

## Summary report on DAsKIT video-conference, 25 June 2018

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The main topics of this video-conference were:

1. Status on the DAsKIT countries progressing
2. Actual issues
3. Progress on actions: validation of surfDA; diagnostics on surfDA; OBSMON; AMDAR pre-processing
4. Planning of next DAsKIT WD
5. Planning of next actions & AOB

Short status per country:

### ALGERIA

- data acquisition:  
SYNOP, TEMP, AMDAR and ASCAT (MetopA ,MetopB) from GTS (BUFR);
- data pre-processing:  
BUFR SYNOP (duplications and amends are tackled); AMDAR (selection of template 311010);  
Plans: pre-processing of GPS data;
- monitoring tools:  
OBSMON installation is on-going; MANDALAY (CY40T1) has been ported;
- verification tools:  
HARP not installed;
- surface DA:  
AROME OI\_MAIN (CY40T1\_bf07) is being cycled under test mode with GTS SYNOP data (first results available)
- upper-air DA:  
pre-operational 3D-Var for ALADIN at 00,06,12,18UTC (CY40T1\_bf07); for AROME (00,12UTC); B-matrix has been computed from AEARP downscaling and a 3D-Var cycling is being implemented for AROME at CY40T1\_bf07;
- joint surface+ upper-air DA:  
building a pre-operational version of 3D-Var cycle, combined with OI\_MAIN, for AROME at CY40T1;
- reported issues:
  - compilation problem still remains for BATOR CY43T1\_bf02 (routine bator\_decodhdf5\_mod.90), although the compilation flags for hdf5 package are now conforming to advise from LACE/Météo-France;
  - a segmentation fault in the forecast step with INIT\_SURF file when running blendsur routine (CY40T1\_bf07) has also been reported;
  - MPI communication bug (Memory overflow) in Screening or Minimisation step with large amount of observations (example : SYNOP + TEMP + ASCAT), when using 1 node with several cores or multiple nodes with several cores.

## BELGIUM

- data acquisition:  
SYNOP, AMDAR from GTS (BUFR);
- data pre-processing:  
Python script that deals with duplications and amends; SAPP (ECMWF) is installed;  
Plans: configuration of SAPP to local needs;
- monitoring tools:  
OBSMON is technically working but not in use;
- verification tools:  
HARP;
- surface DA:  
daily 3-hour cycling of an eflow suite for surface DA (OI\_MAIN) is running in experimental mode for CY43T2 (not done for CY40T1\_bf07) without namelists tuning (see reported issues);  
Plans: cycling with ALARO at 1.3 km;
- upper-air DA:  
Plans: running 3D-Var (some experiments with AMDAR were already done);
- operational systems:  
CY43T2 by dynamical adaptation;
- reported issues:  
Preliminary validation of the surface DA (CY43T2) cycling has shown there is a BIAS improvement on screen level parameters, but analysis increments not always show consistent features.

## BULGARIA

- data acquisition:  
SYNOP, TEMP from GTS (BUFR), local SYNOP (converted to BUFR);
- data pre-processing:  
duplications are removed;
- monitoring tools:  
OBSMON, MANDALAY ported locally;
- verification tools:  
HARP ported; local surface verification tool;
- surface DA:  
OI\_MAIN (CY40T1\_bf07) for AROME-BG was ported from beaufix and cycle for 2 weeks with BUFR data and ODB validation; a newcomer has arrived and efforts are being put onto its training;
- operational systems:  
CY43T2 by dynamical adaptation is running in parallel suite since January 2019 (created a new PGD file for SURFEX 8 of ecoclimap 8).

## MOROCCO

- data acquisition:  
SYNOP, TEMP and AMDAR from GTS (BUFR); local SYNOP; local GPS, ATOVS (BUFR);
- monitoring tools:  
OBSMON installation: on-going in the local machine;
- verification tools:

- HARP not yet;
- surface DA:  
bator (CY40T1) handling: SYNOP, TEMP and AMDAR from GTS (BUFR) in beaufix; local SYNOP; GPS (BUFR); surface DA runs to AROME-MOROCCO in beaufix; waiting the new local machine to port and cycle it;
- upper-air DA:  
3-hour cycling 3D-Var for AROME-MOROCCO has been cycled in beaufix (CY40T1\_bf07); B-matrix diagnostics have been done, comparing the downscaling with the ensemble method;
- joint surface+upper-air DA:  
Plans: acquisition of a new HPC is planned for 2019, where surface DA should be validated and the full AROME-MOROCCO settings is supposed to be ported.

## POLAND

- data acquisition:  
OPLACE data is used;  
conversion of local SYNOP to BUFR;
- monitoring tools:  
OBSMON installed and tested with DAsKIT WD data (see reported issues);
- verification tools:  
HARP-v2 runs for DA cycle;
- surface DA:  
6-hour cycling of a surface DA based on CANARI (not SURFEX) for ALARO (CY40T1\_bf07 and CY43T2\_bf10) 4 km; 66-hour forecasts. RMSE scores for one week period (2019060400-2019061100) after a 3 week cycling were shown; comparison of scores for 2-metre temperature and 10-metre wind speed for: i) ALARO operational (in black in the slide panel, not shown here); ii) ALARO+CANARI (yellow); and ALARO+CANARI cold start (blue), has shown a neutral impact on the forecast, when local data is not in use (just OPLACE);
- operational systems:  
ALARO CY43T2\_bf10;  
AROME CY40T1\_bf07 (to change early autumn);
- reported issues:  
OBSMON: problems when testing local data with graphical/shiny part of OBSMON; the implementation of the conversion tool (from the local experiment's output data to shiny recognised format) is missing.

## PORTUGAL

- data acquisition:  
SYNOP, TEMP, AMDAR from GTS (BUFR);  
Plans: OIFS radar data;
- data pre-processing:  
local handling of duplications and amends (FORTRAN): SYNOP;
- monitoring tools:  
home-made (metview plotting); local OBSMON and MANDALAY implementation is on-going;  
Plans: follow the progress of local implementation of SAPP (ECMWF);
- verification tools:  
local surface verification tool;

- Plans: HARP implementation;
- surface DA:  
BATOR (CY38): SYNOP, TEMP; BATOR (CY40T1\_bf07); ported to ECMWF 3-hour cycling of a standalone surface DA scheme (OI\_MAIN, CY40T1\_bf07, 60-levels) ; setting an experiment for validation of 48-hour forecasts of AROME-PT2 (CY40T1\_bf07, 60-levels) initialised by surface DA using as reference the same AROME-PT2 model configuration, initialised by dynamical adaptation for the two periods: WINTER: 10dez2018-10fev2019 (cold and rainy period); SUMMER: 01ago2018-09set2018 (extreme temperatures); just started the winter cycle; porting of the scheme to ECMWF;
- joint surface+ upper-air DA:  
B-matrix computed computed by AEARP downscaling and tested in beaufix for AROME-PT2 OI\_MAIN+3D-Var, with AROME DA CarBC (CY40T1);  
Plans: porting the beaufix experiment to the local machines;
- operational systems:  
AROME-PT2 (CY38);  
implementation of AROME-PT2 (CY40T1\_bf07) and start of its validation;
- reported issues:  
installing BATOR CY43T2\_bf\_09 installation in the local machine (IBM-p7) since the native compiler does not supports FORTRAN2008 features;  
Plans: move to gfortran compiler.

## TUNISIA

- data pre-processing:  
OPLACE; local SYNOP;
- monitoring tools:  
OBSSMON and MANDALAY implemented on the local machine;
- verification tools:  
HARP not installed;
- surface DA:  
BATOR has been locally implemented on CY40T1 and should now be tested with OPLACE databases; surface DA (OI\_MAIN) has been implemented in beaufix but not yet on the local machine;
- joint surface+ upper-air DA:  
B-matrix has been computed by the ensemble method;  
Plans: to implement a joint surface + 3D-Var DA, with a Jk component; purchase a new HPC platform by end of 2019; installing CY34T2; testing DA for CY43T2.

## TURKEY

- data acquisition:  
SYNOP and AMDAR from GTS (BUFR), local SYNOP (conversion to BUFR); non-conventional observations are using AMSUA, AMSUB-MHS (NOAA18-19 & METOP1-2, SEVIRI (METEOSAT11) and AMV (METEOSAT));
- data pre-processing:  
nothing is done; SAPP will be implemented during 2019 in pre-operational mode; test of new observations;
- monitoring tools:  
OBSSMON has been installed and tested with provided observations; a python script has been created to visualize MANDALAY output;
- verification tools:

- Plan: HARP implementation;
- surface DA:  
BATOR (CY43T2\_bf10) has been installed; BATOR (CY43T2\_bf10) and CANARI tested successfully with local SYNOP; diagnostics done for one SYNOP station;  
Plans: set-up of a surface DA (OI\_MAIN) to AROME-Turkey;
- joint surface+ upper-air DA:  
B-matrix has been calculated from AEARP at CY43T2 by the ensemble method;  
Plans: set-up of a joint surface (OI\_MAIN) + 3D-Var DA to AROME-Turkey;
- operational systems:
- a 6-hour DA is being cycled for ALARO CY40T1 in operational mode (at 00, 06, 12, 18UTC network times), at 4.5km, 60 levels and with LBC from ARPEGE; as conventional observations are using SYNOP GTS&local; TEMP local and AMDAR GTS; as ; CANARI is used for surface DA and 3D-Var for the upper-air with 24-hour varBC. The model is integrated up to 48 hours.

Acknowledgments: from Morocco, Portugal and Turkey, to Alena Trojakova (CHMI, LACE) on local BATOR implementation (as well as at ECMWF).

Main conclusions:

1. local implementation of CY43T2 in operations has been a major concern for most of the local teams (6 out of 8) in the past quarter and 3 of them (Algeria, Belgium and Poland) already have it in operations under dynamical adaptation initialisation;
2. concerning surface DA (OI\_MAIN), 5 out of 8 countries have now a local surface DA cycling (standalone or in conjunction with 3D-Var) and the remaining 3 countries (Bulgaria, Morocco and Tunisia) are waiting new HPC platforms;
3. local work on DA is now split by the two versions: CY40T1 and CY43T2; at the same time,
4. some countries are working with AROME physics, other with ALARO; other with both;
5. countries start to show and discuss the first diagnostics and forecast scores on the impact of surface DA, namely: Algeria, Belgium, Poland, Portugal and Turkey;
6. MANDALAY has been implemented and tested in almost all countries (still on-going for Portugal) and no issues have been found;
7. OBSMON has been implemented and tested in almost all the countries (still on-going for Algeria and Portugal), but none has started to use it on a regular basis;
8. HARP has not been implemented in most of the countries;
9. issues with AMDAR data have been solved, though some countries did not start to process it yet;
10. issues with BATOR installation at CY40T1\_bf07 have been solved, but problems when installing BATOR at CY43T2 still remain (Algeria, Portugal);

11. the draft Agenda for the 2019 Joint LACE and DAsKIT WD has been discussed and some points have been agreed:
  - i. focus of DAsKIT WD will be the local validation and tuning of surface DA;
  - ii. common action on AMDAR should be kept and Algeria and Morocco will participate on its organization;
  - iii. a session on HARP should be kept and Belgium will take charge of it (will provide info on the user's WD that will take place in Denmark during October 2019 and will deliver hints on how to install it locally before the WD so that participants may take issues for discussion);
  - iv. a session on B-matrix computation and Jk cost function component will take place also and Morocco and Tunisia will help on its organization;
  - v. summary of Météo-France progress on surface DA should be organized by Claude Fischer (by video-conference);
  
12. Alex Deckmyn has provided a debriefing on the recent SAPP (ECMWF) workshop and also some summary transparencies;
  
13. due to the short time left to the video-conference, the last two topics in the agenda were left over and some transparencies will be used by the DA coordinator for further information. Those topics were:
  - i. the recent EUMETNET query from Observation Capability Area experts (ObsSET) in order to support the next 5 years planning of EUCOS geographical area observing systems taking into account SRNWP needs (under the form of a Statement of Guidance (SoG),
  - ii. planning of the Rolling Working Plan for 2020 (RWP2020).
  
14. next DAsKIT video-conference will take place in December 2019 and a doodle to establish the appropriate dates will be set in advance.

#### Recommendations & actions:

1. all countries are invited to document their issues in the LACE forum, on the page dedicated to DAsKIT issues <http://www.rlace.eu/forum/viewtopic.php?f=21&t=580>;
  
2. countries have been strongly encouraged to proceed to the validation of their surface DA cycling (at CY40T1) so that main issues may be found and solved in an optimum way and main conclusions may be commonly achieved/discussed during the next DAsKIT WD;
  
3. advises on compilation of HDF5 library needed for BATOR CY43T2 installation have been shared once again between Bulgaria, Czech Republic and Algeria and were introduced at the LACE forum <http://www.rlace.eu/forum/viewtopic.php?f=37&t=117&p=2176#p2176>;
  
4. Alena Trojakova shared her notes on CANARI (ISBA) tuning via e-mail;
  
5. Belgium shared validation results on surface DA so that Claude Fischer may give some support;

6. Poland contacted Roger Randriamampianina on OBSMON daTraining instructions in order to get information on interface from experiments output data and shiny graphical interface;
7. Portugal will share a namelist to create properly the input file to blendsur which avoids a “segmentation fault” issue during the model run time;
8. Besides, some discussion took place on the meaning of the words “diagnostics”; “validation”; and “verification tools” in the context to surface DA (and used for the planning of the next WD). It was said “diagnostics” should target the processes by which a feature (in DA schemes) is identified and understood; “validation” should target the confirmation of an expected feature of the scheme (usually that the forecast becomes closer to observations, that is, more realistic) and for that each team could use the locally available “verification tools”; where “verification tools” concerns the tools, in a wide sense, available in our community to proceed with “validation”;
9. Finally, some discussion took place on the cycling period duration that should be taken to make the analysis error to stabilise before we proceed to a regular DA validation process (along a certain period). Poland used a 3 weeks period and Belgium used a 1 month period.