



Status of Numerical Weather Prediction with **ALADIN** in Bulgaria

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Talk Outline

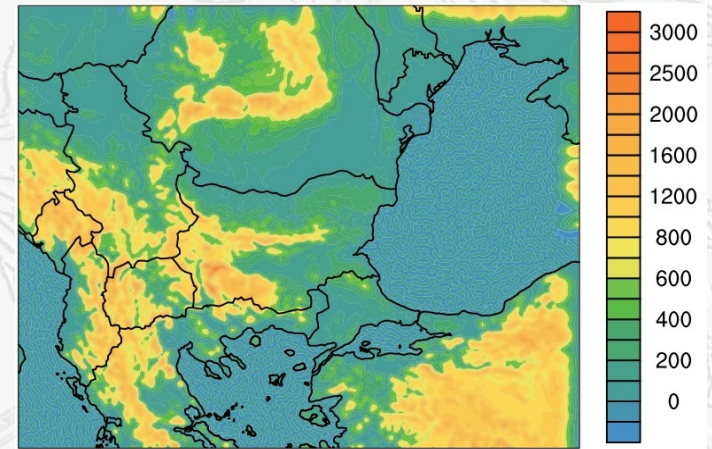
- Operational suite in NIMH
- Some Forecast verification against surface measurements in SYNOP stations in Bulgaria
- First steps with SAPP
- Progress of DAsKIT in NIMH

Operational suite in NIMH

Two model configurations (based on cy43t2 since November 2019) are run operationally in Division “Numerical modelling” at 06 and 18 UTC:

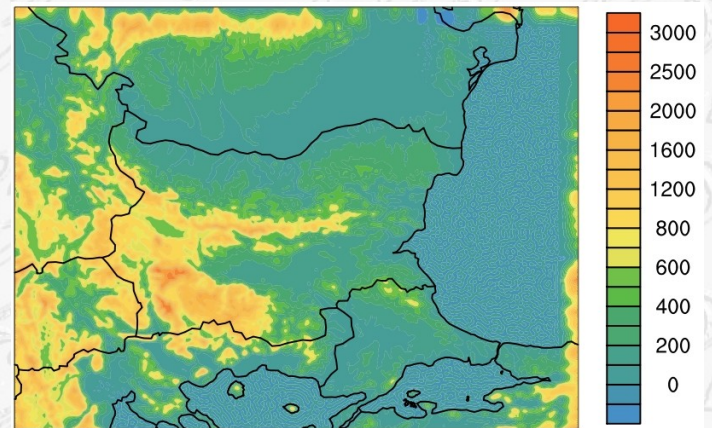
ALADIN-BG (5/105):

- horizontal resolution – 5 km (256x200 points)
- levels – 105 (32 below 3 km)
- time step – 300 s
- forecast range – 72 h
- initial and boundary conditions from ARPEGE

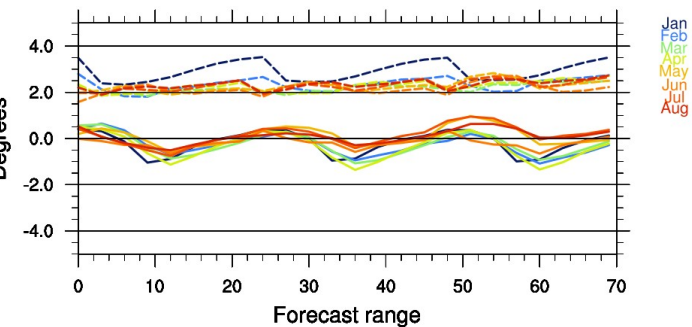


AROME-BG (2.5/60):

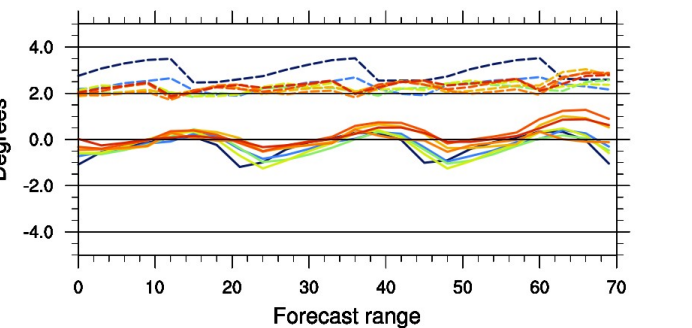
- horizontal resolution – 2.5 km (320x240 points)
- levels – 60 (27 below 3 km)
- time step – 60 s
- forecast range – 36 h
- initial and boundary conditions from ALADIN-BG



ALADIN: 2020: T2M (06 UTC)



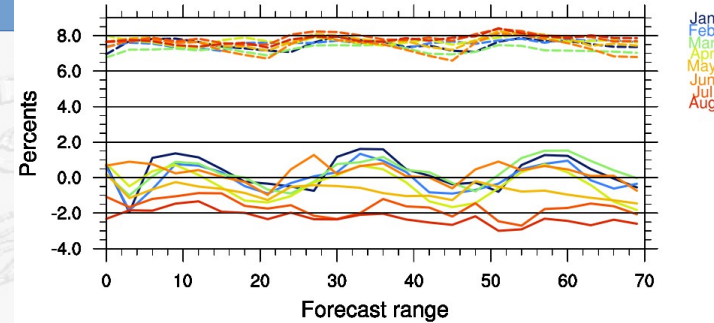
ALADIN: 2020: T2M (18 UTC)



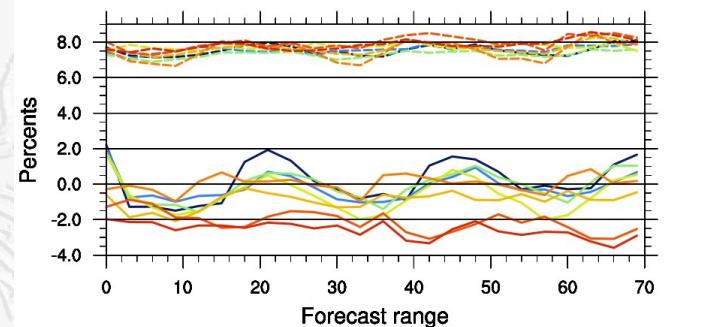
ALADIN-BG

Mean monthly
BIAS (solid lines)
and RMSE
(dashed lines)

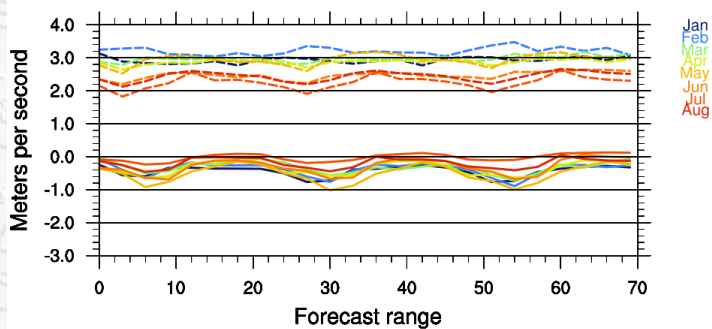
ALADIN: 2020: RH2M (06 UTC)



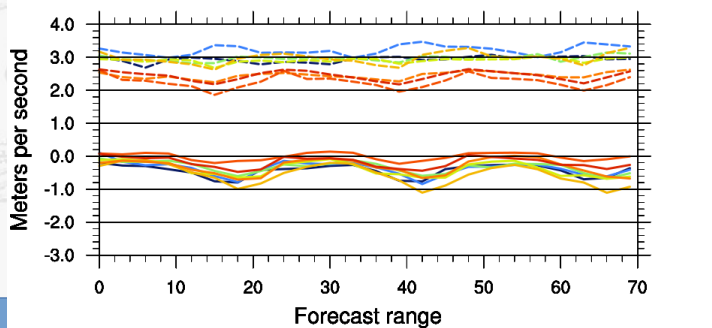
ALADIN: 2020: RH2M (18 UTC)



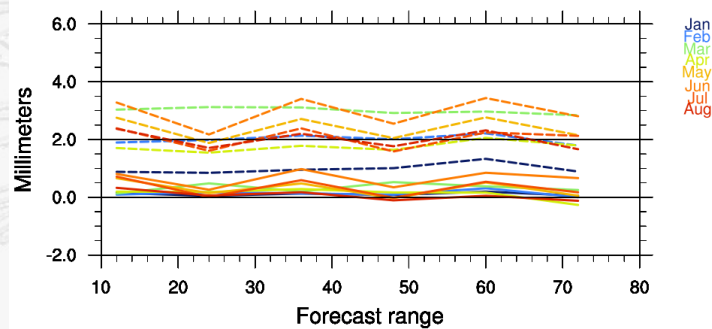
ALADIN: 2020: WIND10M (06 UTC)



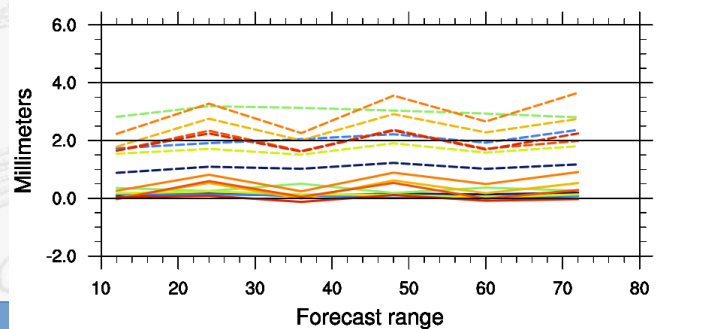
ALADIN: 2020: WIND10M (18 UTC)



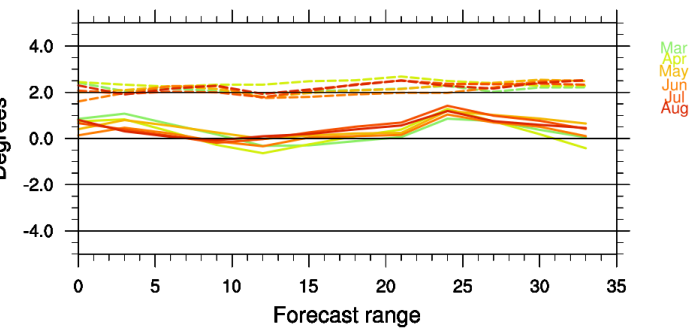
ALADIN: 2020: PREC12H (06 UTC)



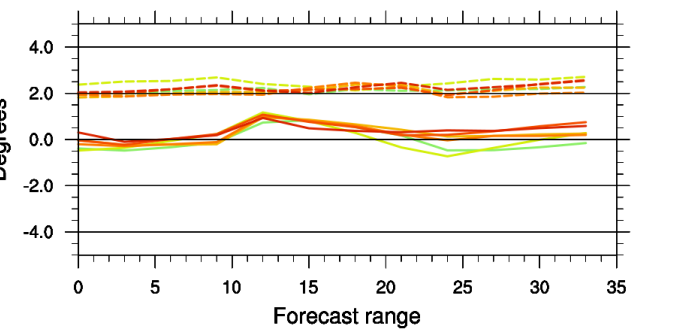
ALADIN: 2020: PREC12H (18 UTC)



AROME: 2020: T2M (06 UTC)



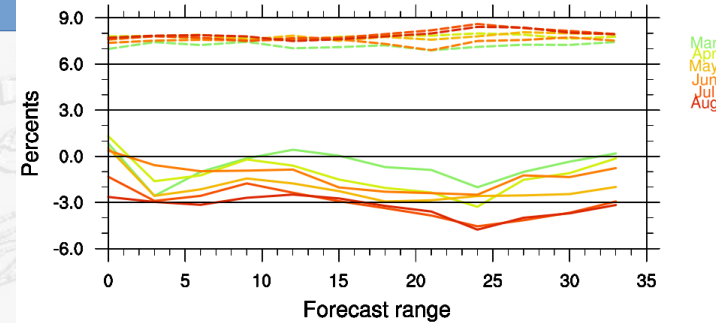
AROME: 2020: T2M (18 UTC)



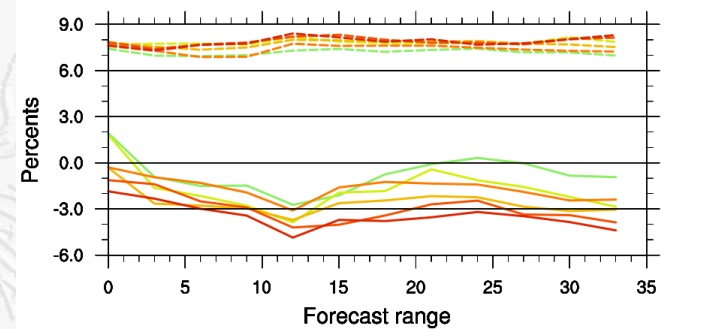
AROME-BG

Mean monthly
BIAS (solid lines)
and RMSE
(dashed lines)

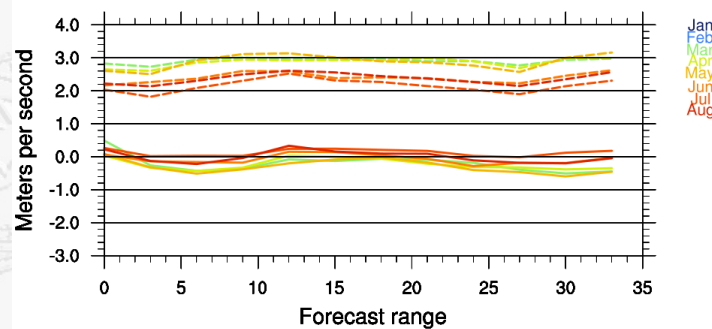
AROME: 2020: RH2M (06 UTC)



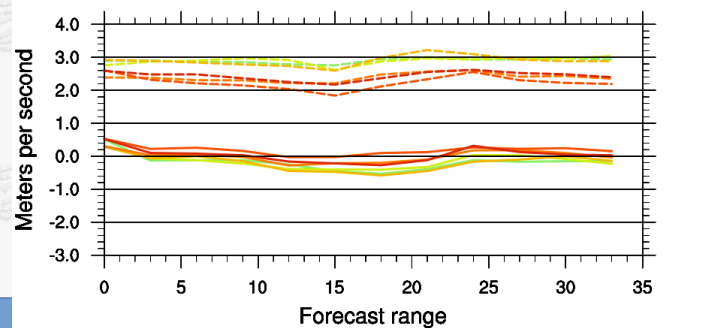
AROME: 2020: RH2M (18 UTC)



AROME: 2020: WIND10M (06 UTC)



AROME: 2020: WIND10M (18 UTC)



Tested SAPP on a local machine with the base parameters (4 processors with 16GB RAM). Set up port forwarding so it could be accessed both using the local machine VirtualBox ran on and outside machines.

Using `ext_cmd.py` from `ecflow cron`, SYNOP and BUFR extractions were done for ECMWF DA 6 hour windows and for 1 hour windows. Increased the rate of MS1 extractions to hourly.

All exercises on beaufix OK up to now

Porting

HARP, surfDAexer and MANDALAY were successfully ported on our machine.

SurfDAexer was repeated with BULGARIAN SYNOP reports converted to BUFR on domain on AROME – BG – single experiment, no real cycling yet

Some system news: cy 43t2 bf10 was recompiled using the tools of Intel Parallel Studio 2020.

The main result was that ALADIN forecast 3 to 4 minutes faster on the all equal conditions, on the same platform.

This was cause mainly due to using the compilation option `-xCORE-AVX2` and using the of the short vector library instead of mkl.

There are also some tricks in tuning of the MPI library – for details please mail to Milen.Tsankov@meteo.bg .

All this tunings are for homogeneous Intel platform.



Thank you for your attention!