

Settings of the DA system for satellite data  
RC-LACE Stay report

Hungarian Meteorological Service

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# 1 Introduction

Currently, the data assimilation system is quasi-operational in Romania. Using the previous cycle cy36t1-op2 the results of DA were encouraging, but there were some doubts regarding the satellite data assimilation.

Recently, our computer (IBM BLADE Linux Cluster) was upgraded, and with the new cycle (cy38t1-bf03) some technical issues were found concerning the incorrect settings of the new system. The stay was very helpful in order to progress towards operational data assimilation in Romania.

Therefore, the stay comprised the following steps :

- to correctly install the DA system within cy38t1-bf03;
- set-up of the DA configuration

## 2 Installation of the new cycle (cy38t1-bf03)

The DA settings for Romanian domain are:

- ALARO 6.5 km horizontal and L49 vertical resolution;
- IC and LBC from ARPEGE with 3 hours frequency;
- Bmatrix computed using Ensemble method;
- SST from Arpege analysis;
- surface analysis CANARI and upper-air 3DVAR;
- 6h assimilation window

In order to set the appropriate working environment all the necessary libraries were installed (netcdf-4.1.3; grib-api-1.12.0; emos-000392; auxlibs-2.5). We used the Intel compiler version 13.1.1 and the MKL libraries. To compile the gmckpack-6.5.17, the Hungarian settings were used. Some issues were found regarding grib-api libraries which were solved by keeping in the lib directory only the static libraries (also, before the compilation export the options: CC=icc; FC=ifort; CFLAGS="-g -O1 -fp-model precise"; FCFLAGS="-g -O1 -fp-model precise").

## 3 Implementation of DA system on the new computer

The tests were carried out for one day using the OPLACE observations with a cold start. There were technical problems in the screening part. Routines *varbc-pred.F90* and *varbc-rad.F90* were modified in order to switch off predictors 5 and 6.

Firstly, in order to read the satellite observation we used the libbufr\_383MF and the bufrtables.383MF. Unfortunately we obtained the following error due to the routine *bator\_decodbufr\_mod.F90: forrtl:severe(64): input conversions error, unit-5, file Internal Formatted Read*. Therefore, the libbufr\_383EC and bufrtables.383EC were used.

The scripts and namelists were adapted from the Hungarian operational DA system.

## 4 Outlook

The validation and scientific evaluation of DA is ongoing in Romania. Future work is needed regarding the issues with the computing platform (the communication between nodes).