

Status of data assimilation in Slovenia - 2018

Benedikt Strajnar



ARSO METEO
Slovenia



ZAMG

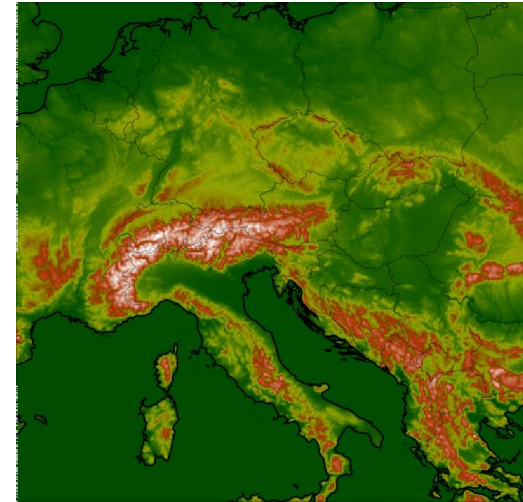
ROMANIA
ANM



Status overview

Model: ALARO-v1B cy40t1

- 4.4 km, 87L, 432x432
- Timestep: 180 s
- Coupling: ECMWF (6h lag), 1h/3h
- Space-consistent LBC, no init.
- 72h/36h forecasts



Upper-air DA: 3h 3D-Var, dsc. ens B,

- SYNOP (u,v,t,rh), AMDAR (u,v,q), Mode-S EHS/MRAR (u,v), GEOWIND/HRWIND(u,v), TEMP(u,v,t,q), PROFILER (u,v), SEVIRI(2,3), AMSU-A(5-12), MHS(3-5), IASI(~35), ASCAT(u,v)
- VarBC (rad.), REDNMC=1.6, SIGMAO_COEF=0.9

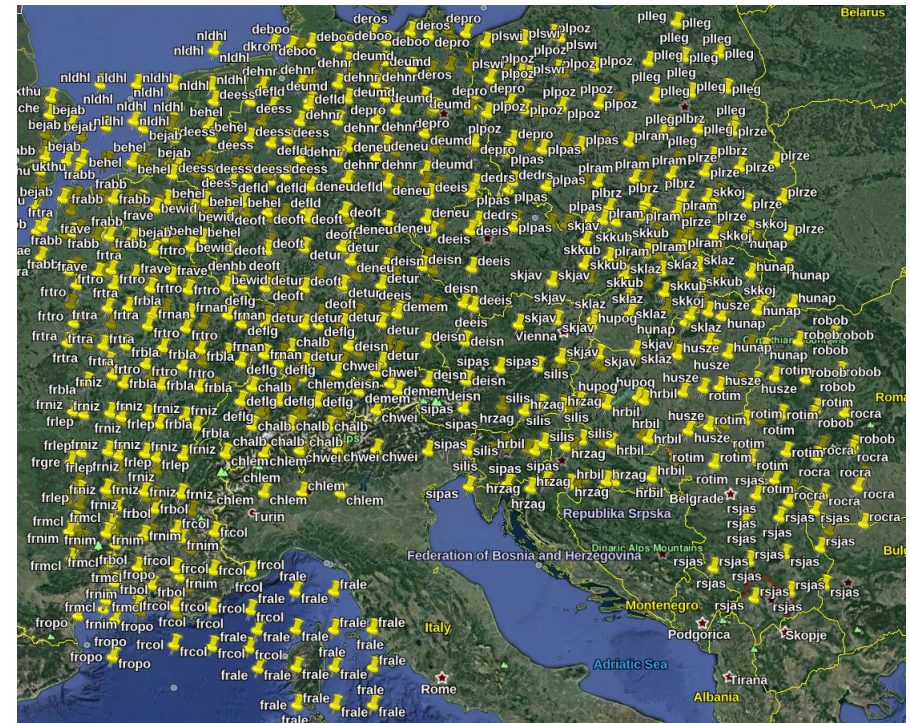
Surface DA:

- OI-CANARI, SYNOP(t,rh)
- SST analysis from ECMWF

Towards radar DA

Development of HOOF – the Python tool for homogenization of Opera OIFS dataset

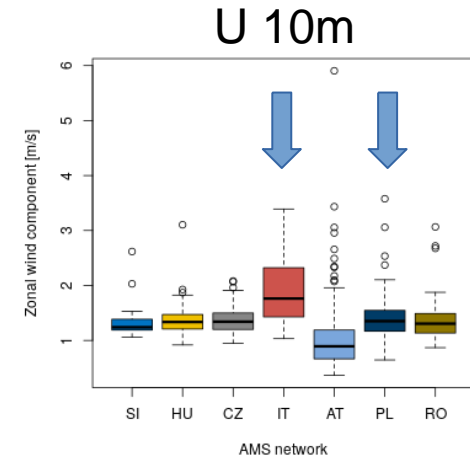
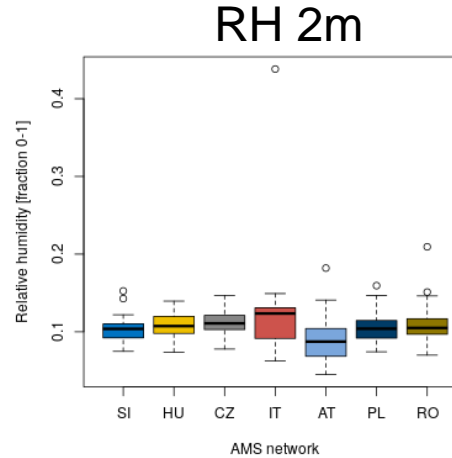
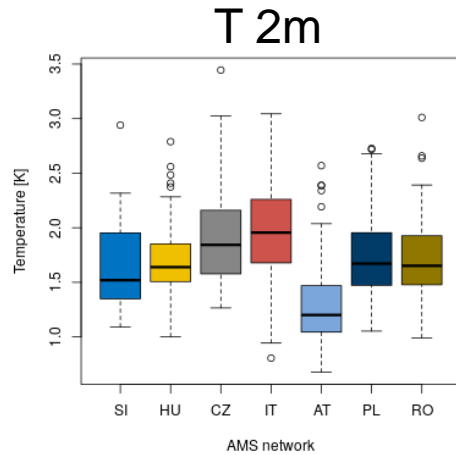
- See separate presentation
- Enables:
 - Homogeneous and prescribed structure
 - Relevant (meta)data only
 - Splitting of files in individual measurements
 - Defining or adjusting metadata
- Enables reading of the complete OIFS dataset and storing to ODB (Bator cy43)



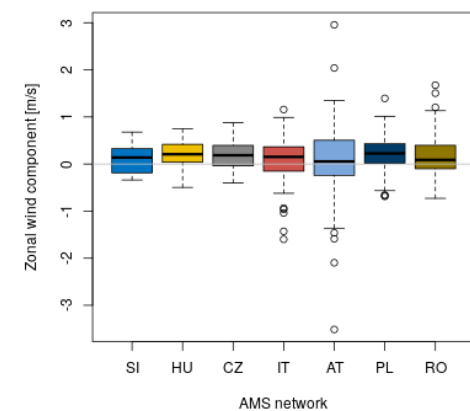
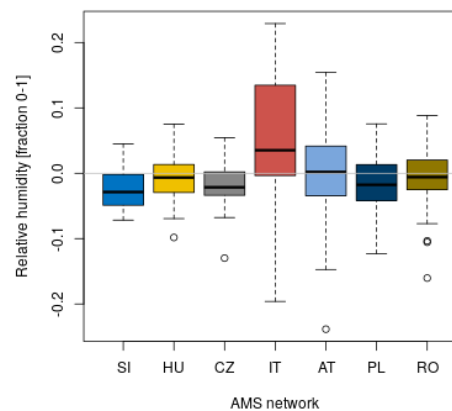
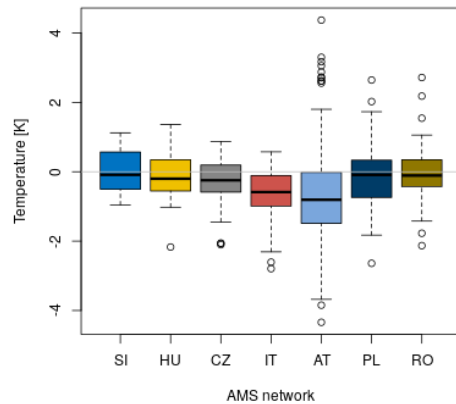
Monitoring of AWS data

- 1 month monitoring of all OPLACE AWS + Italian stations. Blacklisting needed?

OMG
Std.

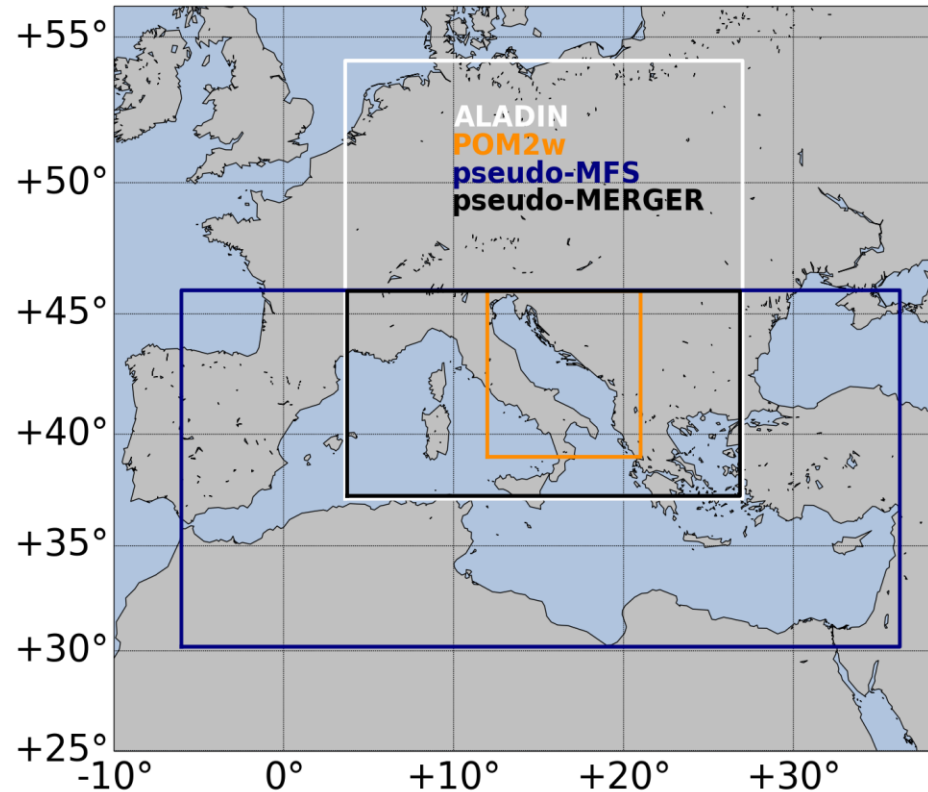


OMG
Bias



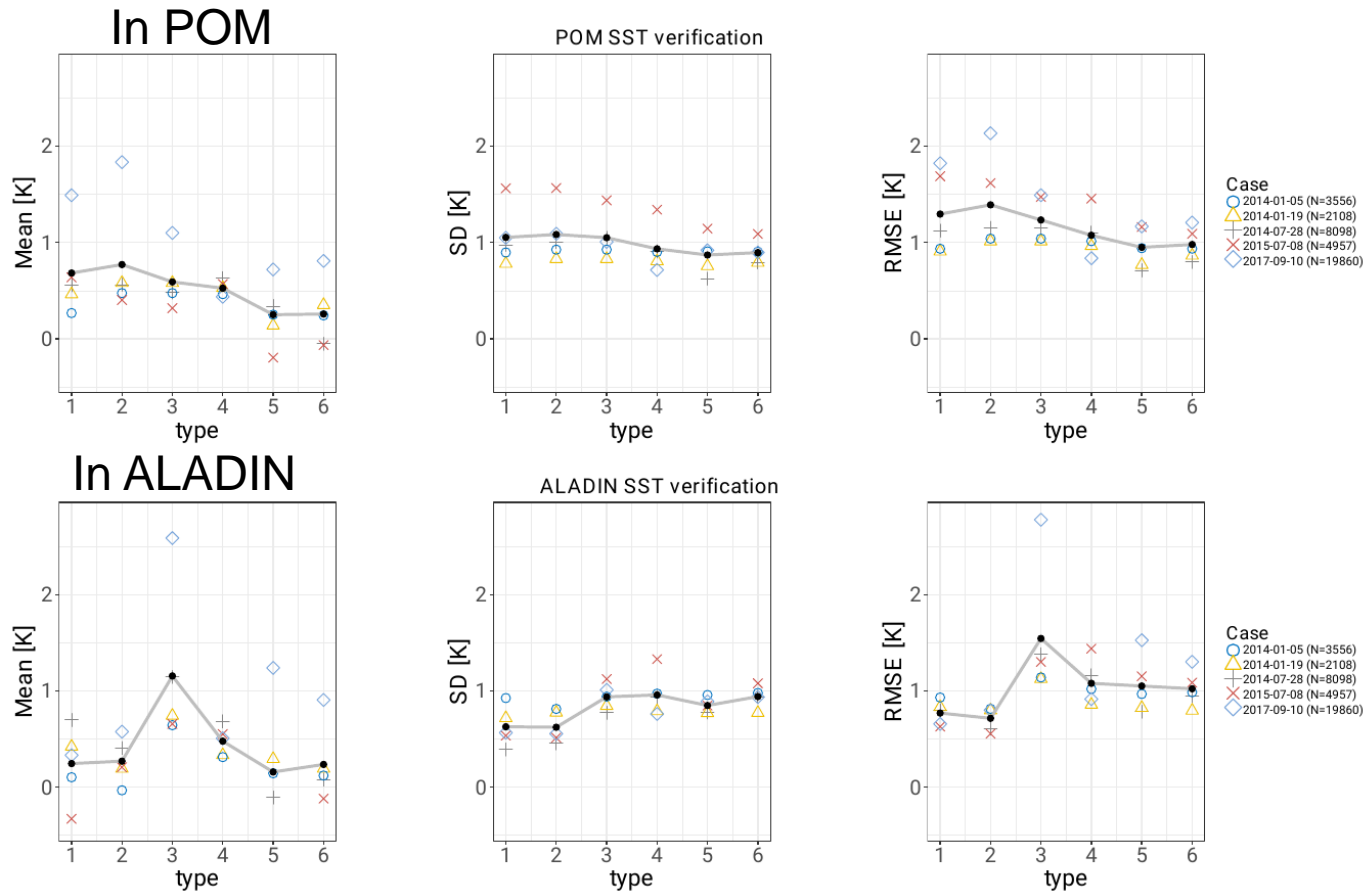
Impact of SST and 2-way coupling

- ALADIN 2w coupled to ocean model POM over the Adriatic Sea
- SST provided by POM, fluxes provided from ALADIN
- 2w coupling compared to using static SST
- Quasi-weak ocean atmosphere coupling



Impact of SST and 2-way coupling on SST

- Quality of SST forecast verified by daily gridded Copernicus satellite observations for 5 extreme weather periods

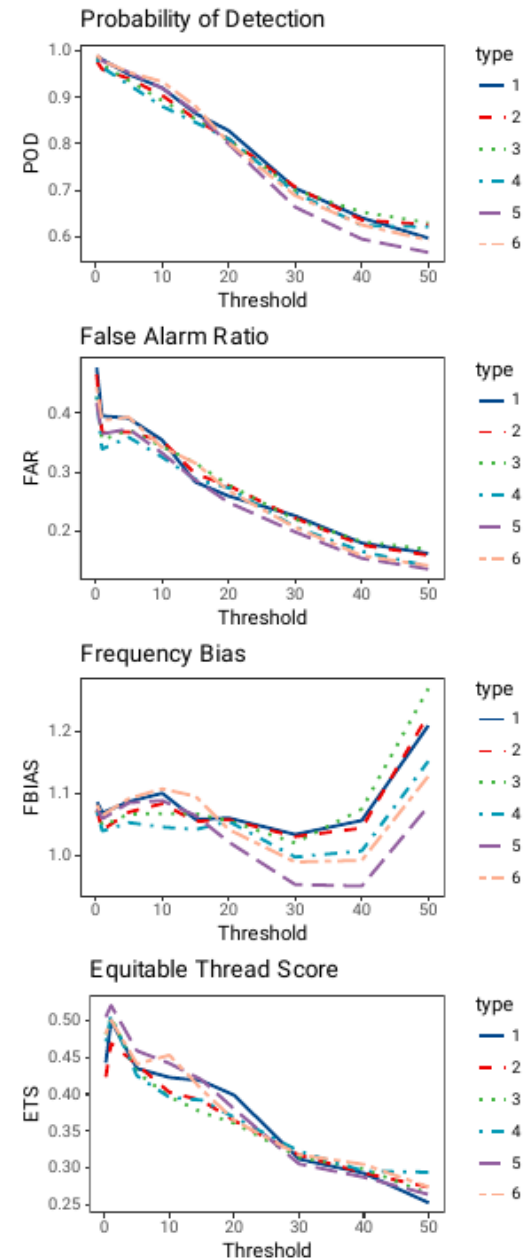


- 1: EC/OSTIA
- 2: MFS
- 3: 1w POM
- 4: 1w POM + 2w FC
- 5: 2w POM + 1w FC
- 6: 2w POM 2w FC



Impact of SST and 2-way coupling on precipitation

- SST plays a more important role for mesoscale processes during the warm part of the year.
- The high horizontal resolution of SST provided by a regional ocean model does not outperform a static SST initialised from global analysis (ECMWF).
- The two-way coupled runs do not outperform the run using the freshest static SST analysis.
- Impact of applying 2w coupling in forecast of the assimilation cycle before the simulated event is neutral
- 2w coupled experiment performs better than the uncoupled one if SST is provided by the same regional ocean model
- **Data assimilation for the ocean component is necessary in a coupled system.**



Plans for 2018/2019

- 1.3 km (nowcasting) model domain with data assimilation based on radar data – hourly update plus short range forecast
- 4.4 km EDA to provide flow-dependent bg. error estimate

