



Data assimilation activities at ONM (Algeria)

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Outlines

Operational setup at ONM

Progress and DA activities

- Testing of a first 3DVAR Assimilation setup.

- Tested observations

Issues

Perspectives and plans

Overview

Operational setup at ONM

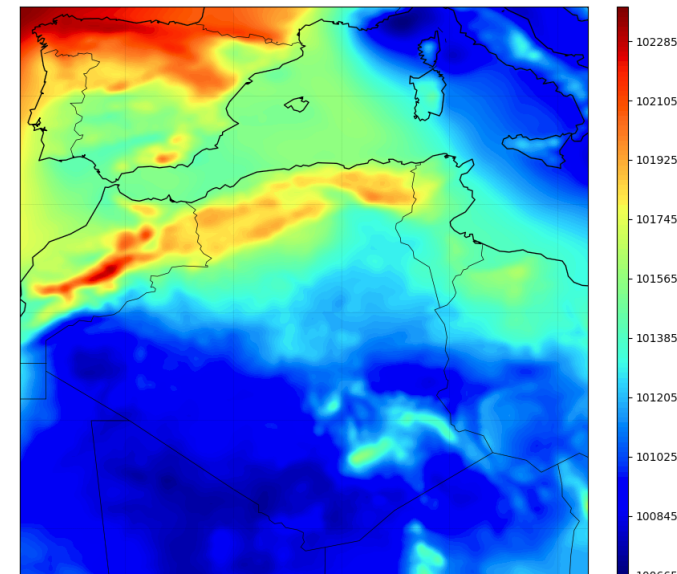
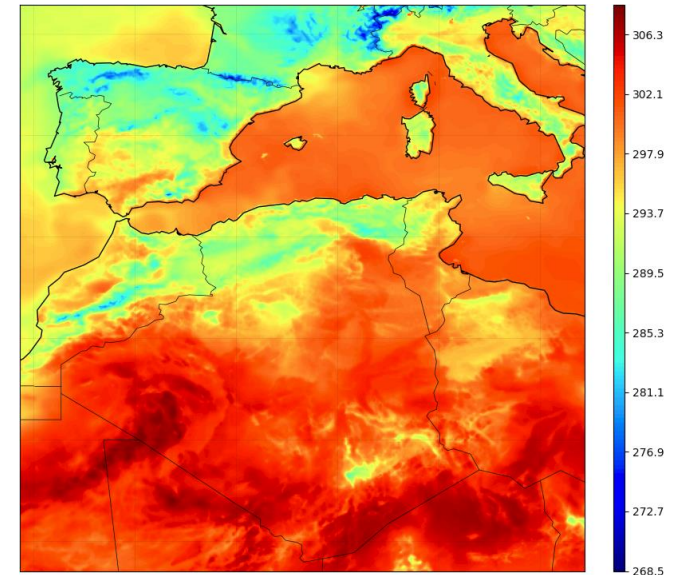
Operational forecast models

○ **ALADIN cy40t1**

Resolution = 8 km , 350x350 grid points
Number of levels = 70
Time step integration = 180s
Coupling model : ARPEGE
Coupling frequency : Every 3 hours
Forecast range : 72h at 00h , 12h
Type of initialisation : First ARPEGE coupling file.

○ **ALADIN_DUST cy40t1**

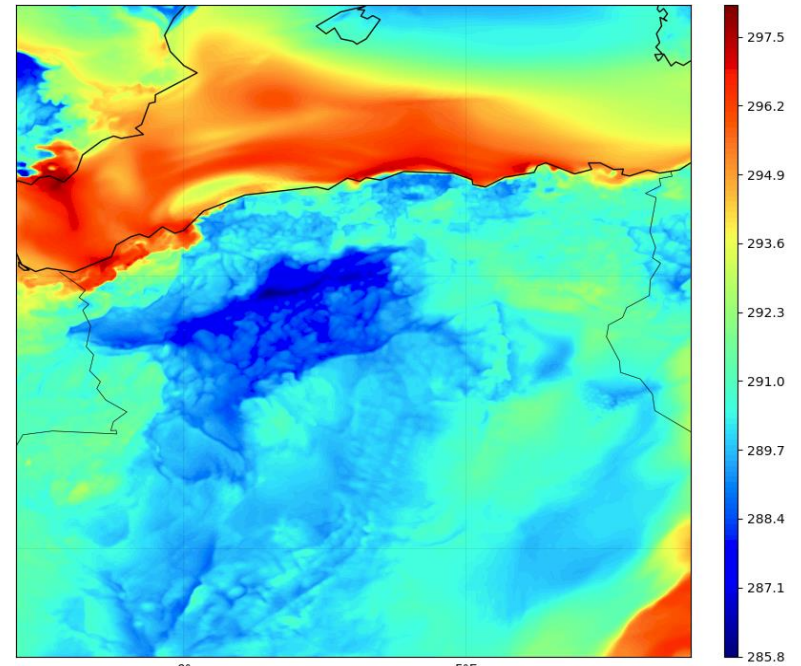
Resolution = 11 km , 240x240 grid points
Number of levels = 70
Time step = 180s
Coupling model : ARPEGE
Coupling frequency : every 3 hours
Forecast range : 48h at 00h , 12h
Type of initialisation : First ARPEGE coupling file.



Operational setup at ONM

○ AROME cy40t1

Resolution = 3 km , 400x400 grid points
Number of levels = 41
Time step = 180s
Coupling model : ALADIN
Coupling frequency : every 1 hour.
Forecast range : 48h at 00h , 12h
Type of initialisation : First ALADIN coupling file.



Upper air analysis

None (3DVAR with SYNOP under testing)

Surface analysis

None (CANARI with SYNOP under testing)

Progress and DA activities (Since Lisbon DAsKit working days)

➤ 2017 :

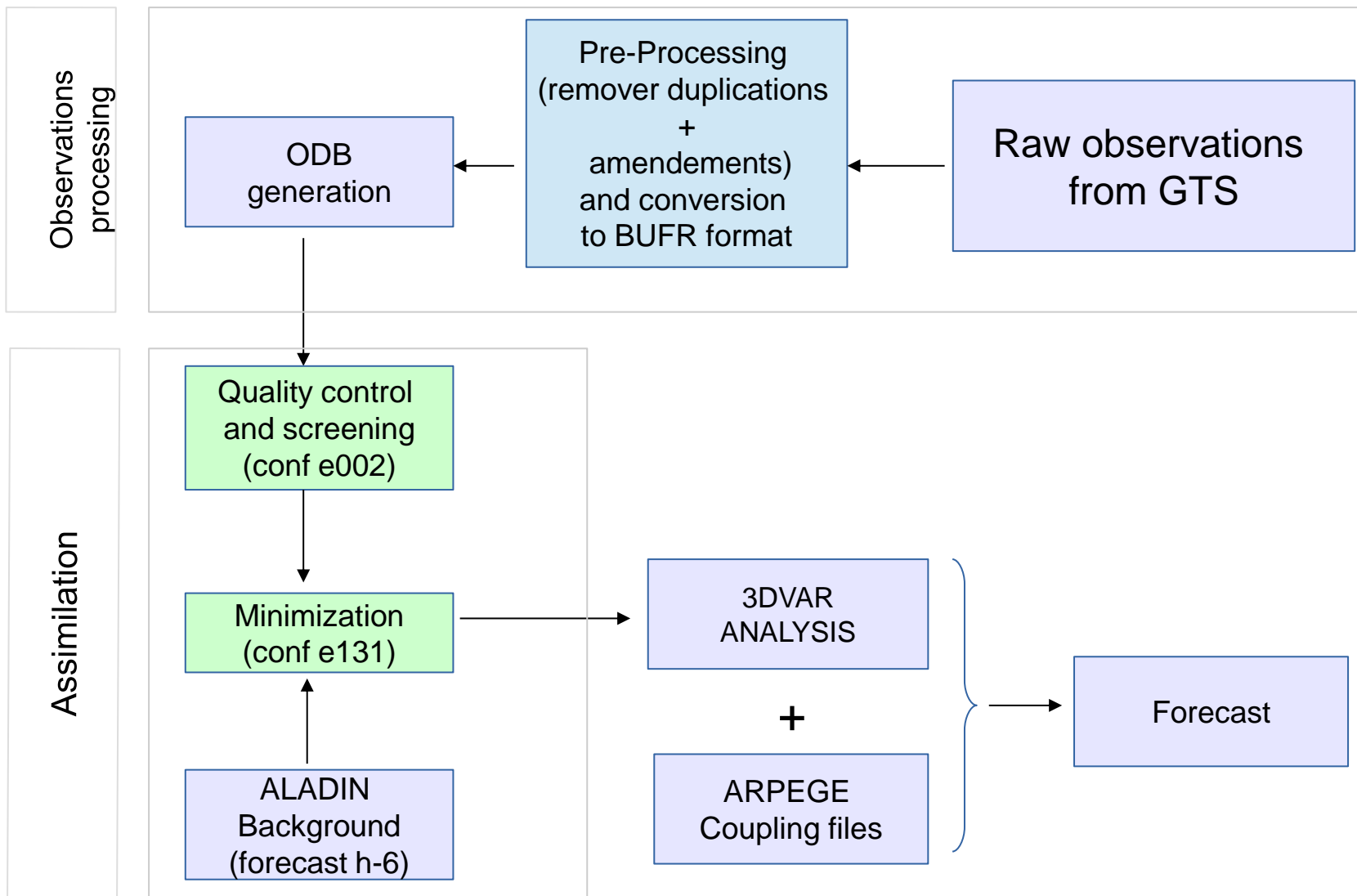
- Computation of the background matrix error covariances for ALADIN using **NMC** method (at ONM)
- Computation of background matrix error covariances for AROME model using **AEARP** method (at Météo France)
- Configuration of a 3DVAR assimilation for ALADIN and AROME using synop data

➤ 2018 :

- First setup of a 3DVAR assimilation cycle for ALADIN (pre-operational version).
- Installation of the back-phased BATOR cy40t1 (M.Monteiro ,F. Guillaum , A. Trojakova) for the assimilation of AMDAR data (template 311010) and testing assimilation of GTS AMDAR data.
- Installation of MANDALAY utility in order to read ECMA and CCMA databases.
- Testing of a rapid-update-cycling scheme (3hour cycling) with ASCAT wind data for ALADIN

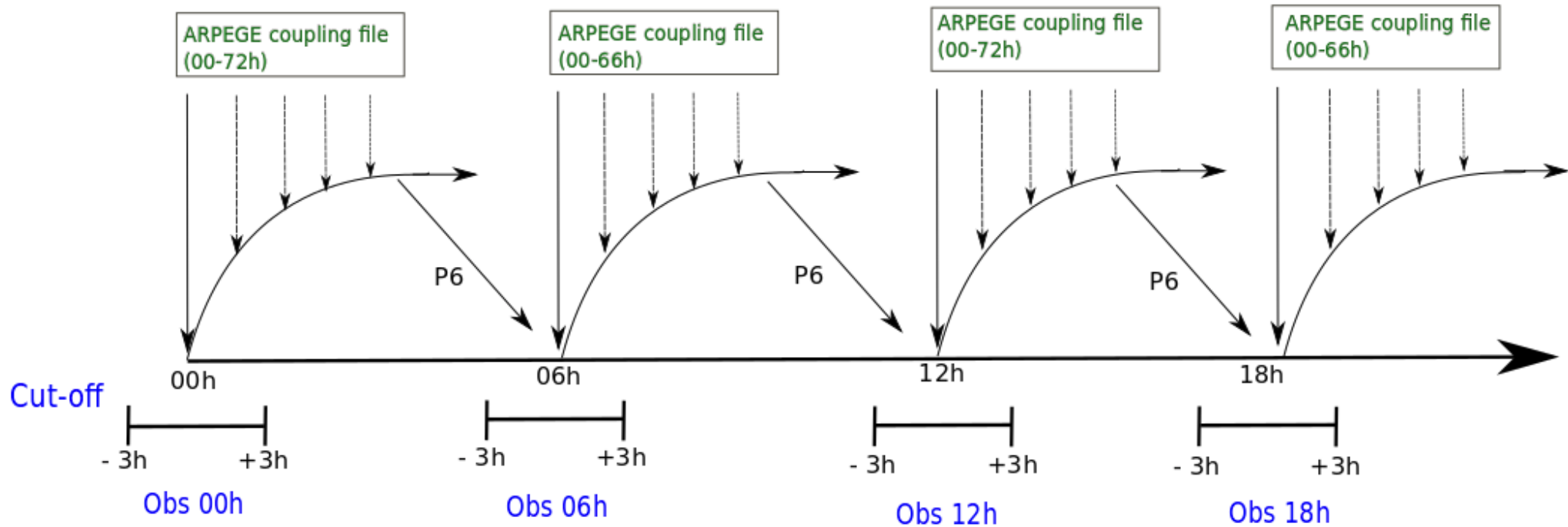
Testing of a first 3DVAR assimilation cycle

Testing of a first 3DVAR Assimilation setup (ALADIN)



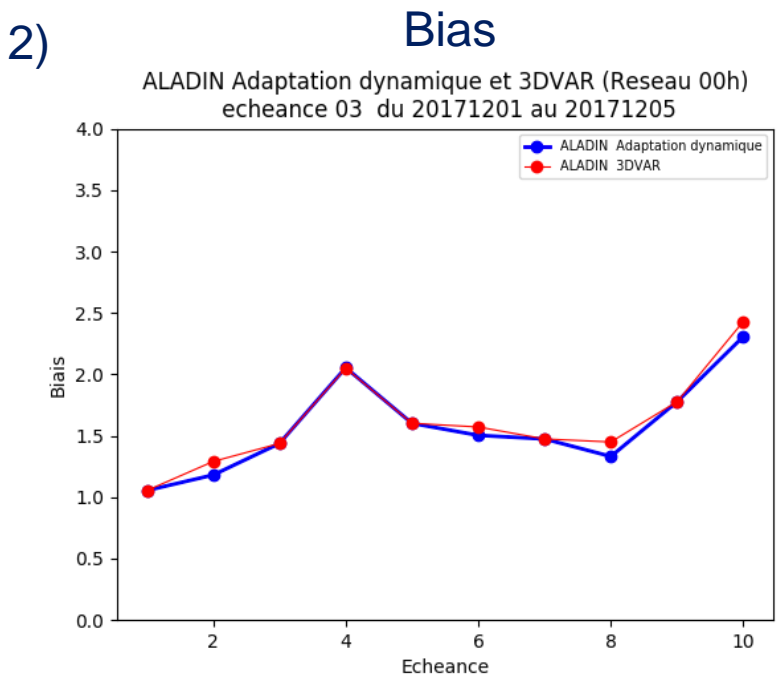
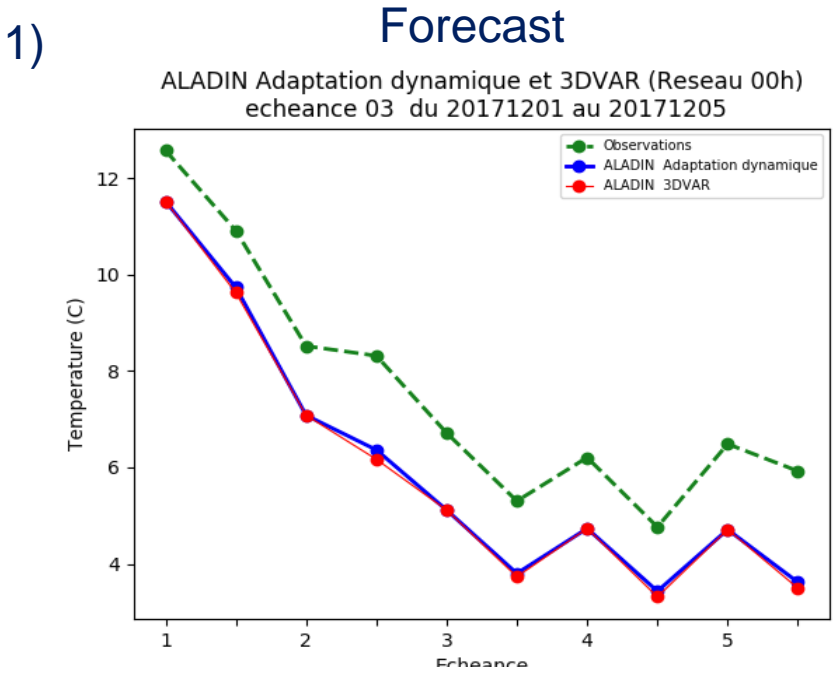
Testing of a first 3DVAR Assimilation setup (ALADIN)

6 hours assimilation cycle
3 hours observations cut-off

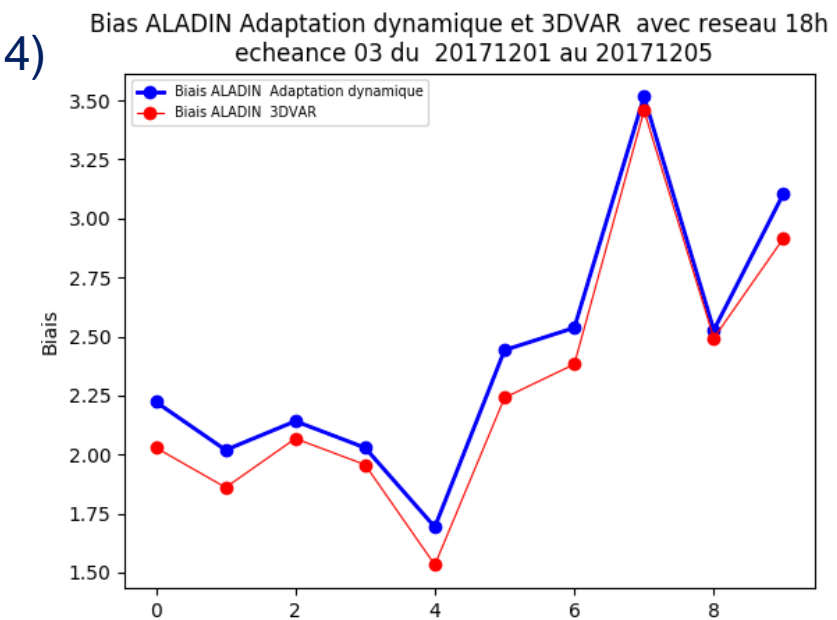
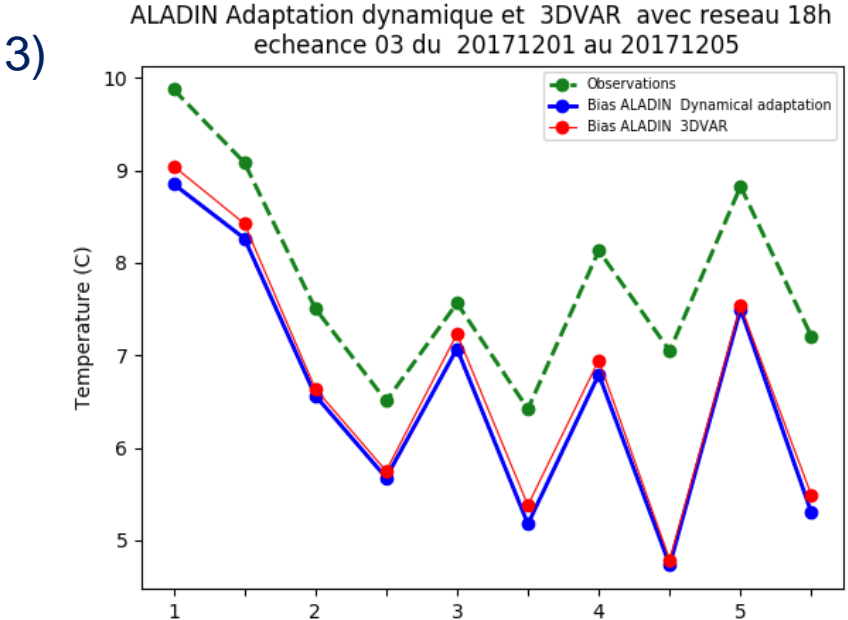


Preliminary results

Scores for T2m parameter 01-12-2017 to 05-12-2017



00h forecast
VS
00h 3DVAR



00h forecast
VS
18h 3DVAR

Tested observations

- Algerian Synop (Ps, T2m ,H2m ..etc) + synop of neighboring countries (Tunisia , Morocco , Italy, Spain , France and Portugal)
- ASCAT winds (speed and wind direction). from Metop A and Metop B, collected from GTS
- AMDAR data IUA* , EGRR with template (31 10 10) (T , P ,wind speed and direction)

Issues

- Crash with CANARI surface analysis for AROME in subroutine **CANCER.F90**. Calculating the Observations-first guess departures.

Setting :

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OROLIM=10000,

ORODIF=0 ,

/....

&NACTEX

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LAEOMN=.T.,

Type of error: Fortran segmentation fault.

- Crash in screening when using more than one observation type (assimilation of SYNOP+ASCAT) In subroutine **STEPO.F90**

Type of error : MPI_Recv communication

Main perspectives

- Build a 3DVAR assimilation cycle for AROME model using all available data types (SYNOP , ASCAT, AMDAR) for testing purpose.
- Coupling of the surface CANARI-OI_MAIN analysis with the upper air analysed fields (for AROME model)
- Assimilation of radio sounding data.

Other

- Handling (conversion from RINEX format to BUFR) and assimilation of GPS data
- Assimilation of SEVIRI satellite radiances.

Thank you
for your attention