LACE DAWD & DAsKIT – Summary of discussions

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Status presentations

▸ Migration to cy43t2 is ongoing

▸ Numerous observational upgrades in operations

▸ Background error modelling – local EDA-based preferred

    ▸ Tuning

    ▸ Spread for humidity found to be smaller in EDA simulation technique

▸ Assimilation cycling: separate prod/assim?

Assimilation of humidity information

▸ ZTD GNSS causes considerable impact on forecast

- ▸ Bias correction (static or VarBC or both)
- ▸ Cycling of bias coefficients

▸ More impact studies on E-GVAP

▸ Rain assimilation as interesting addition/alternative for radar

- ▸ Possible implementation LACE (AS rain rate, microlinks)?

Assimilation of radar

▸ Reflectivity operator validated with ALARO (graupels beneficial – but not mandatory)

▸ Construction of pseudo-obs validated

 ▸ Few bugs and treatment of fg_depar=0

▸ Assimilation for wind-optimized scans ready

▸ Dealiasing not yet ready but promising

▸ Earlier initial experiments showed drying (but suffered from incorrect initialization etc.). More impact experiment needed.

 ▸ Possible tests: thinning, selection box, assimilation of fg_depar=0, sensitivity threshold or not, graupel on-off

▸ HOOF to be upgraded with superobbing and dealiasing functionality

Aircraft observations

▸ New Mode-S source are available and under evaluation, consistently good impact

▸ For EHS, processing by EMADDC is preferred

▸ MRAR can be shared within OPLACE, after whitelisting

▸ VarBC approach to correct T and U is considered useful

▸ If data remains local:

  ▸ Details about EMADDC processing are needed

NWP-based nowcasting - RUC

▶ Spinup: IAU as good compromise between spin-up and accuracy.

▶ Additional observations:

  ▶ Aircraft, radar obs.

  ▶ Wind profilers

  ▶ Sodars (wind)

  ▶ Crowd-sourced observations

Surface assimilation - OI

▸ Surface DA has many parameters to tune.

▸ Studies to tune CANARI correlation functions (determination of shape of functions/influence lenght scale/etc).

▸ Decisions depend on the local surface network; on the domain orography; and on the model resolution.

▸ Probably no universal solutions for tuning.

Surface assimilation

▸ Coupled and offline experiments

▸ LST with DIF scheme (SURFEX 8.1)

  ▸ combined MSG+Sentinel by CDF matching

  ▸ impact achieved by hourly cycling

▸ SWI (SCATSAR)

  ▸ local obs. errors

  ▸ problem with summer moistening

▸ LAI via improved PGD

▸ Force-restore vs. diffusion scheme, 3L snow scheme (unification of SURFEX versions needed for operations)

▸ Uncertainty about MF decision for future

Main topics from 2021 plan

▸ Radar DA (reflectivity, wind) [25 pm]

▸ Other existing obs (GNSS, Mode-S, AMV, radiances) [22 pm]

▸ New obs (STD, microlinks, dense surface obs.) [9 pm]

▸ Setups for nowcasting (prototypes to evolve) [16 pm]

▸ Surface assimilation, surface obs. (SEKF) [12 pm]

Achievements & status of DAsKIT

▸ most of the countries are working on CY43T2 in their DA suites

▸ several DAsKIT countries have got new HPC infrastructures and local progress to establish DA suites is visible now

▸ some countries already started to show validation results with 3D-Var or on a combined solution

▸ observations tacked so far in DAsKIT countries include mainly conv observations, GNSS (humidity)

▸ during these WD, the bridge between ODB (T-codes) and the monitoring software OBSMON was achieved (thanks to Belgium team) through some practical exercises

▸ finally, at least 4 countries are implementing SAPP in-doors and know now how to use SAPP BUFR files with BATOR (T-codes) (thanks to Turkey).