

Phasing Report

Cycle 41.t1

**STUDIES ON THE LATEST DEVELOPMENTS
IN ARPEGE/IFS**

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I. AROME 3DVar

1. RTTOV coefficients Validation for the IASI observations

After noticing a decrease in the number of IASI assimilated observations using the 41_t1.03 pack (compared to the 40_op2), new RTTOV coefficients files were produced in order to test if the difference was due to the change in the RTTOV coefficients. My task was to build a new experience, based on 41_t1.03 and using a new set of coefficients, and compare the impact on the assimilated observations in term of number and cost function JO.

The different Olive experiences used in this validation are summarized on the table bellow. B4QL and B4QT experiences were built by Philippe CHAMBON.

Table 1: Olive experiences used in RTTOV coefficients validation for the IASI observations

Experience ID	B4QL (Reference)	B4QT (RTTOV version2) 10/01/2015	69DP (RTTOV version3)
Date			
Cycle	al40_arome-op2HR.12	al40_arome-op2HR.12	al40_arome-op2HR.12
ARPEGE Cycle	cy40_op2HR.12	cy40_op2HR.12	cy40_op2HR.12
Assimilation Binaries (on beaufix)	al40_arome-op2HR.12	home/gmap/mrpa/cha mbonp/pack/41_t1_test.03.IMPI411IFC1301.2x/bin	home/gmap/mrpa/cha mbonp/pack/41_t1_test.03.IMPI411IFC1301.2x/bin
Assimilation Namelists (on beaufix)	cy40_op2HR.12	home/gmap/mrpa/cha mbonp/namelists/CY41_t1_based_on_CY41_based_on_al40_arome-op2HR.07.nam	home/gmap/mrpa/cha mbonp/namelists/CY41_t1_based_on_CY41_based_on_al40_arome-op2HR.07.nam
RTTOV coefficient (on beaufix)	home/gmap/mrmn/michely/RTCOEF/rtcoef.19_towardsrttov11_BIN_v2.tgz	home/gmap/mrmn/michely/RTCOEF/rtcoef.19_towardsrttov11_BIN_v2.tgz	home/gmap/mrpa/cha mbonp/RTCOEF/rtcoef.19_towardsrttov11_BIN_v3.tgz

We took the assimilation cycle of 20h as an example to show the IASI assimilated observations anomaly. Figures 1 and 3 represent the assessment of observations number and cost function as well as the differences (taking the B4QL as a reference) of respectively the B4QT and the 69DP experiences. Almost 800 SATEM observations in B4QT were not assimilated using the RTTOV coefficients version 2 (Figure1 (b)). IASI (Metop1 and Metop2) is the main cause of this loss of 800 observations as shown on Figure 2. After changing the RTTOV files coefficients in the 69DP experience, we were able to catch up the missing observations (Figures 3 & 4). So the IASI RTTOV coefficients would be responsible of this assimilated observations anomaly.

In order to investigate more the reason behind the cut of nearly 800 observations after the minimization, the bias and the standard deviation of the simulated brightness temperature error between 69DP (rtcoef pack version 3) and B4QT (rtcoef pack version 2) were calculated . For IASI Metop1, bias and standard deviation are equal to zero which is expected as there is no change in IASI Metop1 RTTOV coefficients between the two packs. Nevertheless, for IASI Metop2, the bias has a range of [-2 , 3] with an average equal to 0.031 and the bias has a range of [0 , 0.6] with an average equal to 0.2. Thus, the missing observations would be related to the assimilation observation selection. The Bias and RMSE ranges being quite large, it gives us confidence in the cloud detection procedure.

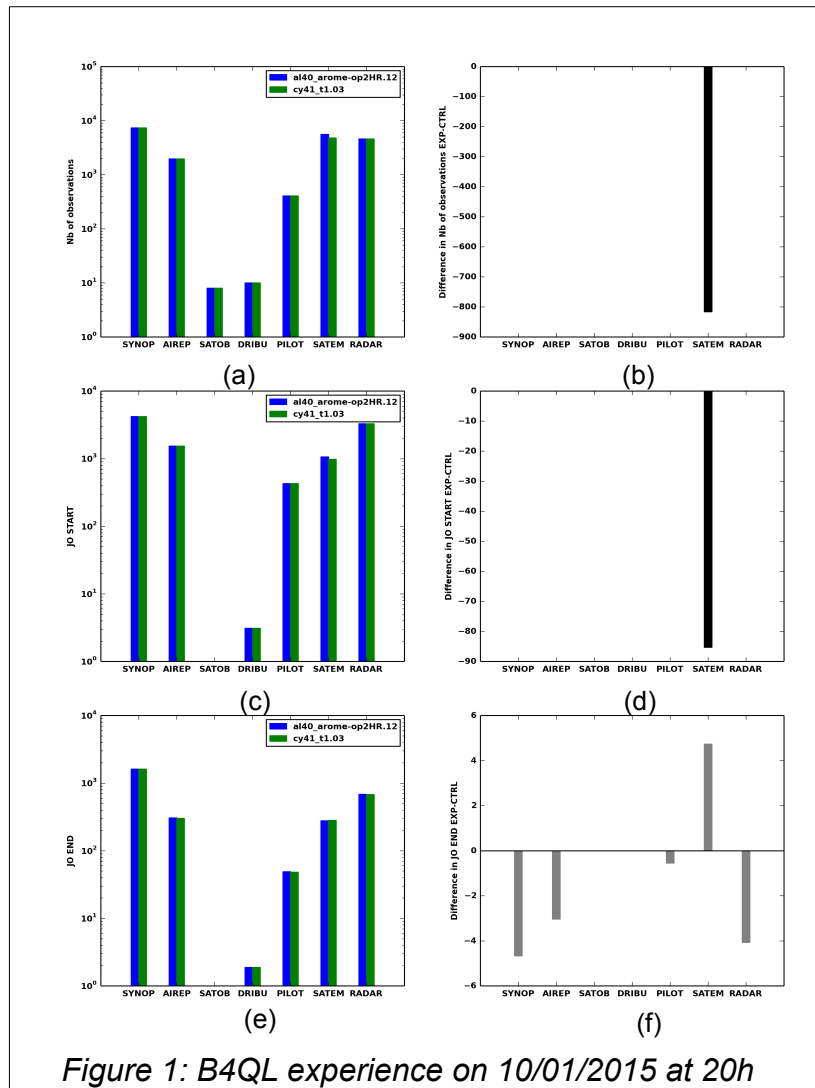


Figure 1: B4QL experience on 10/01/2015 at 20h

B4QL				B4QT			
Obstype 7 == SATEM, Satellite sounding data				Obstype 7 == SATEM, Satellite sounding data			
Codetype	210	1	3	Codetype	210	1	3
Variable	METOP	SENSOR=AMSSUA	Jo_Costfunction	Variable	METOP	SENSOR=AMSSUA	Jo_Costfunction
RAD	277	137.3270470897	→ X	RAD	274	135.6750603543	
Codetype	210	1	3	Codetype	210	1	3
Variable	METOP	SENSOR=MHS	Jo_Costfunction	Variable	METOP	SENSOR=MHS	Jo_Costfunction
RAD	117	24.55731130025	→ X	RAD	120	26.39917006484	
Codetype	210	1	3	Codetype	210	1	3
Variable	METOP	SENSOR=IASI	Jo_Costfunction	Variable	METOP	SENSOR=IASI	Jo_Costfunction
RAD	562	48.44111673780	→ X	RAD	632	68.96289319315	
Codetype	210	2	4	Codetype	210	2	4
Variable	METOP	SENSOR=HIRS	Jo_Costfunction	Variable	METOP	SENSOR=HIRS	Jo_Costfunction
RAD	21	8.624047153032	→ X	RAD	21	6.513121327594	
Codetype	210	2	4	Codetype	210	2	4
Variable	METOP	SENSOR=AMSSUA	Jo_Costfunction	Variable	METOP	SENSOR=AMSSUA	Jo_Costfunction
RAD	379	186.4629113663	→ X	RAD	381	196.8563526830	
Codetype	210	2	4	Codetype	210	2	4
Variable	METOP	SENSOR=MHS	Jo_Costfunction	Variable	METOP	SENSOR=MHS	Jo_Costfunction
RAD	306	30.18358768818	→ X	RAD	306	28.84424589531	
Codetype	210	2	4	Codetype	210	2	4
Variable	METOP	SENSOR=IASI	Jo_Costfunction	Variable	METOP	SENSOR=IASI	Jo_Costfunction
RAD	1389	167.5070805846	→ X	RAD	486	116.4458892671	
Codetype	210	73	73	Codetype	210	73	73
Variable	METEOSAT10	SENSOR=MSG HR	Jo_Costfunction	Variable	METEOSAT10	SENSOR=MSG HR	Jo_Costfunction
RAD	2262	346.7749165889	→ X	RAD	2262	438.9641341612	
Codetype	210	18	286	Codetype	210	18	286
Variable	DMSP	SENSOR=SSMIS	Jo_Costfunction	Variable	DMSP	SENSOR=SSMIS	Jo_Costfunction
RAD	308	43.72651161073	→ X	RAD	323	55.20292869246	
ObsType 7 Total:	5621	993.6045301195	→ X	ObsType 7 Total:	4805	1073.863795639	

Figure 2: SATEM minimization listing differences between B4QT and B4QL

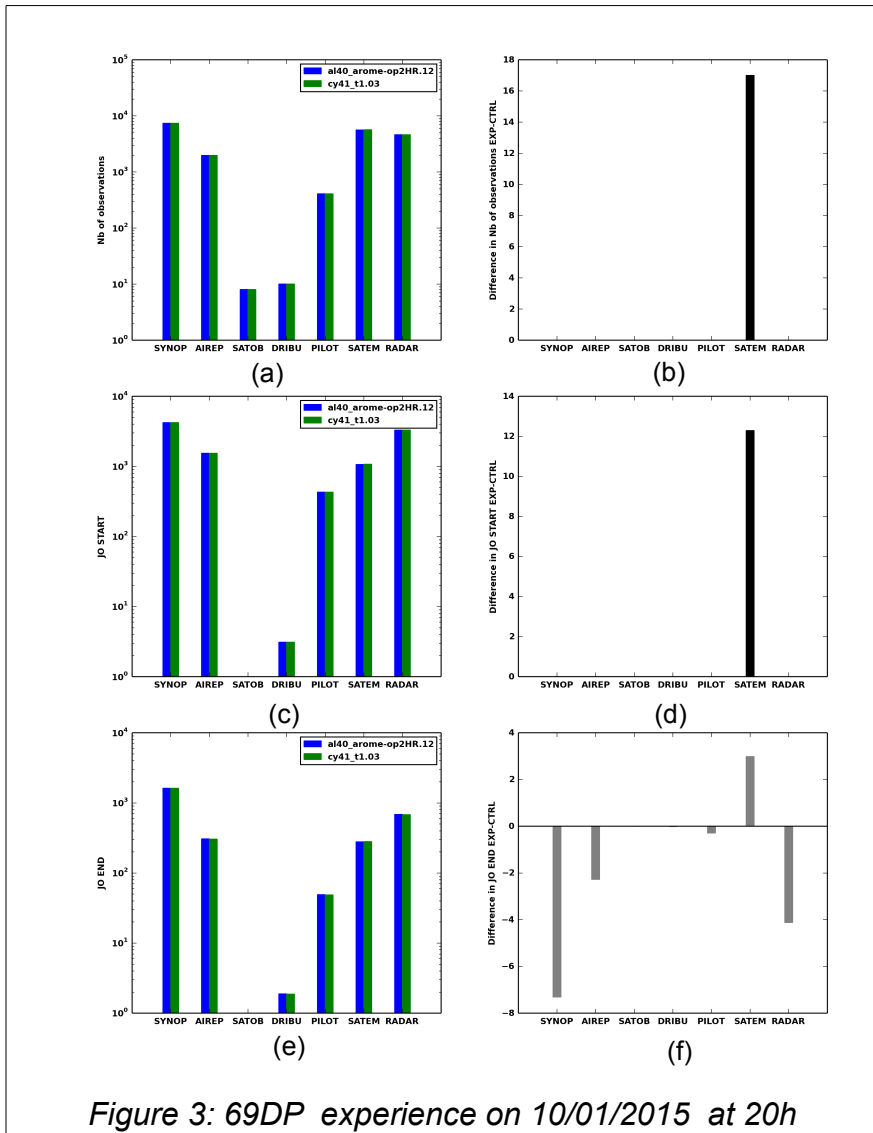
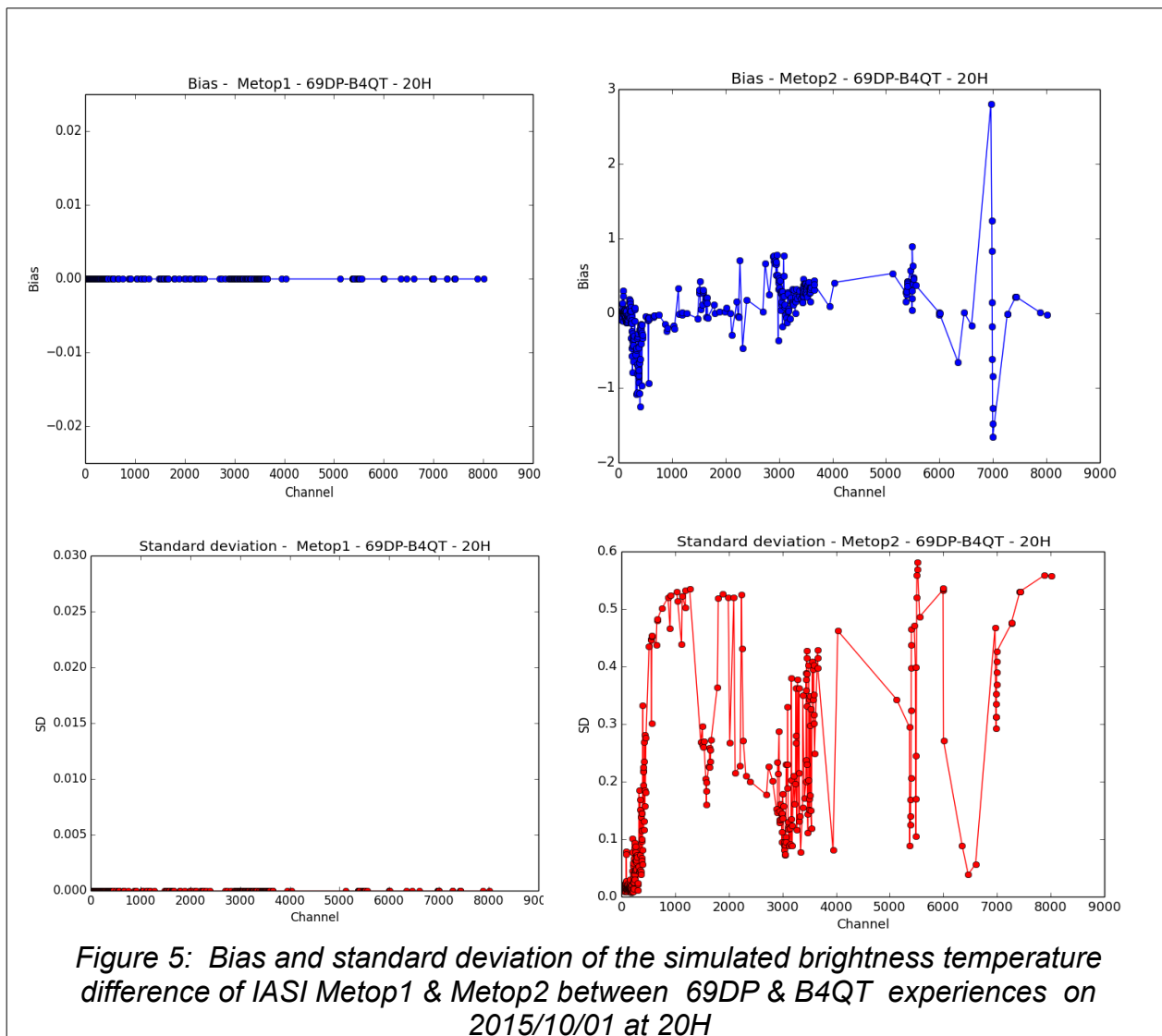


Figure 3: 69DP experience on 10/01/2015 at 20h

B4QL				69DP			
Obstype	7	===	SATEM, Satellite sounding data	Obstype	7	===	SATEM, Satellite sounding data
Codetype	210	===	METOP 1 3 SENSOR=AMSUA	Codetype	210	===	METOP 1 3 SENSOR=AMSUA
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	277		152.0736739013	RAD	274		150.4585842304
Codetype	210	===	METOP 1 3 SENSOR=MHS	Codetype	210	===	METOP 1 3 SENSOR=MHS
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	117		31.56298287291	RAD	120		26.57508961845
Codetype	210	===	METOP 1 3 SENSOR=IASI	Codetype	210	===	METOP 1 3 SENSOR=IASI
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	562		108.1531162145	RAD	562		108.1574159179
Codetype	210	===	METOP 2 4 SENSOR=HIRS	Codetype	210	===	METOP 2 4 SENSOR=HIRS
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	21		13.16014119220	RAD	21		13.16014119217
Codetype	210	===	METOP 2 4 SENSOR=AMSUA	Codetype	210	===	METOP 2 4 SENSOR=AMSUA
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	379		196.8920763068	RAD	381		208.4081363861
Codetype	210	===	METOP 2 4 SENSOR=MHS	Codetype	210	===	METOP 2 4 SENSOR=MHS
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	306		35.51625742708	RAD	306		28.60218421123
Codetype	210	===	METOP 2 4 SENSOR=IASI	Codetype	210	===	METOP 2 4 SENSOR=IASI
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	1389		209.1796491311	RAD	1389		209.1659115527
Codetype	210	===	METEOSAT10 73 SENSOR=MSG HR	Codetype	210	===	METEOSAT10 73 SENSOR=MSG HR
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	2262		266.5750030340	RAD	2262		266.5476272919
Codetype	210	===	DMSP 18 286 SENSOR=SSMIS	Codetype	210	===	DMSP 18 286 SENSOR=SSMIS
Variable	DataCount		Jo_Costfunction	Variable	DataCount		Jo_Costfunction
RAD	308		48.99205467035	RAD	323		63.31872722293
ObsType 7 Total:	5621		1062.104954750	ObsType 7 Total:	5638		1074.393817624

Figure 4: SATEM minimization listing differences between 69DP and B4QL



2. Surfex Troubles

Surfex was behind several aborts due to “*Surfex Field Not Found*”. Actually, in surfex 7.3 used in 41t1 (cycle 40 uses surfex 7.2), some field names changed and other fields were added or removed (Table 2).

We were able to bypass the names modification issue by turning off the fields selection option in the the namelist `namel_previ_surfex`, but this workaround was not enough to deal with the added fields. The ultimate solution for the Surfex issue (thanks to the efforts of Françoise TAILLEFER) was to use a new PGD file for the 41t1 that worked just fine with the selection field in the namelist.

A Surfex reproductibility test was performed by changing the processors number in the surface coupling job (couplingsurf in Olive). There was no difference between the fa files using 48 and 24 processors.

Table 2: Fields Changes from Surfex 7.2 to 7.3 in AROME

Names Modification		New Fields	Removed Fields
Surfex 7.2	Surfex 7.3		
SN_VEG_TYPE	SN_VEG_TYP	TROOF* (* 4-5)	SSO_CANOPY
SN_ROOF_TYPE	SN_RF_TYP	SSO_CAN_Z0* (*1-6)	SSO_CAN_LVL
T_ROOF*	TROOF*	TROAD* (* 4-5)	SN_ROOF_TYPE
ASNOW_VEG	ASN_VEG	TWALL* (* 4-5)	SN_ROAD_TYPE
RSNOW_VEG1	RSN_VEG1	T_WIN1	
T_ROAD*	TROAD*	GLACIER	
T_WALL*	TWALL*	TEMPARP	
WSNOW_ROOF1	WSN_RF1	ROAD_DIR	
RSNOW_ROOF1	RSN_RF1	WALL_OPT	
TSNOW_ROOF1	TSN_RF1	_FBUF_MASK	
ASNOW_ROAD	ASN_RF		
WSNOW_ROAD1	WSN_RD1		
RSNOW_ROAD1	RSN_RD1		
TSNOW_ROAD1	TSN_RD1		
ASNOW_ROAD	ASN_RD		
T_CANYON	TCANYON		
Q_CANYON	QCANYON		
SN_ROOF_N	SN_RF_N		
SN_ROOF	SN_RF		
SN_ROAD_N	SN_RD_N		
SN_ROAD	SN_RD		

3. 41_t1.04 Cycling test

3.1 Modifications listing

Details of Olive experience used in the cycling test are summarized in Table 3. A namelist pack prepared by Philippe CHAMBON (THANKS Philippe for all the help and the support) for the cycle 41.t1 was used in the experience. Few modifications in some namelist were necessary (Table 3) to get trough the cycling test.

Table 3: Olive Cycling Experience

Experienxe ID	69HT
Date	01-10/02/2015
Cycle	al40_arome-op2HR.12
ARPEGE Cycle	cy40_op2HR.12
Pack (beaufix)	home/gmap/mrpa/chambonp/pack/41_t1_test.05.IMPI500IFC1301.2x
Namelist (beaufix)	home/gmap/mrpa/chambonp/namelists/CY41t1_based_on_CY41_based_on_al40_arome-op2HR.07.nam
RTTOV coefficients (beaufix)	home/gmap/mrpa/chambonp/RTCOEF/rt_coef.19_towardsrttov11_BIN_v4.tgz
PGDFILE (beaufix)	scratch/work/tailefer/SURFEX_FILES/PGD_franmg_cy41t1.lfi_conv.fa
ecoclimap_covers_param (beaufix)	home/gmap/mrmn/michely/ECOCLIMAP/7.3/eco.tgz

Table 4: Namelist modifications

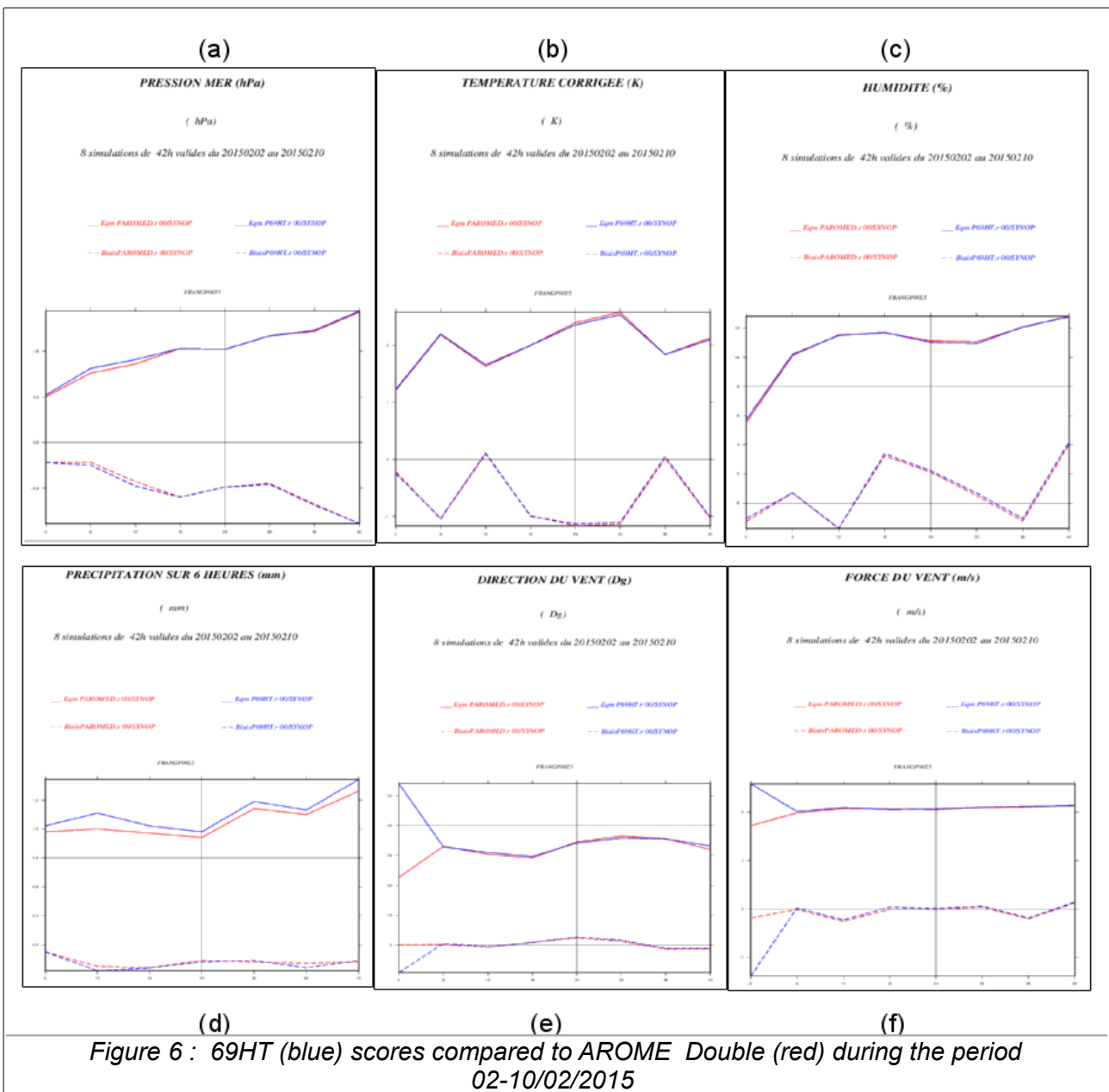
Namelist	Modifications
All	LUSE_TELSEM=.FALSE.
namel_previ_prod namel_previ_assim namel_previ_dyn_prod namel_previ_dyn_assim	add LWIDER_DOM=.TRUE. in &NAMFPC
namel_previ_prod select_fp	rename SURFREFLECT.MAX on SIM_REFLECT.MAX
namel_previ_surfex (for the forecast_int)	Surfex field selection modified (Table 2)
namel_e927_surf (couplinsurf in coldinit)	Add LRAY=.FALSE. In &NAMPHY

3.2 Results

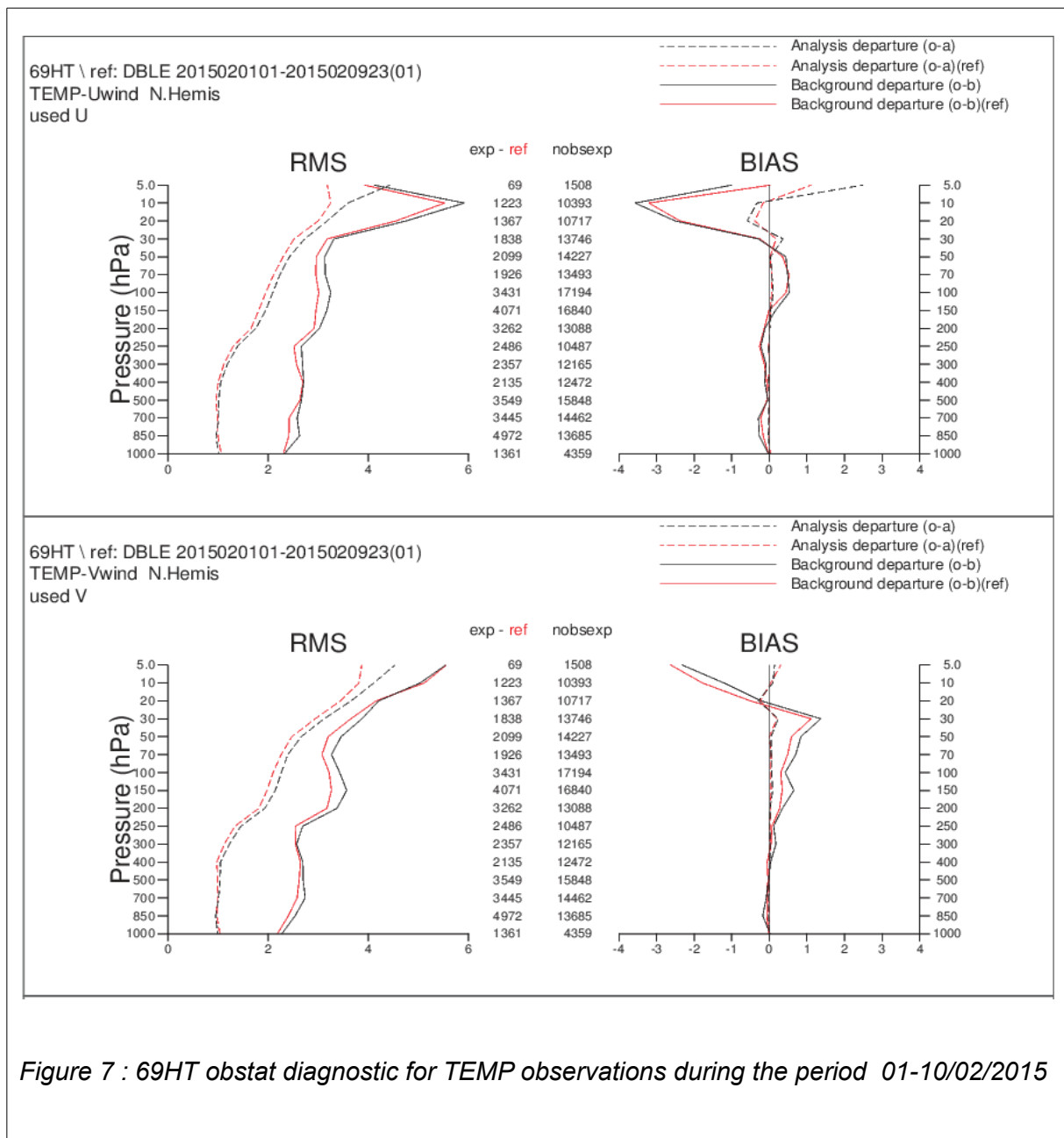
69HT score results compared to AROME Double suite from the 2^{sd} to the 10th of February 2015 show :

- a degradation in the 6H accumulated precipitation score (Figure 6.(d))
- an important difference in the rms and the bias for both wind direction (Figure 6. (e)) and wind speed (Figure 6. (f)) at 00H

To see clearer in the precipitation score results, we ran a scores_indicateur diagnostic under Olive (BSS, FAR, POD scores) that confirmed the score degradation.



The wind inconsistency at 00H might be related to the observations. In fact, after examining 69HT obstat diagnostic, we noticed some significant differences in TEMP and EUprofiler observation numbers (Figures 7 & 8). These incoherence seems to be related to contributions added to 41_t1.05 pack (while we are cycling with 41_t1.04) dealing with HR observations. Thus Philippe CHAMBON launched an experience with the latest pack that we had, that's to say 41_t1.06, in order to pinpoint the wind anomaly. As the latest modifications in AROME Double suite were undertaken in the 1st week of Mars, starting the new cycling experience on 10/03/2015 was more suitable (The new pack cycling test results are not available yet ... Keep on following for more details).



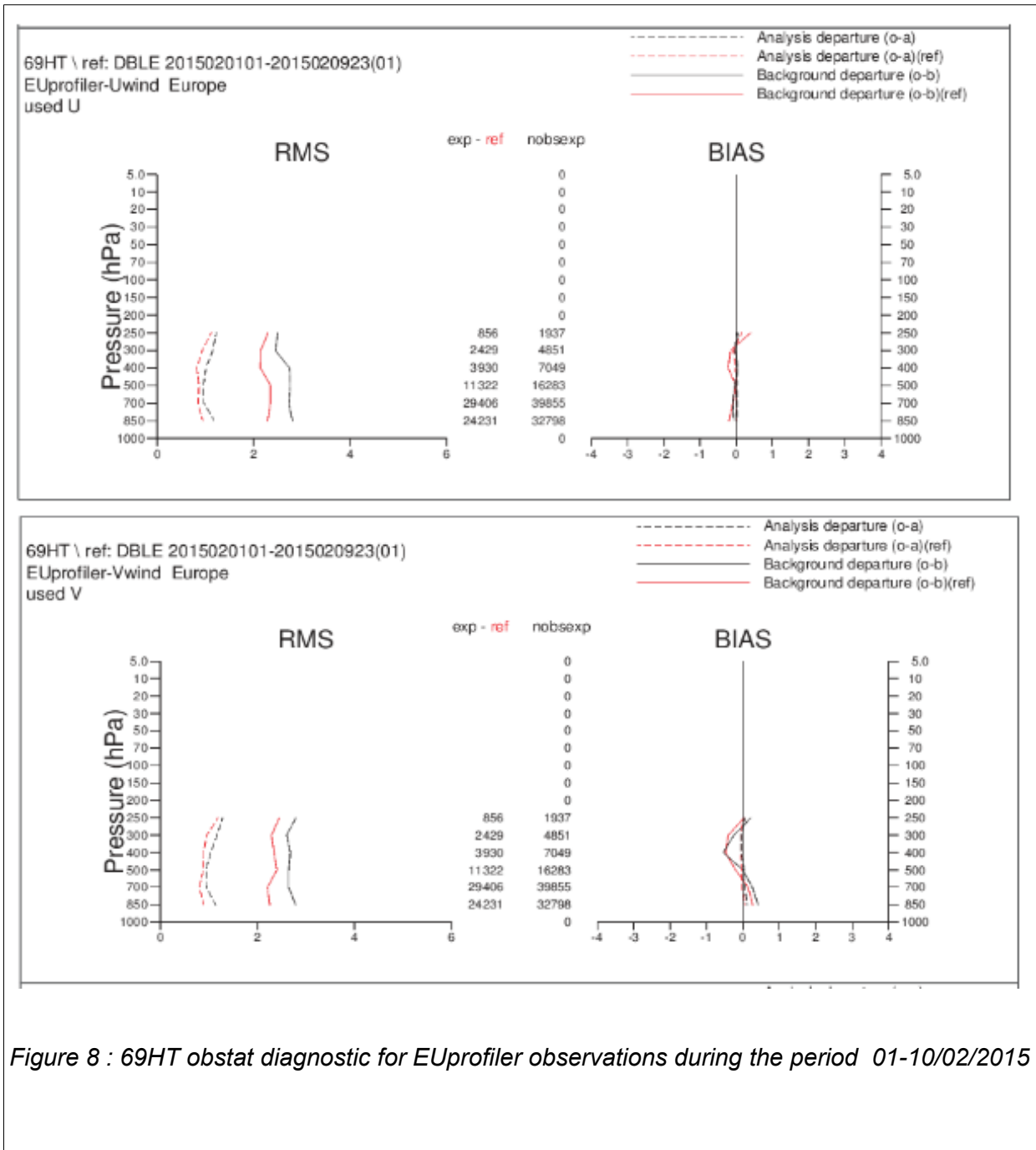


Figure 8 : 69HT obstat diagnostic for EUprofiler observations during the period 01-10/02/2015

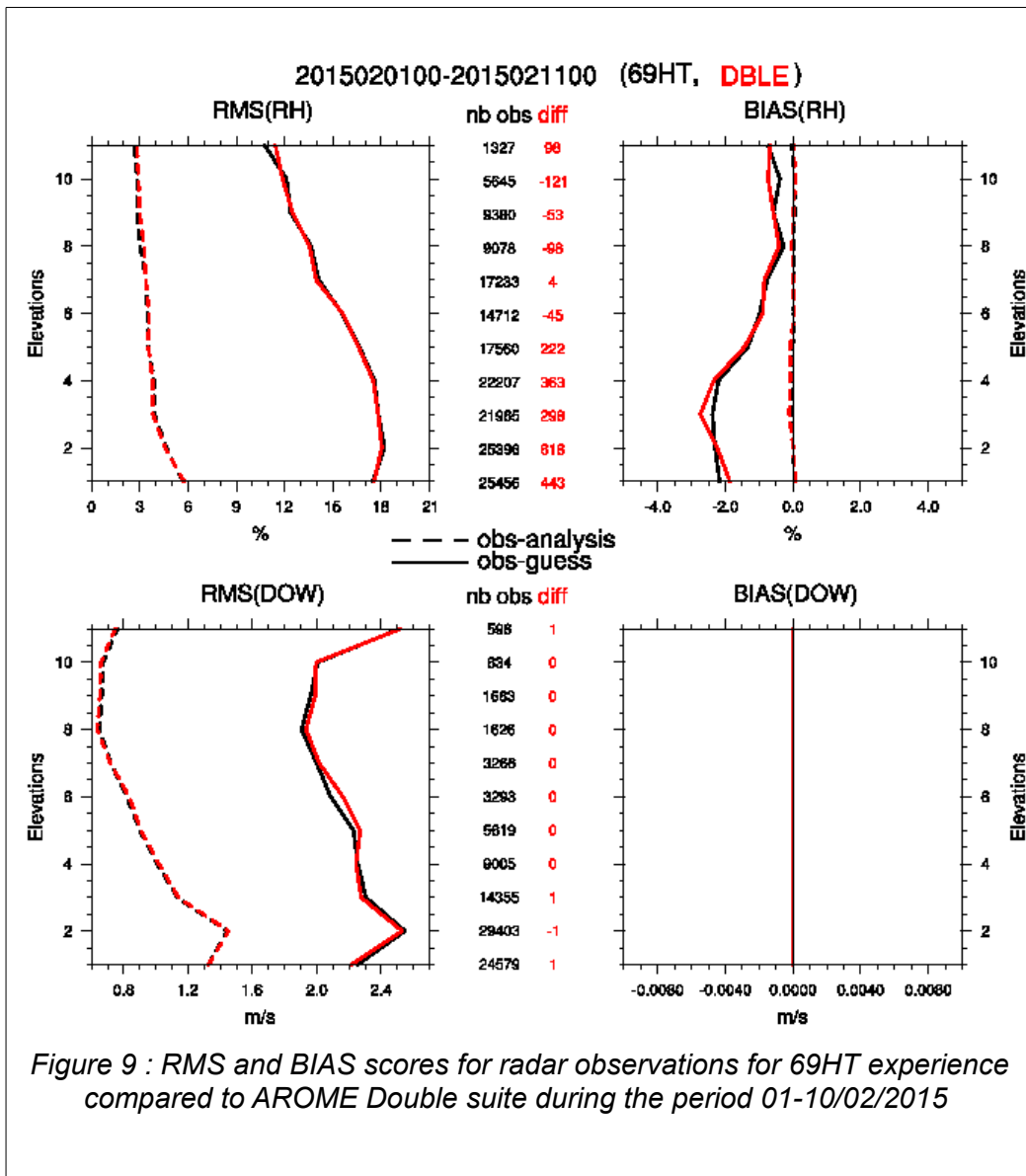


Figure 9 : RMS and BIAS scores for radar observations for 69HT experience compared to AROME Double suite during the period 01-10/02/2015

II. ALADIN Reunion 3DVar

1. Minimization bug

Minimization run with the 41t1 binary and the namelist from the double suite (with some changes related to the 41t1 cycle) aborted with the error message “*ABORT Error matching spectral fields*” called by `spectral_fields_mod.F90` subroutine when `LREADGPTRAJ` was initialized to `TRUE`. Turning ***LREADGPTRAJ*** to ***FALSE*** in the `namel_minim` was necessary in ALADIN minimization (for information, `LREADGPTRAJ=TRUE` in AROME & `LREADGPTRAJ=FALSE` in ARPEGE).

Once we had the first run results, a minimization listing comparison between the experience and the reference showed a considerable difference of gradient and a low JB cost function indicating a problem in the minimization. As we encountered a problem with the trajectory before (with the *LREADGTRAJ*), we were tempted to try different keys combinations dealing with the trajectory Grid Point / Spectral Space management (Table 5) which was a false trail to follow as the problem persisted.

After examining the subroutines that caused the abort due to the trajectory management, we noticed that the error was related the humidity field representation (GP or SP). So in an attempt to follow the AROME lead, we tested a minimization with the Humidity on Grid Point Field and the *LREADGPTRAJ* to `TRUE`.

1.1 Humidity on Grid Point

Changing the humidity from the spectral to the grid point field was possible using a “trick” on Olive. The trick consists on adding the job called “*coupling_Qpdg*” (with the appropriate namelist) before the minimization (with some changes on the namelist `namel_minim`). We were not able to run the *Coupling_Qpdg* with the 41t1_test_4 pack so we kept the 38 cycle as binary. The two namelists needed, that is to say `namel_fpos_frangp_qpdg` and `namel_minim_AROME` for respectively the *Coupling_Qpdg* and the *minim* jobs on Olive, can be found on beaufix under the path: `/home/gmap/mrpm/khalfaoui/namelist/cyc41t1_based_on_al40_reunion-op2.02.nam/namelist_Humidity_on_GP`.

This is said, changing the humidity on GP didn't solve the problem either even though we tried to turn off some minimization keys proper to ALADIN (`CONF %REDNMC_Q` for example) in order to isolate the part of the code responsible of the minimization bug. The results of these tests are shown in Table 5.

1.2 openmp <> 1

It seems that running the minimization with openmp different from 1 introduces an error noise. I had the misfortune to change the default openmp value which amplified considerably the gradient. So to prevent such a pointless accident, **keep openmp=1 in the minimization.**

Table 5: Summary of experiences results with **CONFIG%LSPFCE = FALSE**

Combination		Minimization Results			Comments	
ALADIN Reunion	LREADGPTRAJ LTRAJGP LSPRT	F F F	ABORT TRAJEC%MAIN:NOT YET DONE/GFL			Exp 69ET
	LREADGPTRAJ LTRAJGP LSPRT	T T T	ABORT Error matching spectral fields			Exp 69ET
	LREADGPTRAJ LTRAJGP LSPRT	F T F	Initial GRAD 0.8814141 E+05	JO (Start / End) 56702.7514025 / 50144.7543834	JB 0.464358803588	Exp 69ET
	LREADGPTRAJ LTRAJGP LSPRT	T T F	0.3655097 E+09	56702.7514025 / 56799.5441869	0.19426422 E-13	Exp 69ET !!! ABORT removed from spectral_fields.F90
	LREADGPTRAJ LTRAJGP LSPRT	F T T	0.358946 E+09	56711.8213670 / 56691.7839267	0.4695687 E-12	Exp 69ET
	LREADGPTRAJ LTRAJGP LSPRT	T T T	0.9189032 +22	56246.5632755 / 0.7601061 E+27	0.144029 E-14	Exp 69G8 !! With Specific Humidity on Grid Point Field
	LREADGPTRAJ LTRAJGP LSPRT	T T T	0.1228388 E+09	56246.5632755 / 66309.7826149	0.34418529 E-11	Exp 69G8 !! With Specific Humidity on Grid Point Field !! AROME name_l_minim + &NAMJG ALADIN
	LREADGPTRAJ LTRAJGP LSPRT	T T T	0.1543693 E+09	56246.5632755 / 56268.3410335	0.3940464 E-12	Exp 69G8 !! With Specific Humidity on Grid Point Field AROME name_l_minim + &NAMJG ALADIN with CONF%REDNMC_Q=F
	ALADIN Reference 69EU LSPFCE=TRUE					
	Reference	INITIAL GRADIENT 0.223634497285 E+04 FINAL GRADIENT 0.21674280767 E+03 JO 55534.9938400 / 39041.9877717 JB 1012.08354794				

1.3 Sigma B of the day

A sound advice suggesting to deactivate sigmab of the day (thanks Ghislain FAURE) resolved the minimization problem. Putting `CONFIG%LSPFCE = TRUE` in `&NAMJG` in the `namel_minim` was enough to reproduce quite accurately the initial gradient of the reference (Table 6).

Actually, in ALADIN Reunion Double suite, `CONFIG%LSPFCE` was changed to TRUE a week after we started working on the minimization problem which helped us to follow the trail of sigmab of the day. More happy news came from ARPEGE when Vincent GUIDARD was able to trace a bug in 4DVar thanks to the sigmab of the day problem encountered in ALADIN.

Table 6: Summary of experiences with `CONFIG%LSPFCE = TRUE`

		Combination	Minimization Results			Comments	
AROME	LREADGPTRAJ	T				Exp 69EC	
	LTRAJGP	T	:)				
	LSPRT	T					
ALADIN Reunion	LREADGPTRAJ	F	Initial GRAD 0.223743 E+04	JO (Start / End)	JB	Exp 69ET	
	LTRAJGP	T		56702.7514025 /			1001.78990099
	LSPRT	F		39964.0525535			
Reference	LREADGPTRAJ	F	0.2270043 E+04	56711.8213670 /	964.526103768	Exp 69ET	
	LTRAJGP	T		39828.3519465			
	LSPRT	T					
<u>ALADIN Reference 69EU</u>							
INITIAL GRADIENT			0.223634497285 E+04				
FINAL GRADIENT			0.21674280767 E+03				
JO			55534.9938400 / 39041.9877717				
JB			1012.08354794				

2. 41_t1.04 Cycling test

2.1 Modifications listing

- **Date Choice:** Due to sigmab deactivation in the Double suite on 18/02/2015, we preferred to begin the cycling test in 15/02/2015 and then start diagnostics in 18/02/2015.
- **Surfex :** a new PGD file for the 41t1 cycle for ALADIN Reunion was necessary to get trough the surfex changes. This is said, it is worth noticing that we had less challenges with Surfex in ALADIN Reunion as we do not have a Surfex selection field in the namelist (when we started the 6914 experience).

Details of Olive experience used in the cycling test are summarized in Table 7. We started the experience with the namelist pack of the Double suite to which we added progressively the necessary modifications. Namelist Changes are reported in the Table 9.

Keep in mind that, as we switched off the sigmab day and giving that we had an abort related to the errgribvor file, we removed errgribvor box in the minimization job in the Olive experience (6914).

Table 7: Olive Experience

Experienxe ID	6914
Date	15/02 -->11/03/2015
Cycle	al40_arome-op2HR.12
ARPEGE Cycle	cy40_op2HR.12
Pack (beaufix)	home/gmap/mrpa/chambonp/pack/41_t1_test.05.IMPI500IFC1301.2x
Namelist (beaufix)	home/gmap/mrpm/khalifaoui/namelist/cyc41t1_based_on_al40_reunion-op2.02.nam
RTTOV coefficients (beaufix)	home/gmap/mrpa/chambonp/RTCOEF/rtcoef.19_towardsrttov11_BIN_v4.tgz
PGDFILE (beaufix)	scratch/work/tailefer/SURFEX_FILES/PGD_reunion_cy41t1.lfi_conv.fa
ecoclimap_covers_param (beaufix)	home/gmap/mrmn/michely/ECOCLIMAP/7.3/eco.tgz

Table 8: Input files

File	Path on beaufix
ecoclimap_covers_param	/home/gmap/mrmn/michely/ECOCLIMAP/7.3/eco.tgz
PGDFILE	scratch/work/tailefer/SURFEX_FILES/PGD_reunion_cy41t1.lfi_conv.fa
Rt_Coef_tgz	home/gmap/mrpa/chambonp/RTCOEF/rtcoef.19_towardsrttov11_BIN_v4.t

Table 9: Namelist modifications

Namelist	Modifications
namel_e927_assim namel_e927_surf namel_e927_cp surf_def namel_e927 namel_fpos_reunion_addsurf1 namel_fpos_reunion_addsurf2	Add : &NAMARG &NAMINTFLEX &NAMOOOPS
namel_reunion_champ_tsurf	Add NAMARG NAMOOOPSARG In NAMEMIS_CONF add LUSE_TELSEM=.FALSE
namel_canari_surf	Add NAMARG NAMINTFLEX NAMOOOPS
namel_screen	Add NAMARG NAMINTFLEX NAMOOOPS In NAMEMIS_CONF add LUSE_TELSEM=.FALSE.
namel_screen_dfs	In NAMEMIS_CONF add LUSE_TELSEM=.FALSE.
namel_minim	Add NAMARG NAMINTFLEX NAMOOOPS In NAMEMIS_CONF add LUSE_TELSEM=.FALSE. In NAMVAR put LREADGPTRAJ=.FALSE.
namel_biasdfi namel_incrdfi namel_previ_prod namel_previ namel_previ_dyn	Add NAMARG NAMINTFLEX NAMOOOPS In NAMGEM REFLKUO= - - IN NAMPHY0 add REFLKUO=5000.
namel_previ namel_previ_dyn namel_previ_prod select_fp *	Remove all lines with *METEOSAT_severi7_*

Table 10: Profile modifications

JOB	Modifications
canari	Cpu:200 --> 400 (abort due to time limit)
idfi	Cpu 200 --> 600 (abort due to time limit)
screening	Cpu 200 --> 400 (abort due to time limit)

2.2 Results

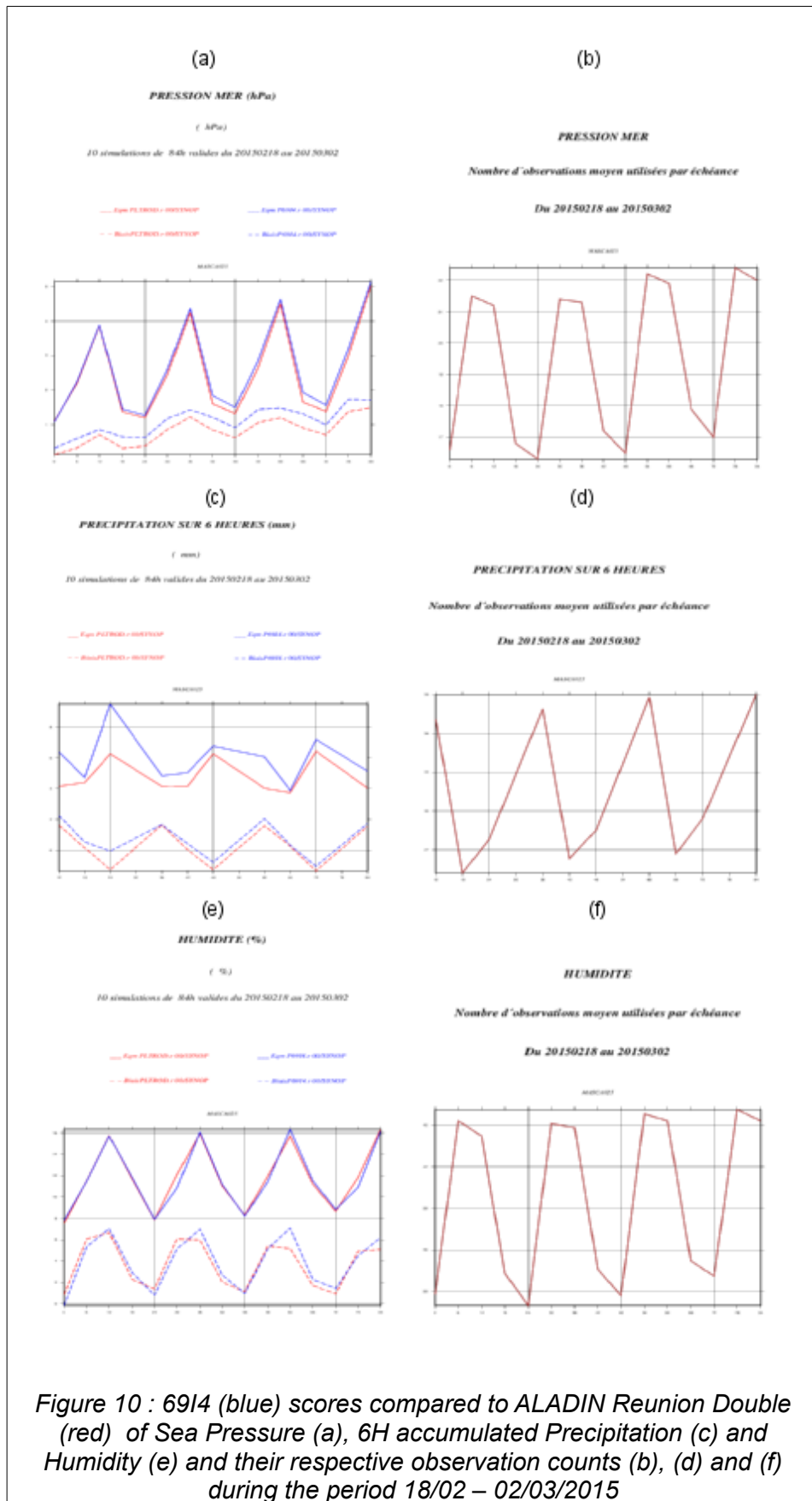


Figure 10 : 6914 (blue) scores compared to ALADIN Reunion Double (red) of Sea Pressure (a), 6H accumulated Precipitation (c) and Humidity (e) and their respective observation counts (b), (d) and (f) during the period 18/02 – 02/03/2015

ALADIN Reunion scores results for Sea Pressure, 6h accumulated Precipitation and Humidity as well as their respective observation counts are characterized by a distinguished periodic signal for both 6914 experience and the Double suite (Figure 10). This behavior might be related to the observation fluctuations and the choice of the test period (18/02–02/03/2015) but further investigations need to be done.