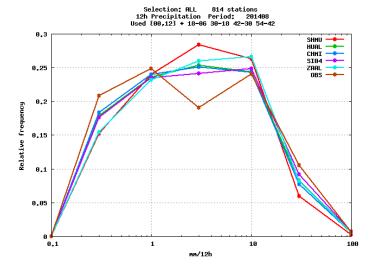




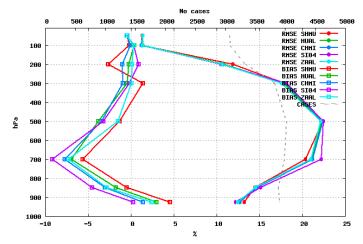


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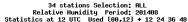
## Precipitation & humidity vert. profiles

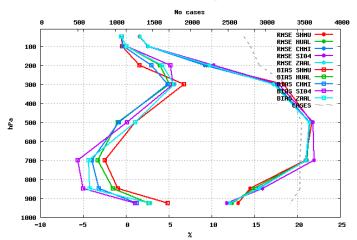


39 stations Selection: ALL Relative Humidity Period: 201408 Statistics at 00 UTC Used {00,12} + 12 24 36 48



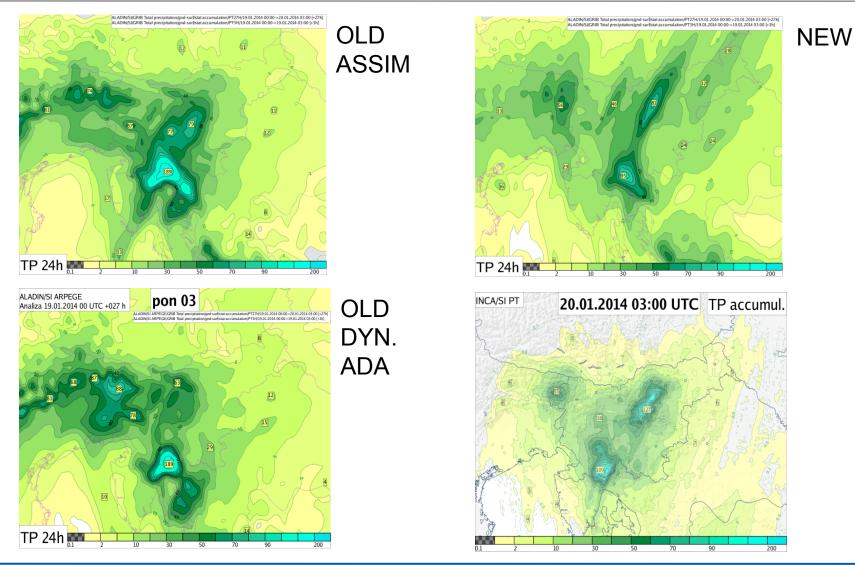
Selection: ALL using 814 stations 12h Precipitation Period: 201408 Hours: {00,06,12,18} 4.5 50000 Rhse shhu 🕂 Rh32 HUR RHCE CHNT 45000 4 RHSE STRA RHSE ZAAL BTAS SHMI 40000 3.5 BTAS HUAL -8-BIAS CHMI 35000 3 BIAS ST04 BTAS ZAAL CASES 30000 2.5 nn/12h 2 25000 5-222 £ 1.5 20000 1 15000 10000 0.5 5000 -0.5 Й 15 50 10 28 25 30 35 40 45 55 Forecast length





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## Case study



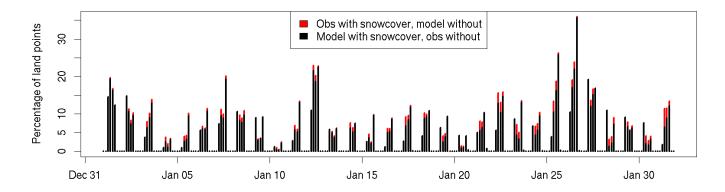
## Comments by forecasting office

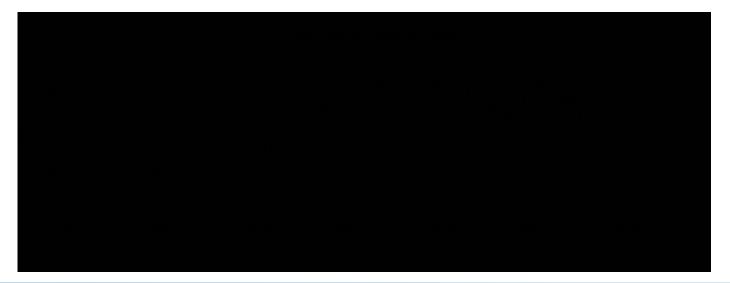
- "Model enables nice insight to the nature of the processes which improves conceptional understanding, the space and time is not reliable"
- "There is jumpiness in model runs, this helps assess uncertainty"
- "Winds are more realistic, link with convection is visible"
- "Advantage of being rapidly available"
- "Precipitation sometimes too spotted"

#### Snow analysis

## NWCSAF – Snow cover

#### Winter 2013



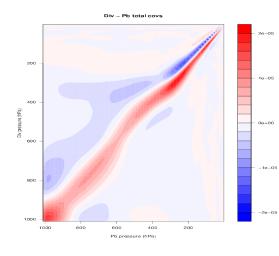


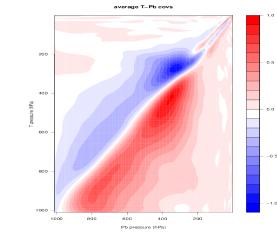
#### New ensemble B matrix

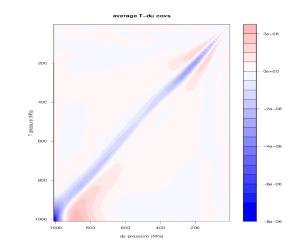
## New B matrix

- Samples : 562
- Period: March April 2012
- Coupling: ECMWF
- Tuning (default, to be done during a stay in October):
- REDNMC=1.6
- SIGMAO\_COEFF=0.9

## Multivariate analysis





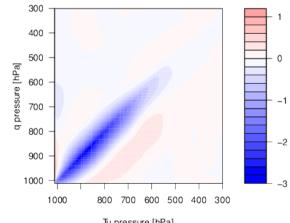


q - Pb covariances x 105

q - unbal. div covariances x 109

300 2 300 10 400 400 5 500 500 q pressure [hPa] q pressure [hPa] 0 0 600 600 -5 -1 700 700 -10 800 -2 800 -15 900 900 -3 -20 1000 1000 1000 800 700 600 500 400 300 1000 800 700 600 500 400 300 divu pressure [hPa] Pb pressure [hPa]

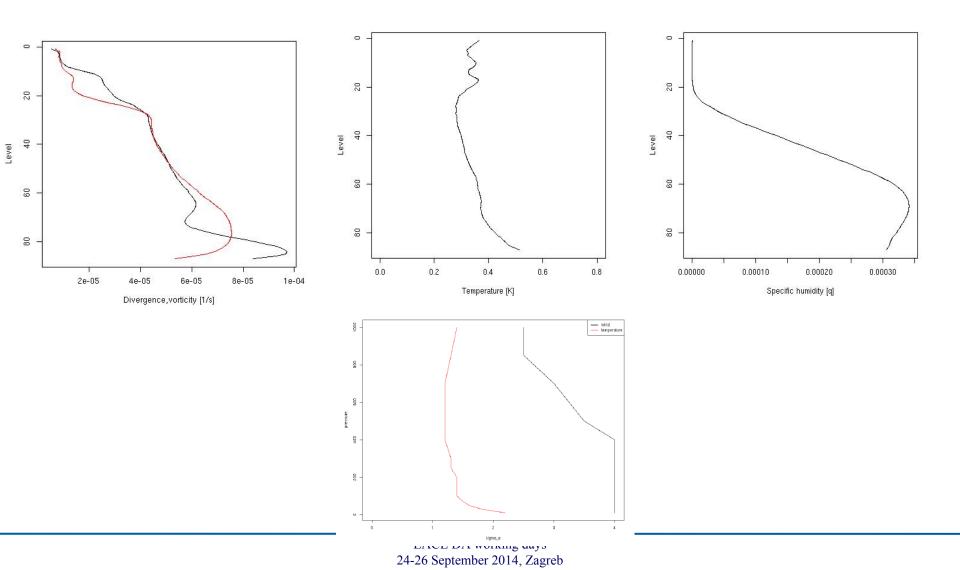
q - unbal. T covariances x 105



Tu pressure [hPa]

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## Vertical profiles of error std.



## Conclusions

- More validation and tuning necessary (stay in LJ)
- Humidity observations missing (GPS)
- Quite good feedback from forecasters