Status of Numerical Weather Prediction with ALADIN in Bulgaria

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Talk Outline

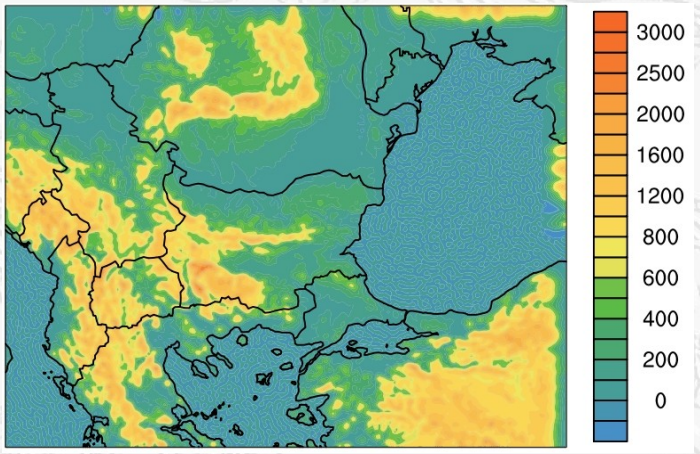
- Operational suite in NIMH
- Some Forecast verification against surface measurements in SYNOP stations in Bulgaria for cy41t1 and cy43t2
- Progress of DasKIT in NIMH

Operational suite in NIMH

Two model configurations (based on Cy41t1) are run operationally in Division "Numerical modelling" at 06 and 18 UTC:

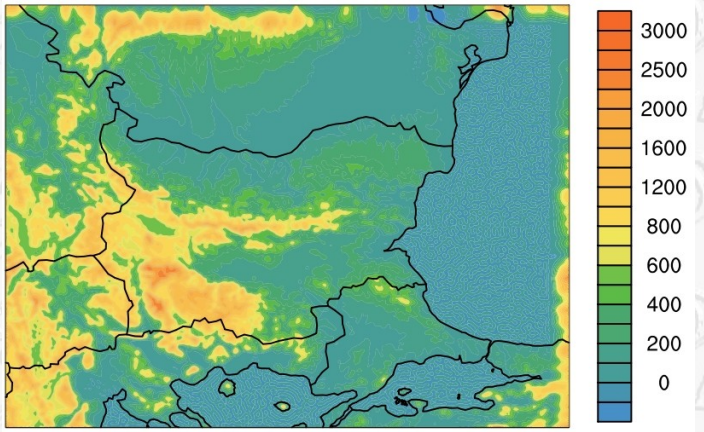
ALADIN-BG (5/105):

- horizontal resolution – 5 km (256x200 points)
- vertical levels – 105 (32 below 3 km)
- time step – 300 s
- forecast range – 72 h
- initial and boundary conditions from ARPEGE (7/105)



AROME-BG (2.5/60):

- horizontal resolution – 2.5 km (320x240 points)
- vertical levels – 60 (27 below 3 km)
- time step – 60 s
- forecast range – 36 h
- initial and boundary conditions from ALADIN-BG (5/105)

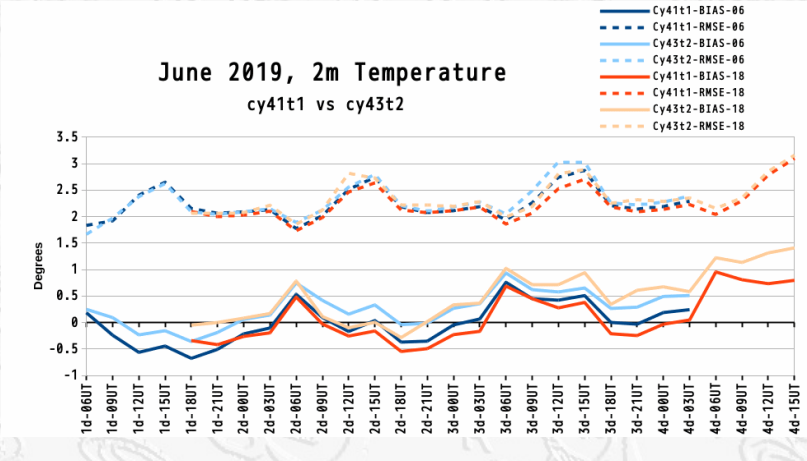


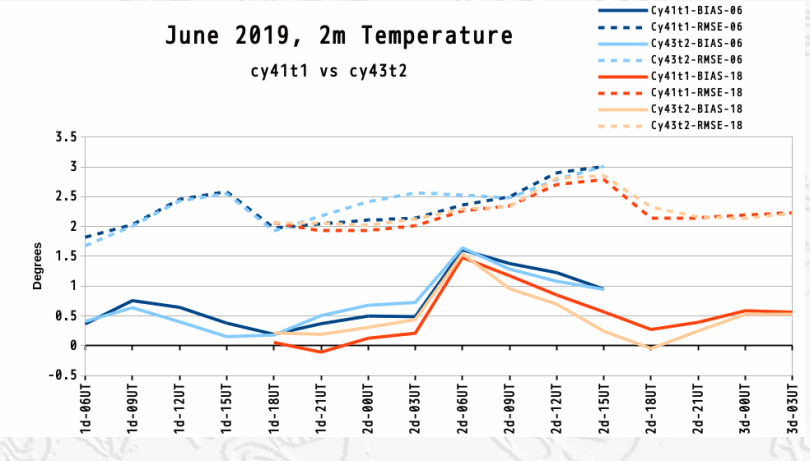
Operational suite in NIMH

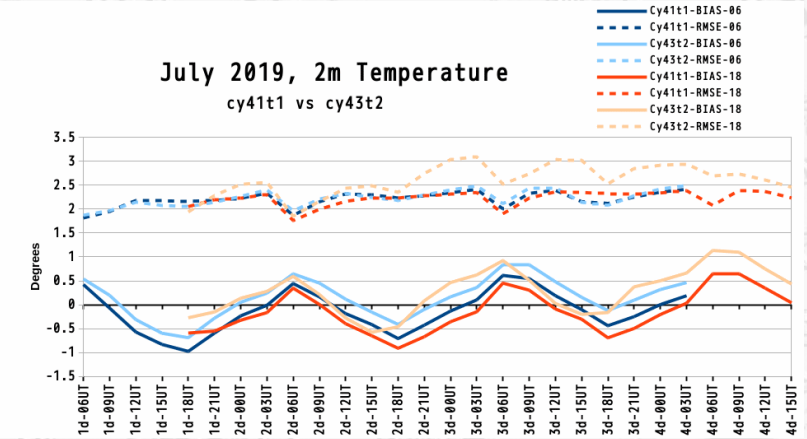
Cy43t2 was ported and runs on a parallel suite

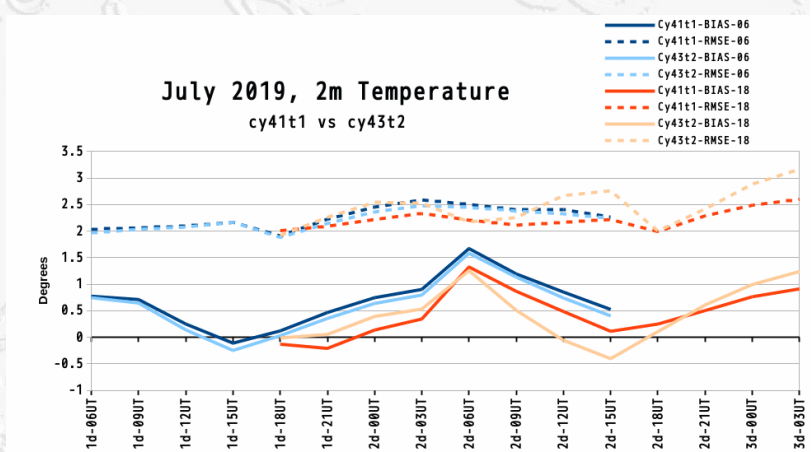
- new PGD file was created for SURFEX 8
- ecoclimap version 8 is used
- 06 UTC forecasts run since January 2019
- 18 UTC forecasts run since June 2019

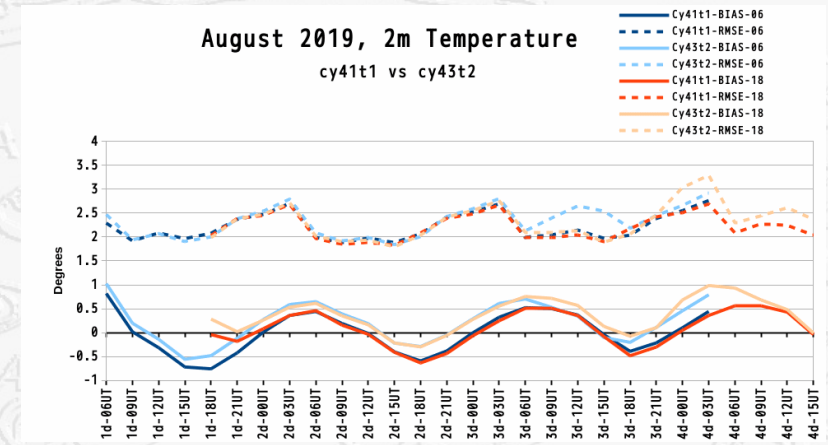
Cy41t1 versus Cy43t2 - Temperature



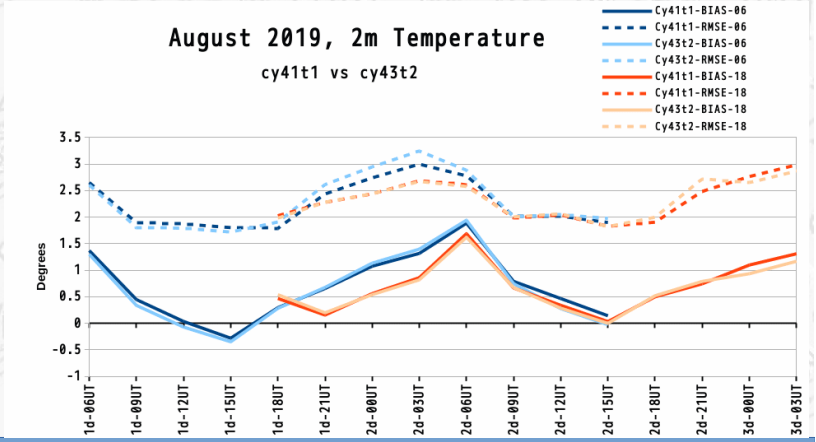






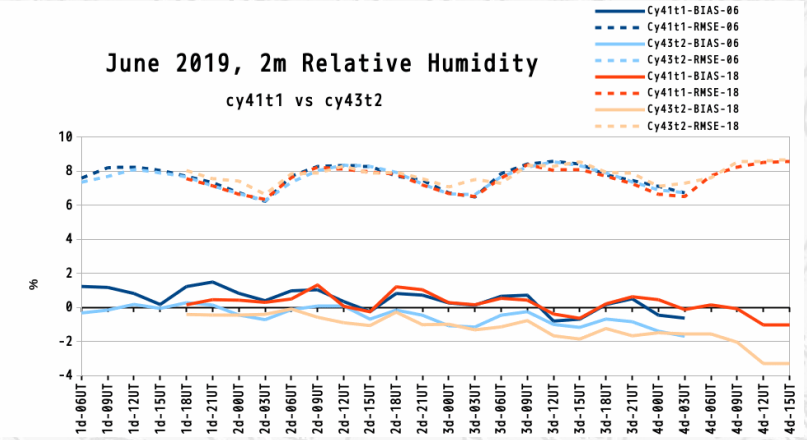


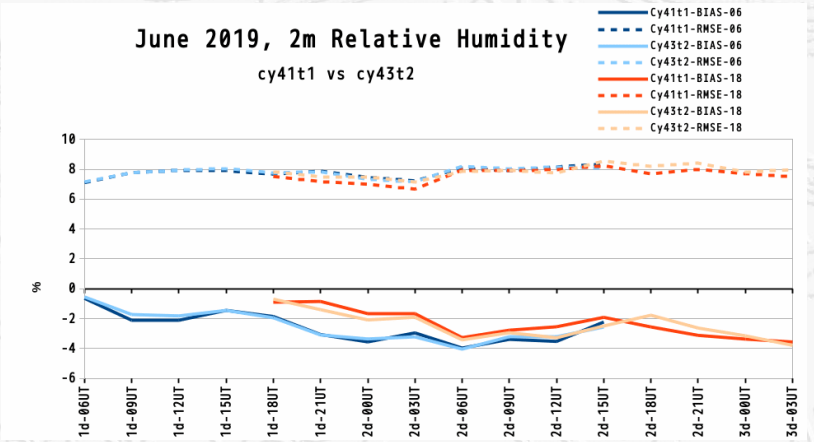
Cy41t1-BIAS-06
Cy41t1-RMSE-06
Cy43t2-BIAS-06
Cy43t2-RMSE-06
Cy41t1-BIAS-18
Cy41t1-RMSE-18
Cy43t2-BIAS-18
Cy43t2-RMSE-18

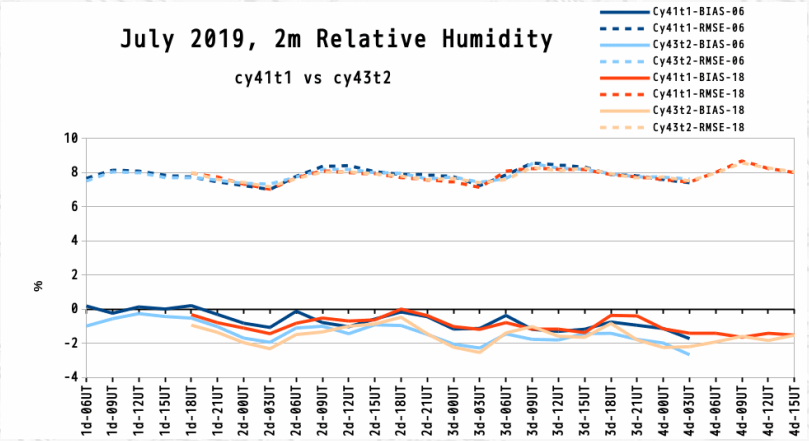


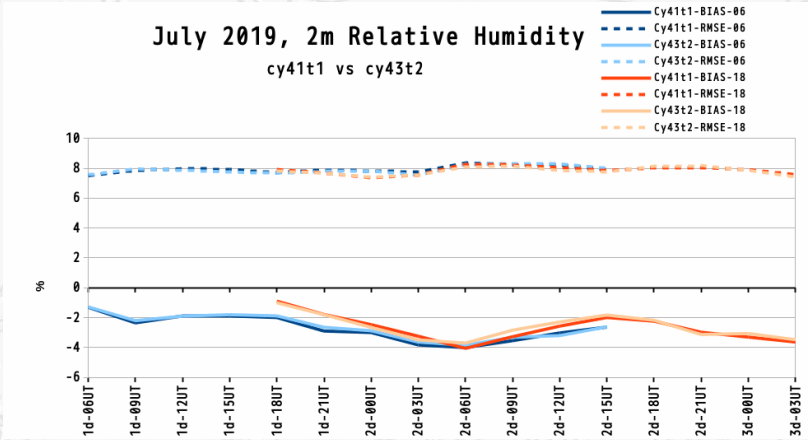
Mean monthly BIAS (solid lines) and RMSE (dashed lines) of 2 m temperature as a function of the time of the corresponding forecasts (in UTC)

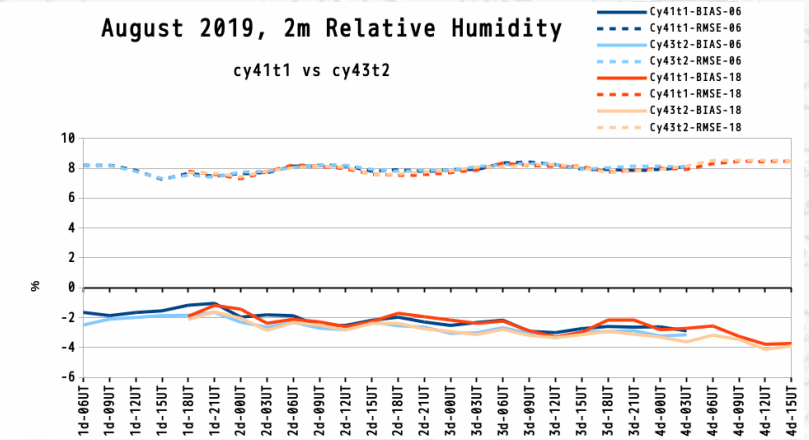
Cy41t1 versus Cy43t2 – Relative Humidity

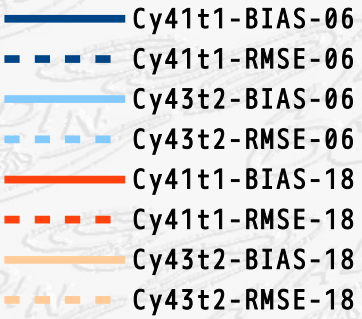


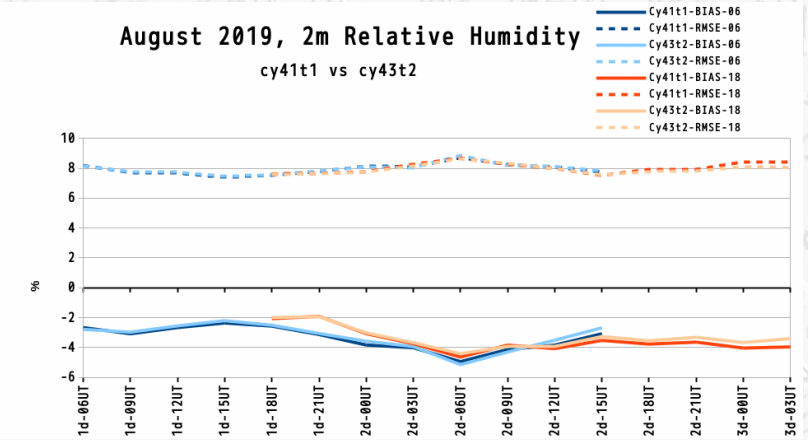






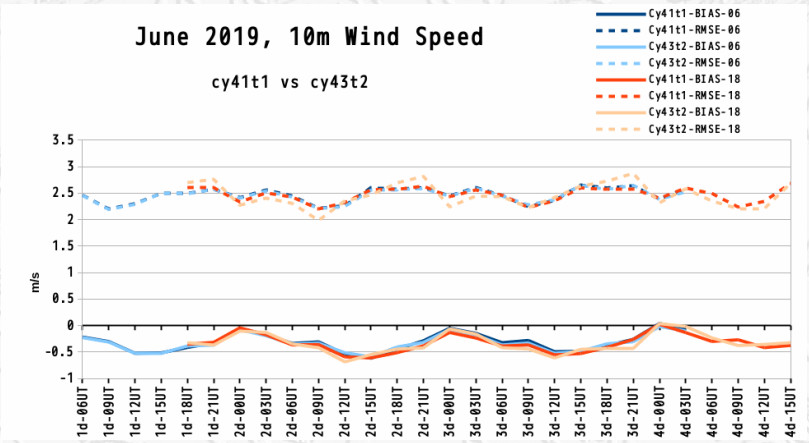


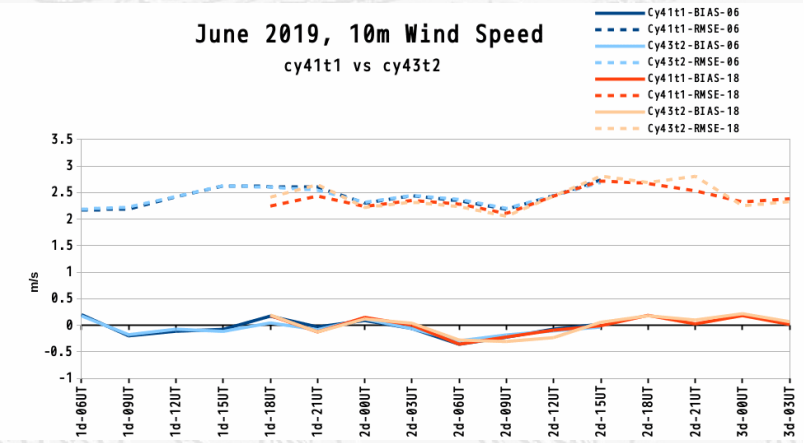


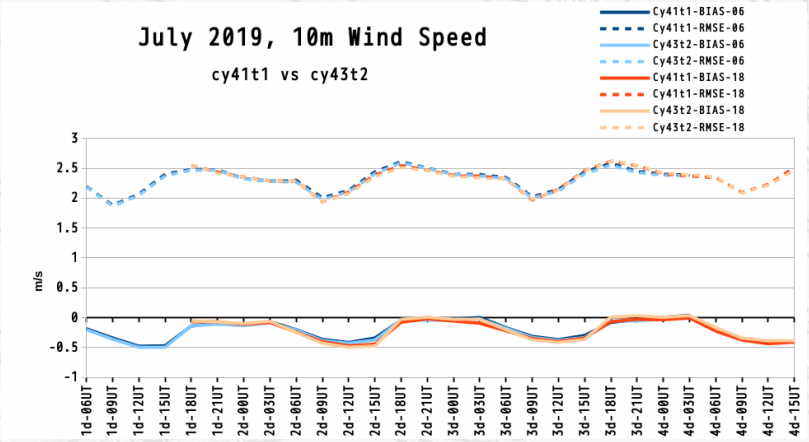


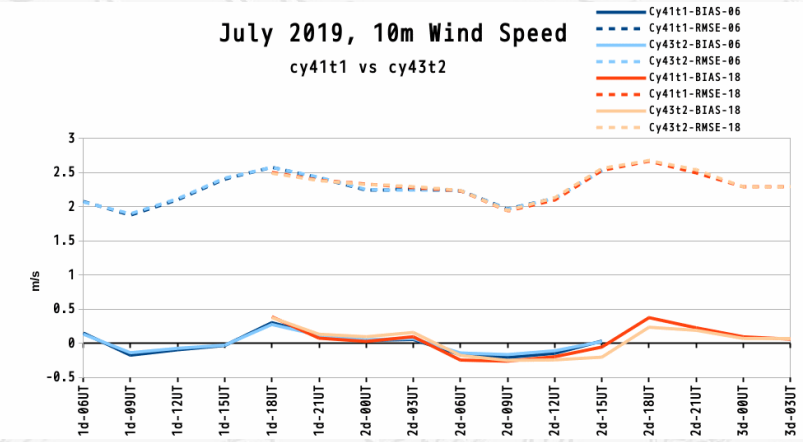
Mean monthly BIAS (solid lines) and RMSE (dashed lines) of 2 m relative humidity as a function of the time of the corresponding forecasts

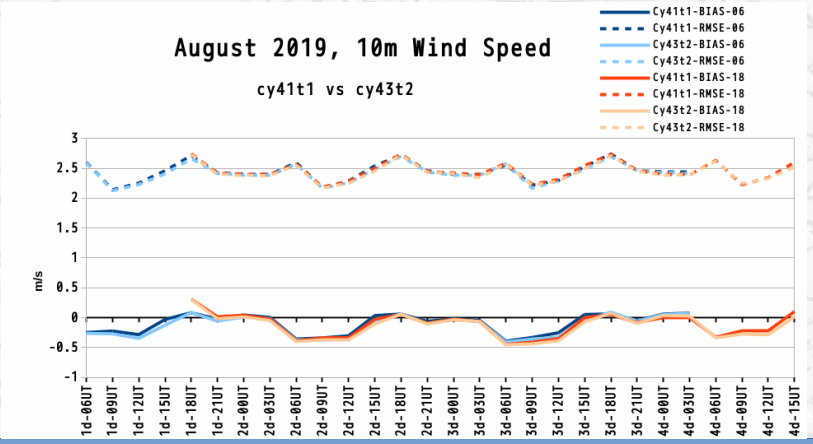
Cy41t1 versus Cy43t2 – Wind Speed

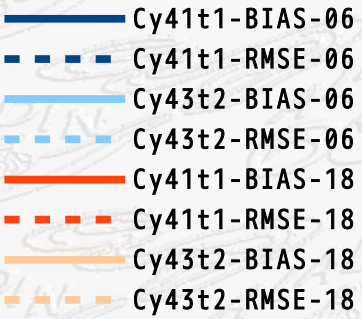


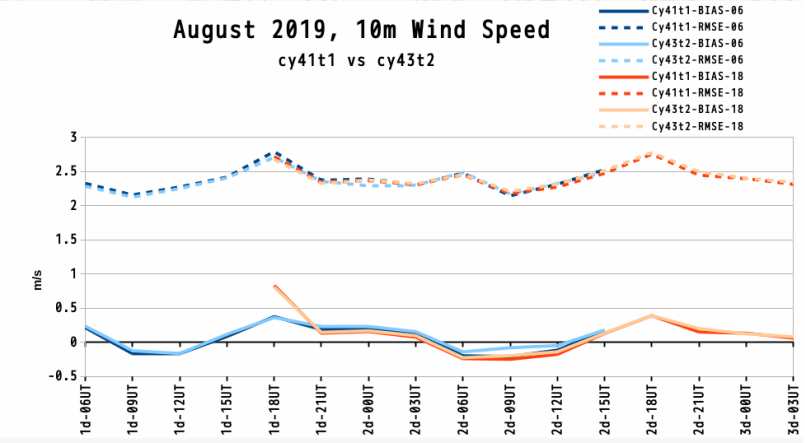






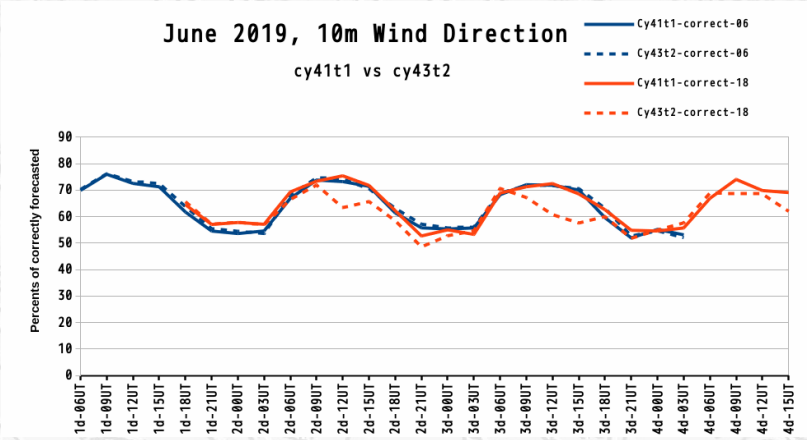


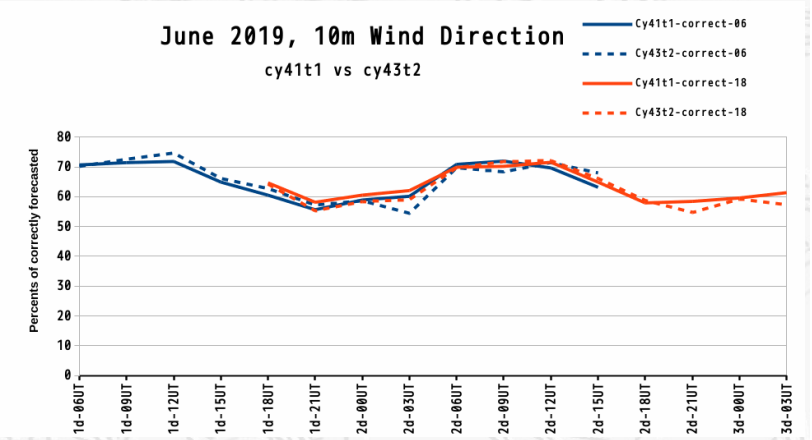


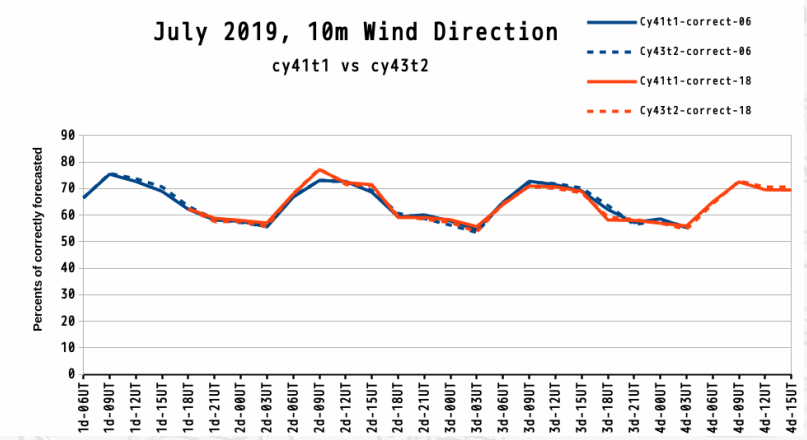


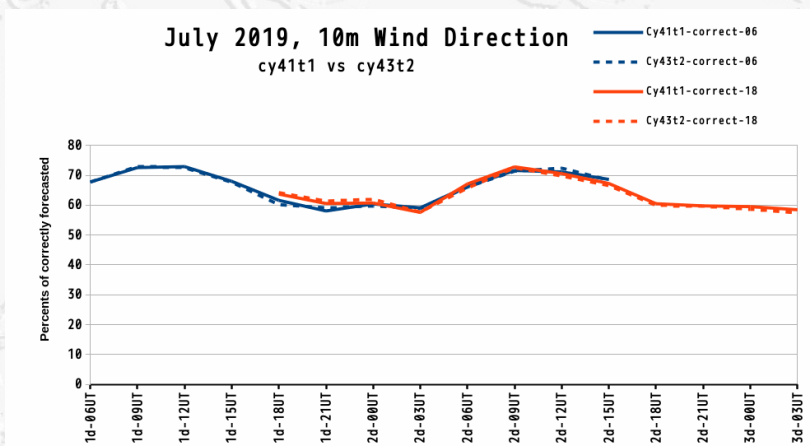
Mean monthly BIAS (solid lines) and RMSE (dashed lines) of 10 m wind speed as a function of the time of the corresponding forecasts

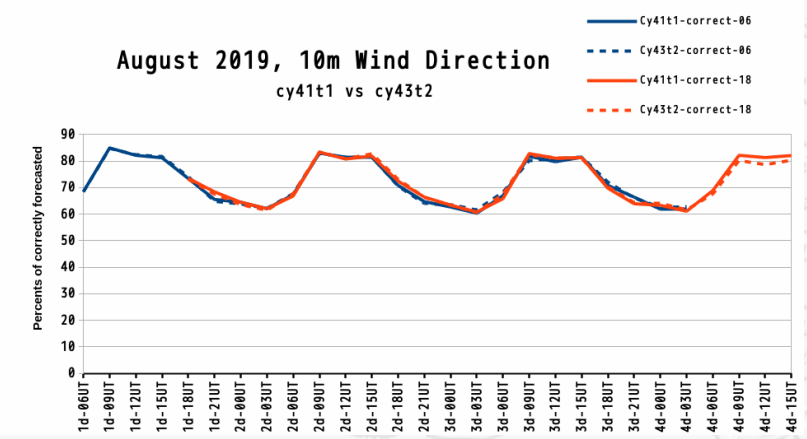
Cy41t1 versus Cy43t2 – Wind Direction

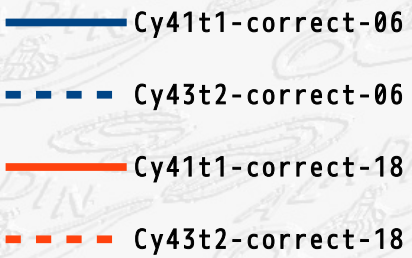


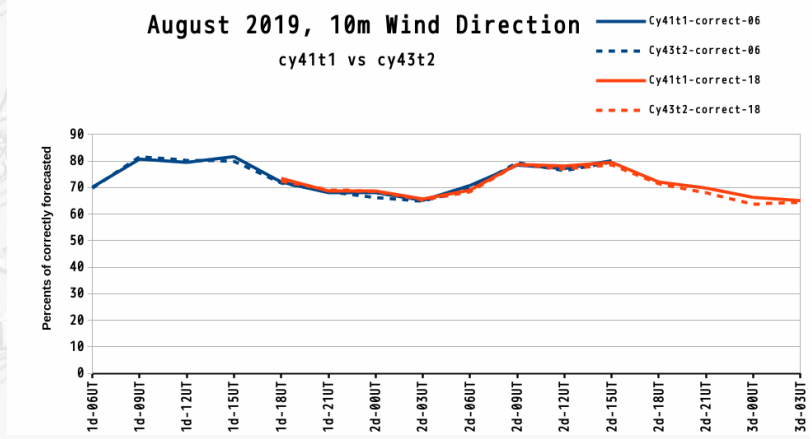












Mean monthly percent of correctly forecasted 10 m wind direction as a function of the time of the corresponding forecasts

Progress of DasKIT in NIMH (from Andrey)

- Two weeks period cycling with Bulgarian SYNOP messages from 10-th of February.
- Messages are converted to BUFR format using synop2bufr.
- BATOR was used to fill the ODB files.
- Data was passed to AROME BG using OI.
- Validation of data base content was done using ODB tools
- Cycling was with cy 40t1.

There are still some problems with BATOR in cy43t2, especially in namelist content.

Thank you for your attention!