Considerations of further developement of RC LACE data assimilaion

Tomislav Kovacic
DHMZ

Consideratos of future developement of RC LACE DA

Overview

- Improvement of data usage
- System performance improvement
- Implementation of more advanced data assimilation methodes

  Surface analysis
- Plans for OPLACE
- Radar data assimilation

Consideratos of future developement of RC LACE DA

Improved usage of data

- Impact of data on anlysis
  - DFS (already used in some services)
  - Reduction of variance
- Impact on forecast
  - Adjoint methode (based on developement started by F. Vana)
  - OSE – moist energy norm (Roger's work)
  - Case studies
  - Mesoscale tools for verification
  - SAL, 2D, R based tools,Verification included in HARMONI
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Consideratos of future developement of RC LACE DA

System performance improvement

- Tuning of background error statistics
- Tuning of observation error statistics
- Tuning of multivariate balances

  Tuning method is already developed in Hungary. Method is relativly simple to apply. There are other methods based on perturbed observatios. Could be tested and used as well.
- Sigma b map
- Hybrid B

Consideratos of future developement of RC LACE DA

Implementation of more advanced DA methods

- Developement of 3DVAR 3h RUC (Slovenia) for ALARO 4.4 km (Slovenia).
- Developement of 3DVAR 3 and 1h RUC for AROME (Hungary)
- Ensemble data assimilation? (Austria)
- Tests with seasonal B matrices.
- LAEF ensamble for B matrix
- ARPEGE ensamble
- Ratnmc
- Rain b matrix

Consideratos of future developement of RC LACE DA

Surface analysis

- CANARI
  - Solve problem of T2m and RH2m RMSE at 12H.
  - Solve ”summer” problem with surface analysis.
  - Solve a problem of stations with constant bias.
  - Use new structure function.
  - 2DVAR for surface
- Start experiments with SURFEX analysis for ALARO
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Consideratos of future developement of RC LACE DA

Plans for OPLACE

- Implement GPS data
- FInish implementation of national synop data
- Implementation of new data.
- Technical mantainamce.
- nwcSAF data
- Snow measurements (problem in obsoul) Mariken
- ASCAT
- AMV high resolution
- Mode s

Consideratos of future developement of RC LACE DA

Radar data assimilation

- Data problem
  - CONRAD will be used untill BATOR implementation of ODIM HDF5 format reader .
  - Exchange of radar data must be developed. The exchange model used for INCA is a possible solution.
- BATOR
  - Usage of quality flags must be reinvestigate.
  - There can be a problem with PPIs at higher elevations, better horizontal projection must be developet.
- Use of qualiti flags in screening must be checked.

Radar data assimilation (*cont.*)

- Common quality control must be developed in cooperation with rdar departments.
- Test radar data in assimilation for ALARO and AROME.
- Test of radar data in assimilation with 3h and 1h RUC.
- Test B matrix for precipitation.
- Cooperate with HIRLAM in developement/testing of field alignement method for radar data.