

## ARPEGE MEMORANDUM

**From:** GCO

Date: August 08, 2012

**Subject:** New cycle CY38T1

A new cycle CY38T1 has been created. This is not a common cycle with the ECMWF. The different contributions for this cycle are described in the following pages.

ClearCase label: CY38T1

Contributors:

AUGER Ludovic	Project:arpege	CCase branch:mrpa645_CY38_holo
BAZILE Eric	Project:arpege	CCase branch:mrpm604_CY38_pour38t1
BERRE Loik	Project:arpege	CCase branch:mrpa663_CY38_bcov_lam
	Project:arpege	CCase branch:mrpa663_CY38_model_error
BOCHENEK Bogdan	Project:arpege	CCase branch:bochenek_CY38_nprom
BOUTELOUP Yves	Project:arpege	CCase branch:mrpa648_CY38_b379
	Project:arpege	CCase branch:mrpa648_CY38_b382
BOUTTIER Francois	Project:arpege	CCase branch:mrpa651_CY38_stochphyaro
BOUYSSSEL Francois	Project:arpege	CCase branch:mrpa649_CY38_aldsfx2
	Project:arpege	CCase branch:mrpa649_CY38_dbl01
	Project:arpege	CCase branch:mrpe684_CY38_3mtarp
BROZKOVA Radmila	Project:arpege	CCase branch:mrpe684_CY38_alrbf1
	Project:arpege	CCase branch:mrpe684_CY38_tcfix
	Project:arpege	CCase branch:mrpe723_CY38_boyd
DE GRAUWE Daan	Project:arpege	CCase branch:mrpe723_CY38_noextz
	Project:arpege	CCase branch:mrpm602_CY38_bf07
EL KHATIB Ryad	Project:arpege	CCase branch:mrpm602_CY38_bflast

Contributors:

	Project:arpege	CCase branch:mrpm602_CY38_fptng1
	Project:arpege	CCase branch:mrpm602_CY38_io38t1v3
	Project:arpege	CCase branch:mrpm602_CY38_liolevg
	Project:arpege	CCase branch:mrpm602_CY38_misc
	Project:arpege	CCase branch:mrpm602_CY38_obstat
	Project:arpege	CCase branch:mrpm602_CY38_ompsx
	Project:arpege	CCase branch:mrpm602_CY38_rekbf1
	Project:arpege	CCase branch:mrpm602_CY38_rekbf2
FAURE Ghislain	Project:arpege	CCase branch:faure_CY38_cy38minmodbk
GCO	Project:arpege	CCase branch:none
	Project:arpege	CCase branch:marp001_CY38_Rev441
	Project:arpege	CCase branch:marp003_CY38_lfpboyd
	Project:arpege	CCase branch:marp003_CY38_mrpa647_dbft
	Project:arpege	CCase branch:marp003_CY38_pgi
	Project:arpege	CCase branch:marp003_CY38_qsorti4
	Project:arpege	CCase branch:marp003_CY38_t1fix*
GUIDARD Vincent	Project:arpege	CCase branch:mrpe710_CY38_VariousFixes
	Project:arpege	CCase branch:mrpe710_CY38_fix4DVAR
GUILLAUME Frank	Project:arpege	CCase branch:mrpa644_CY38_bat_bugfix
	Project:arpege	CCase branch:mrpa644_CY38_bator_38
	Project:arpege	CCase branch:mrpa644_CY38_bg_windcleaner
	Project:arpege	CCase branch:mrpa644_CY38_bugfix
	Project:arpege	CCase branch:mrpa644_CY38_buoyomm2
LABADIE Carole	Project:arpege	CCase branch:mrmn269_CY36T1_combiPEARP2011
MARGUINAUD Philippe	Project:arpege	CCase branch:mrpm609_CY38_ioservCC
MOENE Toon	Project:arpege	CCase branch:mrpe737_CY38_hirlam-edmf-m-update2
MOLL Patrick	Project:arpege	CCase branch:mrpa646_CY38_dbl2cy38

Contributors:

PAYAN Christophe	Project:arpege	CCase branch:mrpa642_CY38_37t1op1TO38t1
SAINT-RAMOND Nathalie	Project:arpege	CCase branch:mrpa641_CY38_nathalie
SEITY Yann	Project:arpege	CCase branch:mrpm637_CY38_SURFEX_7.2
	Project:arpege	CCase branch:mrpm637_CY38_aro_38_t1_pourv7
	Project:arpege	CCase branch:mrpm637_CY38_aro_devpour38t1
	Project:arpege	CCase branch:mrpm637_CY38_arome_bf3
	Project:arpege	CCase branch:mrpm637_CY38_bfarome
	Project:arpege	CCase branch:mrpm637_CY38_surfex7
SOCI Cornel	Project:arpege	CCase branch:mrpa664_CY38_mescan
SOKKA Niko	Project:arpege	CCase branch:sokka_CY38_bfv7_contrib_hirlam
	Project:arpege	CCase branch:sokka_CY38_hirlam_contrib
TAILLEFER Francoise	Project:arpege	CCase branch:mrpa647_CY38_can_graup
	Project:arpege	CCase branch:mrpa647_CY38_db_cs
	Project:arpege	CCase branch:mrpa647_CY38_fa_sfx
	Project:arpege	CCase branch:mrpa647_CY38_odb_ca
	Project:arpege	CCase branch:mrpa647_CY38_optcan
VANA Filip	Project:arpege	CCase branch:mrpe706_CY38_lsprtfix
	Project:arpege	CCase branch:mrpe706_CY38_toucans
VARELLA Hubert	Project:arpege	CCase branch:mrpm627_CY38_wavelet_optim
VOITUS Fabrice	Project:arpege	CCase branch:mrpm630_CY38_ddhdyn4_38t1
	Project:arpege	CCase branch:mrpm630_CY38_spectral_nudging4_38t1
WATTRELOT Eric	Project:arpege	CCase branch:mrpa652_CY38_radarfrom37op1
YESSAD Karim	Project:arpege	CCase branch:mrpm603_CY38_dev38pour38t1
	Project:arpege	CCase branch:mrpm603_CY38_newsuvert
	Project:arpege	CCase branch:mrpm603_CY38_pre38t1bf
	Project:arpege	CCase branch:mrpm603_CY38_pre38t1bf6

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## **AUGER Ludovic**

### **Doc:**

*Update coupling files compression tools HOLO/UNHOLO .*

**Project:** aladin  
**ClearCase branch:** mrpa645\_CY38\_holo

### ***Modified:***

ald/programs holo.F90 unholo.F90

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## **BAZILE Eric**

### **Doc:**

*arp/module/yomphy.F90 : add LECTFLO and comments ;  
arp/namelist/namphy.h : add LECTFLO ;  
arp/phys\_dmn/acevolet.F90 : fix to get TKE report with LFLEXDIA ;  
arp/phys\_dmn/actke.F90 : idem ;  
arp/phys\_dmn/acturb.F90 : bugfix, and add LECTFLO ;  
arp/phys\_dmn/fl2hl.F90 : new passage FullLevel2Halflevel ;  
arp/phys\_dmn/hl2fl.F90 : new passage HalfLevel2Fulllevel ;  
arp/setup/su0phy.F90 : add LECTFLO ;  
mse/externals/aro\_ground\_diag.F90 : fix Z0 and z0h, 2 times multiplied by g .*

**Project:** arpege,Meso-NH surface  
**ClearCase branch:** mrpm604\_CY38\_pour38t1

### ***Added:***

arp/phys_dmn	fl2hl.F90	hl2fl.F90		
<b>Modified:</b>				
arp/module	yomphy.F90			
arp/namelist	namphy.h			
arp	phys_dmn			
arp/phys_dmn	acevolet.F90	actke.F90	acturb.F90	
	fl2hl.F90	hl2fl.F90		
arp/setup	su0phy.F90			
mse/externals	aro_ground_diag.F90			

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## **BERRE Loik**

### **Doc:**

*These programs allow background error covariances for limited area models (LAMs) to be calculated (stat.F) and diagnosed (diacov.F and libgsa.F). Compared to earlier versions (which were used outside the common code), these programs have been cleaned up and optimized (to some extent). Note that routines sposv\* (used by stat.F) and ssyev\* (used by diacov.F) are assumed to be available in the BLAS library, so they have not been (re)added in the directory bcov\_lam.*

*The link with these BLAS routines needs however to be checked before calculations can be done successfully (first tests were not successful).*

**Project:** utilitaires  
**ClearCase branch:** mrpa663\_CY38\_bcov\_lam

### **Added:**

uti/bcov_lam	others		
uti/bcov_lam/others	libgsa.F		
uti/bcov_lam	programs		
uti/bcov_lam/programs	diacov.F	stat.F	

**Doc:**

*Regionalisation of ensemble inflation. Introduction of dependencies as function of parameter, vertical level and latitude, regarding the ensemble spread diagnosis (in fltbgerr.F90), the calculation of inflation factors (in inflcalc.F90), and the inflation of forecast perturbations (in inflation\_pert.F90). The latitudinal dependence corresponds to a distinction between three latitudinal bands (Northern extratropics, tropics, and Southern extratropics), with a smooth transition from one band to the other when applying the inflation factors (in inflation\_pert.F90). The parameter dependence corresponds to a distinction between temperature, surface pressure, wind and humidity. The vertical dependence consists in computing specific inflation values at each vertical level (including a local average over 3 adjacent vertical levels), and in the imposition of maximum values for reference sigmab's (2K for temperature, and 5 m/s for wind components ; this only affects the first five vertical levels near the model top).*

**Project:** arpege  
**ClearCase branch:** mrpa663\_CY38\_model\_error

**Modified:**

arp/control	forecast_error.F90		
arp/dia	preset_grib_template.F90		
arp/var	bgevecs.F90	fltbgerr.F90	inflation_pert.F90
	inflcalc.F90	subvarens.F90	

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**BOCHENEK Bogdan****Doc:**

*A set of new NPROM\* variables has been added in CY38T1. When they are initialized by namelist with a positive value, then their value is recomputed for optimization in the code. This mechanic was forgotten for the new values. For the bugfix, the whole set up of NPROM\* variables (old and new ones) has been moved to a single place SUOPTPROMA.F90 .*

**Project:** aladin,arpege  
**ClearCase branch:** bochenek\_CY38\_nprom

**Added:**

arp/setup      suoptproma.F90

**Modified:**

ald/setup	suemp.F90		
arp/setup	su0yoma.F90	su0yomb.F90	sudim2.F90
	sump.F90	suoptproma.F90	

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**BOUTELOUP Yves****Doc:**

- Update JPFORC and JPGFL in yom\_ygfl .
- Fixes in order to run correctly (and without surfex) the "mitraille" version of MUSC .
- Remove unwanted warnings, linked to geometry, during reading FA files for MUSC .

**Project:** arpege,auxiliaire  
**ClearCase branch:** mrpa648\_CY38\_b379

**Modified:**

arp/module	yom_ygfl.F90		
arp/phys_dmn	acdifv2.F90	apl_arome.F90	mf_phys.F90
	surf_ideal_flux.F90	writemusc.F90	
xrd/fa/mt	facine_mt.F		

**Doc:**

*Deletion of arguments and not used local variables in some "phys\_dmn" routines.*

**Project:** arpege  
**ClearCase branch:** mrpa648\_CY38\_b382

**Modified:**

arp/phys_dmn	acradin.F90	acraneb.F90	apl_arome.F90
	aplparr.F90	frasolu.F90	radaer.F90
	radaer15.F90	recmwf.F90	

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## **BOUTTIER Francois**

### **Doc:**

*SPPT stochastic physics for Arome model.*

*The IFS SPPT scheme is used to perturb the Arome total physics tendencies. We use the same spectral representation as in the LAM Jb to define the horizontal scale. The scheme is off by default, activated using LSPSDT in namelist NAMSPSDT.*

**Project:** arpege,algebre linéaire

**ClearCase branch:** mrpa651\_CY38\_stochphyaro

### ***Modified:***

arp/adiab	cpg.F90	
arp/parallel	write_spec_grib.F90	
arp/phys_dmn	apl_arome.F90	mf_phys.F90
arp/phys_ec	sppten.F90	
arp/setup	suspsdt.F90	
arp/transform	spec2grid.F90	
xla/module	spectral_arp_mod.F90	

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## **BOUYSEL Francois**

### **Doc:**

*Correction of a bug in the calculation of 2D fields diagnoses of evaporation fluxes and on-surface latent heat in aplpar.F90, when SURFEX is activated. Since the cycle CY37T1, "liquid" fluxes contain the sum "liquid+solid", "solid" fluxes were null .*

**Project:** arpege

**ClearCase branch:** mrpa649\_CY38\_aldsfx2

**Modified:**

arp/phys\_dmn      aplpar.F90

**Doc:**

- Introduction of a threshold on the wind module in the creation of coupling files under the key LPPVIVX (inactive by default).
- Correction of a bug affecting the reproducibility of shallow convection KFB schema in ARPEGE/ALADIN, in OpenMP parallelisation only.
- Correction of a bug in the linearized routines of orographic drag (use a non-initialized variable in a useless calculation); impact strictly neutral.
- Modification of deep convection schema in ARPEGE/ALADIN to activate the modifications "anti-arpegeades" in saturated conditions only  
(negative value of the parameter of regulation "GCVOMGQ").

**Project:**

arpege,Meso-NH physique altitude

**ClearCase branch:**

mrpa649\_CY38\_dbl01

**Modified:**

arp/module	yomppvi.F90		
arp/namelist	namppvi.h		
arp/phys_dmn	accvimp.F90	acdraglad.F90	acdraglrl.F90
arp/pp_obs	apache.F90		
arp/setup	suppvi.F90		
mpa/conv/externals	convection_shal.f90		

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**BROZKOVA Radmila****Doc:***Description:**Development of configuration 3MT ARPEGE and corrections in ALARO physics**Contents:**Added routines:*

*None.*

*Removed routines:*

*None.*

*Modified routines:*

*/arp/module/yomphy.F90*

*Removal of unused switches LNSMLIS and LAUTONEB;*

*New switches: LSMITH\_CDEV (call to Smith condensation/evaporation scheme, after paper QJRMS, 1990); LNEB\_FP (switch for fully prognostic cloudiness in ACNEBN); LSEDSTA and LSEDLAG (switches for statistical or Lagrangian sedimentation in APLMPHYS), LFSVAR and LFSFIX (switches for variable or fix fall-speed of precipitation in APLMPHYS), LSEDCL (switch for sedimentation of cloud water), LA0MPS and LARPMPS (switches for ALARO-0 or ARPEGE microphysical processes in ACACON, ACCOLL and ACEVMEL).*

*/arp/namelist/namphy.h*

*Change of switches, c.f. yomphy.F90*

*/arp/phys\_dmn/acacon.F90, accoll.F90, acevmel.F90*

*Introduction of switches LA0MPS and LARPMPS instead of local ones; change of melting in ACEVMEL (LARPMPS part);  
In ACACON updating auto-conversion from cloud liquid water to snow in LARPMPS part;*

*/arp/phys\_dmn/accdev.F90*

*Introduction of LSMITH\_CDEV option (3MT ARPEGE);*

*Improvement of ice/water repartition of condensates (ALARO);*

*Modification of call to APLMPHYS due to new cloud water sedimentation fluxes and diagnostics of hail.*

*/arp/phys\_dmn/accvud.F90*

*Condensates prevented below cloud base;*

*/arp/phys\_dmn/aclspad.F90, aclspad.F90*

*Modified call to ACNEBSM, removing unused switches.*

*/arp/phys\_dmn/acnebcond.F90*

*Introduction of LSMITH\_CDEV option;  
Adaptation to both « LPROCLD » and L3MT cases;*

*/arp/phys\_dmn/acnebn.F90*

*Introduction of LNEB\_FP option for fully prognostic cloudiness for radiation (combination of stratiform, shallow and deep prognostic ones);*

*/arp/phys\_dmn/acnebsm.F90*

*Removal of obsolete switches LSNMLIS and LAUTONEB; routine computes cloud water and cloudiness according to Smith 1990 paper without further modifications;  
Harmonization of outputs with ACNEBCOND;*

*/arp/phys\_dmn/acpluiz.F90*

*Modification of call to ACNEBSM;  
Introduction of cloud water sedimentation fluxes " modification of call to ADVPRCS;*

*/arp/phys\_dmn/acptke.F90, actkehmt.F90*

*Turbulence scheme TOUCANS bugfixes: these versions supersede version given by Filip Vana.*

*/arp/phys\_dmn/acraneb.F90*

*Bugfix in Voigt profile for solar band at the top of the model;*

*/arp/phys\_dmn/actke.F90*

*Removal of an unused switch LSNMLIS;*

*/arp/phys\_dmn/advprcs.F90*

*Proper introduction of cloud water sedimentation fluxes;*

*/arp/phys\_dmn/aplmphys.F90*

*Introduction of cloud water sedimentation under LSEDCL switch;  
Introduction of LSEDSTA, LSEDLAG, LFSVAR and LFSFIX switches instead of local ones;*

*Introduction of diagnostics of hail (integral of graupel);  
Removal of obsolete code (under local LLASC switch);*

*/arp/phys\_dmn/aplpar.F90*

*Introduction of cloud water sedimentation fluxes and their counting in interface: adding them to turbulent diffusion fluxes of cloud water; counting them together with precipitation fluxes only for soil interaction;  
Correction of a loop length for reproducibility of YUNEBH GFL array;  
Re-arrangement of the call to adjustment: now all options except true-turbulence computation (LNEBECT) are called under LCONDWT switch from ACNEBCOND;*

*/arp/phys\_dmn/hl\_aplpar.F90*

*Correction necessary for compilation of this routine due to change of dummy arguments in parameterization routines;*

*/arp/setup/su0phy.F90*

*Change of switches, c.f. yomphy.F90.*

Tests

*Normally, results do not change for ARPEGE setup. For ALARO, changes in ACRANEB, ACCDEV and ACCVUD change norms, but these bugfixes were validated each.*

**Project:** arpege  
**ClearCase branch:** mrpe684\_CY38\_3mtarp

**Modified:**

arp/module	yomphy.F90		
arp/namelist	namphy.h		
arp/phys_dmn	acacon.F90	accdev.F90	accoll.F90
	accvud.F90	acevmel.F90	aclsps.F90
	aclspsad.F90	acnebcond.F90	acnebn.F90
	acnebsm.F90	acpluiz.F90	acptke.F90
	acraneb.F90	actke.F90	actkehmt.F90
	advprcs.F90	aplmpphys.F90	aplpar.F90
arp/setup	su0phy.F90		

**Doc:**

*arp/phys\_dmn/acmrip.F90, acmris.F90, acptke.F90:*

*Fixes in routines of new turbulence scheme TOUCANS; no interaction with other configurations.*

*arp/phys\_dmn/aplmphys.F90:*

*Fix of pseudo-graupel sedimentation: proper functions for graupel.*

*arp/phys\_dmn/acnebcond.F90:*

*Fix of critical relative humidity dependency on horizontal mesh: Xu-Randall adjustment option only.*

*Add some protections on "microphysics" stratiform clouds.*

*arp/phys\_dmn/acupd.F90:*

*Fix of sedimentation and correction of evaporation fluxes.*

*arp/phys\_dmn/aplpar.F90:*

*Fix of call to ACMRIP, ACMRIS (associated with fix for TOUCANS).*

*Fix of evaporation fluxes correction (associated with fix for ACUPD).*

*arp/phys\_dmn/suphy0.F90:*

*Correction of default values for constants used in TOUCANS and Xu-Randall adjustment.*

*Fix a preventive abort conditions.*

**Project:**

arpege

**ClearCase branch:**

mrpe684\_CY38\_alrbf1

**Modified:**

arp/phys_dmn	acmrip.F90	acmris.F90	acnebcond.F90
	acptke.F90	acupd.F90	aplmphys.F90
	aplpar.F90	suphy0.F90	

**Doc:**

*- arp/phys\_dmn/actkehmt.F90: correction of call to ACNTCLS ;*

*- arp/module/surface\_field\_mix.F90: adding forgotten attribute L\_QSH .*

**Project:**

arpege

**ClearCase branch:**

mrpe684\_CY38\_tcfix

**Modified:**

arp/module	surface_fields_mix.F90
arp/phys_dmn	actkehmt.F90

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## **DE GRAUWE Daan**

### **Doc:**

*Boyd periodization is done during e927. A key LFPBOYD is added to NAMFPC. All Boyd-related changes are under this key. Setting it to .FALSE. will use spline periodization as before. Since Boyd periodization requires gridpoint values outside the domain, the final domain is a subset of the original FullPos domain. The definition of the final domain is done with variables in the NAMFPD namelist. Truncation of semi-Lagrangian trajectories during a run can be avoided by putting (part of) the extension zone inside C+I. This is done with variables NBIPINCIX and NBIPINCIY in the NEMDIM namelist. Setting these variables to zero will truncate the trajectories as before.*

**Project:** aladin,arpege,biper  
**ClearCase branch:** mrpe723\_CY38\_boyd

### **Added:**

ald/utility	bipincishift.F90
bip/module	ewindowe_mod.F90

### **Modified:**

ald/fullpos	fpezo2h.F90	fpezzone.F90	
ald/setup	suebig.F90	suedim.F90	
ald/utility	bipincishift.F90		
arp/ald_inc/namelist	nemdim.h		
arp/fullpos	openfpfa.F90	sufpc.F90	sufpd.F90
	sufpoph.F90	wrhfp.F90	
arp/module	elbc0b_mod.F90	yemdim.F90	yomfpc.F90
	yomfpc.F90		
arp/namelist	namfpc.h		
arp/setup	sudim2.F90		
bip/external	fpbipere.F90		
bip/interface	fpbipere.h		

bip/module ewindowe\_mod.F90

**Doc:**

*An alternative extension zone E' is implemented which can replace the original extension zone E. The difference is that the gridpoint part of the model is not aware of E', so no gridpoint calculations will be carried out there.*

*The periodization of LAM fields is moved from FullPos (e927) to right before the (forward) FFT calls. The dimensions of the E' zone is specified with namelist variables NNOEXTZL and NNOEXTZG (configurations 001 and 923), or with NFPNOEXTZL and NFPNOEXTZG (configuration e927).*

*A namelist variable LARPEGEF\_WRGP\_HIST is introduced to write historical files in gridpoint format.*

*Bugfix: initialize to zero E'-dimensions in case of the global model.*

**Project:** transformées arpege

**ClearCase branch:** mrpe723\_CY38\_noextz

**Added:**

arp/dia wrgpa.F90

bip/module extper\_mod.F90

**Modified:**

ald/setup	suedim.F90	suegeo1.F90	suetrans.F90
arp/ald_inc/namelist	nemdim.h		
arp/dia	wrgpa.F90	wrmlppa.F90	
arp/fullpos	sufpd.F90		
arp/module	yemdim.F90	yomct0.F90	yomfpd.F90
arp/namelist	namct0.h	namfpd.h	
arp/setup	suct0.F90	sudim2.F90	sumpini.F90
bip/module	extper_mod.F90		
tal/external	esetup_trans.F90		
tal/interface	esetup_trans.h		
tal/module	eftdir_ctl_mod.F90	eftdir_ctlad_mod.F90	eftinv_ctl_mod.F90
	eftinv_ctlad_mod.F90	eftinvad_mod.F90	eledir_mod.F90
	eledirad_mod.F90	eleinv_mod.F90	eleinvad_mod.F90
	eltdir_mod.F90	eltdirad_mod.F90	eltinv_mod.F90
	eltinvad_mod.F90	euvtvd_mod.F90	euvtvdad_mod.F90
	suefft_mod.F90	suemp_trans_mod.F90	

tfl/external	setup_trans.F90		
tfl/module	ftdir_mod.F90	ftdirad_mod.F90	ftinv_mod.F90
	ftinvad_mod.F90	tpm_dim.F90	
xrd/fa/mt	facadi_mt.F		

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## **EL KHATIB Ryad**

### **Doc:**

*Mandatory bugfix for AROME/ALADIN (with SURFEX) .*

**Project:** arpege  
**ClearCase branch:** mrpm602\_CY38\_bf07

### **Modified:**

arp/fullpos fp2sx1.F90  
arp/phys\_dmn suphmse\_surface.F90

### **Doc:**

*Bugfixes. No impact on the results.*

**Project:** arpege  
**ClearCase branch:** mrpm602\_CY38\_bflast

### **Added:**

arp/utility dealsforc.F90

### **Modified:**

arp/setup sudim1.F90 sugridf.F90  
arp/utility dealsforc.F90 freemem.F90

### **Doc:**

- Simplification of the configuration management of Fullpos :

LFPOS and LFPSPC are replaced by a single integer in namelist NAMCT0 :

NFPOS=0 <=> LFPOS=.F.

NFPOS=1 <=> LFPOS=.T. + LFPSPEC=.F.

NFPOS=2 <=> LFPOS=.T. + new conf 927 (under development)

NFPOS=927 <=> LFPOS=.T. + LFPSPEC=.T.

+ LECFPOS (internal variable) : if .TRUE., restrict the usage of Fullpos outputs to an alternative to model ones (for ECMWF only).

Files concerned :

arp/adiab/cpedia.F90, arp/control/cnt4ad.F90, arp/control/cnt4.F90, arp/control/stepo.F90, arp/dia/grib\_code\_message.F90, arp/dia/pregrbenc.F90, arp/dia/preset\_grib\_template.F90, arp/dia/wrmlpp.F90, arp/dia/wroutgpgb.F90, arp/fullpos/prespfpos.F90, arp/fullpos/subfpos.F90, arp/fullpos/sufpc.F90, arp/fullpos/sufpd.F90, arp/fullpos/sufpg.F90, arp/fullpos/sufpphq.F90, arp/module/grib\_header\_mix.F90, arp/module/yomct0.F90, arp/namelist/namct0.h, arp/nmi/nnmi3.F90, arp/pp\_obs/ppreq.F90, arp/setup/su0phy.F90, arp/setup/suafn1.F90, arp/setup/suafn3.F90, arp/setup/sucfu.F90, arp/setup/suct0.F90, arp/setup/sudim2.F90, arp/setup/sumpini.F90, arp/setup/supp.F90, arp/setup/su\_surf\_fds.F90, arp/setup/suxfu.F90, arp/utility/iopack.F90

- miscellaneous bugfixes :

arp/adiab/cpg.F90, arp/dia/preset\_grib\_template.F90, arp/utility/freemem.F90, arp/utility/dealspa.F90

- Support for multiple spectral resolutions in fullpos :

ald/setup/suetrans.F90, arp/fullpos/wrmlfp.F90, arp/fullpos/wrplfp.F90, arp/fullpos/wrpvlf.F90, arp/fullpos/wrsfp.F90, arp/fullpos/wrthlf.F90, arp/module/yomtrans.F90, arp/setup/sutrans.F90, arp/utility/freemem.F90, tal/external/esetup\_trans.F90, tal/external/etrans\_end.F90.

**Project:** aladin,arpege,transformées aladin

**ClearCase branch:** mrpm602\_CY38\_fptng1

**Modified:**

ald/setup	suetrans.F90		
arp/adiab	cpedia.F90	cpg.F90	
arp/control	cnt4.F90	cnt4ad.F90	stepo.F90
arp/dia	grib_code_message.F90	pregrbenc.F90	preset_grib_template.F90
	wrmlpp.F90	wroutgpgb.F90	
arp/fullpos	prespfpos.F90	subfpos.F90	sufpc.F90
	sufpd.F90	sufpg.F90	sufpphq.F90
	wrmlfp.F90	wrplfp.F90	wrpvlf.F90
	wrsfp.F90	wrthlf.F90	
arp/module	grib_header_mix.F90	yomct0.F90	yomtrans.F90
arp/namelist	namct0.h		

arp/nmi	nnmi3.F90		
arp/pp_obs	ppreq.F90		
arp/setup	su0phy.F90	su_surf_flds.F90	suafn1.F90
	suafn3.F90	sucfu.F90	suct0.F90
	sudim2.F90	sumpini.F90	supp.F90
	sutrans.F90	suxfu.F90	
arp/utility	dealspa.F90	freemem.F90	iopack.F90
tal/external	esetup_trans.F90	etrans_end.F90	

## Doc:

1) *arp/canari/caohis.F90, arp/module/yomfa.F90, arp/namelist/namfa.h, arp/setup/suarg.F90, arp/setup/sufa.F90, arp/setup/sugrida.F90, uti/pinuts/module/coneo\_prg\_mod.F90, xrd/fa/fanmsg.F, xrd/fa/mt/fanmsg\_mt.F, xrd/lfi/lfinmg.F, xrd/lfi/mt/lfinmg\_mt.F, xrd/programs/datefa.F, xrd/programs/facat.F90, xrd/programs/lficat.F90, xrd/programs/lfilist.F90, xrd/programs/lfisplit.F90, xrd/programs/lfitools.F90, xrd/programs/lfixxxx.F90, xrd/programs/testfa.F, xrd/programs/tstlfi.F :*

*Harmonization of FA/LFI software verbosity. New variable NVERBOSE in namelist NAMFA, corresponding to the FA/LFI software verbosity, which can be 0, 1 or 2.*

- Enable FA/LFI software to use an output file chosen by the user. This is realized with a new argument to the subroutines FANMSG and LFINMG. \*WARNING\* : if you use these modified subroutines in other external programs, don't forget to add the new argument.*
- Let FA/LFI use the same output file than in the host model. This will reduce the amount of prints on stderr or stdout.*
- New driver 'lfitools' to unify the handling of the various FA/LFI utility programs. This will reduced the number of executables to create.*

*Usage: lfitools name [arg-1] [arg-1] ... [arg-N]*

*where <name> is the name of a tool*

*and [arg-1] [arg-1] ... [arg-N] are the arguments of <name>*

*Existing programs today :*

<i>testfa</i>	<i>Interactive tool to test FA software</i>
<i>tstlfi</i>	<i>Interactive tool to test LFI software</i>
<i>facat</i>	<i>Concatenate several FA files</i>
<i>datefa</i>	<i>Display the date of a FA file</i>
<i>lficat</i>	<i>Display the catalog of a LFI file</i>
<i>lfisplit</i>	<i>Split a LFI file into several ones</i>
<i>lfilist</i>	<i>List all fields in a LFI file</i>
<i>lfixxxx</i>	<i>Display the values of a record</i>

*Remark 1 : invoking lfitools without arguments will display this help. Invoking 'lfitools <name>' may display the usage of the*

program <name> .

Remark 2 : Ifisplit can be used to split a surfex+pgd lfi file into a consistant pair of lfi files (surfex,pgd). This requires a namelist which one can find at the following location :  
yuki:/cnrm/gp/mrpm/mrpm602/public/lfisplit.nam

2) arp/setup/suctrl\_gflattr.F90 :

Cleaning (use NULOUT instead of NULERR if error is not fatal).

3) mse/externals/aro\_ground\_param.F90, mse/externals/aroini\_surfa.F90, mse/externals/aroini\_surfb.F90, mse/externals/atm2sx\_env.F90, mse/externals/atm2sx\_field.F90, mse/externals/ini\_prep\_surfex\_aro.F90, mse/externals/suallmse.F90, mse/externals/xxyy2dxdy.F90, mse/internals/read\_surft1\_aro.F90, mse/internals/read\_surfx1\_aro.F90, mse/internals/read\_surfx2\_aro.F90, mse/internals/write\_surfl1\_aro.F90, mse/internals/write\_surfn1\_aro.F90, mse/internals/write\_surft1\_aro.F90, mse/internals/write\_surfx1\_aro.F90, mse/internals/write\_surfx2\_aro.F90, mse/internals/xxyy2lfi.F90, mse/new/arordgp\_surf2.F90, mse/new/arowrgp\_surf2.F90, mse/programs/driver\_off\_omp.F90, mse/programs/offline.F90, surfex/OFFLIN/mode\_write\_surf\_bin.F90, surfex/OFFLIN/mode\_write\_surf\_txt.F90, surfex/SURFEX/conserv\_global\_mass.F90, surfex/SURFEX/ini\_var\_from\_patch.F90, surfex/SURFEX/ini\_var\_from\_vegtype\_data.F90, surfex/SURFEX/mode\_read\_surf\_asc.F90, surfex/SURFEX/mode\_write\_surf\_asc.F90, surfex/SURFEX/prep\_snow\_extern.F90, surfex/SURFEX/prep\_sso\_canopy.F90, surfex/SURFEX/read\_isba\_confn.F90, surfex/SURFEX/write\_header\_fa.F90, mse/internals/fmclos.F90 :

- Bugfixes, add missing interfaces or missing DrHook calls, use abort1 instead of abort1\_sfx in mse
- Let mse/ (and consequently surfex/) use the same output file than in the host model.

4) surfex/SURFEX/abort1\_sfx.F90 :

Use abort1 if defined(ARO). It will make the debugging a bit easier.

**Project:** arpege,Meso-NH surface,surfex,utilitaires,auxiliaire

**ClearCase branch:** mrpm602\_CY38\_io38t1v3

**Added:**

xrd/programs      lficat.F90      lfisplit.F90      lfitools.F90

**Modified:**

arp/canari	caohis.F90		
arp/module	yomfa.F90		
arp/namelist	namfa.h		
arp/setup	suarg.F90	suctrl_gflattr.F90	sufa.F90
	sugrida.F90		

mse/externals	aro_ground_param.F90 atm2sx_env.F90 suallmse.F90	aroini_surfa.F90 atm2sx_field.F90 xxyy2dxdy.F90	aroini_surfb.F90 ini_prep_surfex_aro.F90
mse/internals	fmclos.F90 read_surfx2_aro.F90 write_surft1_aro.F90 xxyy2lfi.F90	read_surft1_aro.F90 write_surfl1_aro.F90 write_surfx1_aro.F90	read_surfx1_aro.F90 write_surfn1_aro.F90 write_surfx2_aro.F90
mse/new	arordgp_surf2.F90	arowrgp_surf2.F90	
mse/programs	driver_off_omp.F90	offline.F90	
surfex/OFFLIN	mode_write_surf_bin.F90	mode_write_surf_txt.F90	
surfex/SURFEX	abor1_sfx.F90 ini_var_from_vegtype_data.F90 prep_snow_extern.F90 write_header_fa.F90	conserv_global_mass.F90 mode_read_surf_asc.F90 prep_sso_canopy.F90	ini_var_from_patch.F90 mode_write_surf_asc.F90 read_isba_confn.F90
uti/pinuts/module	coneo_prg_mod.F90		
xrd/fa	fanmsg.F		
xrd/fa/mt	fanmsg_mt.F		
xrd/lfi	lfinmg.F		
xrd/lfi/mt	lfinmg_mt.F		
xrd/programs	datefa.F lfilist.F90 lfixxxx.F90	facat.F90 lfitplit.F90 testfa.F	lfitcat.F90 lfitools.F90 tstlfi.F

## Doc:

### *Optimizations and bugfixes :*

- Bugfix for LAM (ald/parallel/eslxtpol.F90)
- Bugfix for the program facat (xrd/programs/facat.F90)
- Protection against uninitialized variables (arp/phys\_dmn/aclspstl.F90)
- Missing printouts (arp/setup/sump0.F90)
- Optimization of matrixes multiplications on scalar machine not using ESSL, thanks to ECMWF (xla/internal/linalg/sgemmx.F)

- Optimisation of spectral I/Os when the vertical distribution (driven by NPRTRV) is active : the vertical sets are computed in parallel instead of sequentially.

This modset concerns the following files :

arp/utility/wrgp2fa.F90, arp/io\_serv/io\_serv\_sumpioh.F90, arp/dia/wrmlppa.F90, arp/dia/wrspeca.F90, arp/dia/inifaout.F90, arp/setup/suspeca.F90

- Optimization modset to reduce unnecessary memory and I/Os : 3 new namelist variables are available :

\* LWRSPEC in namct1 : if set to .FALSE., historical spectral fields will not be written out (default is .T.)

\* LIOLEVG in namct0 : if set to .FALSE., the number of vertical levels in model does not need to match the vertical model in input file, but it just need to match the NFLEVG lowest levels in the input file. That way, one can keep the input file as it is, but reduce the value of NFLEVG in namelist when the upper atmosphere does not play any role. The number of levels in input/output files is NIOLEVG (in namelist namdim), which is by default NFLEVG unless overwritten by the presence of an input file via the command line arguments. Note that this facility does not work with LVERTFE=.T., but it help save memory for other configurations than the forecasting model, like Canari or off-line Fullpos. Just make sure you won't extrapolate above the reduced NFLEVG !

\* Furthermore, historical files can pre-exist in the directory of output historical files ; if so, the existing files will be completed with what the model will provide, after the tests of frame and date identity have been verified.

For Surface OI Canari it is recommended to set LVERTFE=.F., LIOLEVG=.F., NFLEVG=2, LWRSPEC=.F., and possibly copy the input file in place of the output file.

This modset concerns the following files :

ald/utility/cchien.F90, arp/utility/openfa.F90, arp/utility/deallo.F90, arp/module/yomop.F90, arp/module/yomct1.F90, arp/module/yomdim.F90, arp/module/yomct0.F90, arp/phys\_ec/sugwd.F90, arp/dia/wrmlppa.F90, arp/dia/wrspeca.F90, arp/dia/inifaout.F90, arp/setup/suspeca.F90, arp/setup/sugridua.F90, arp/setup/sudim1.F90, arp/setup/suvert.F90, arp/setup/su1yom.F90, arp/setup/sudim2.F90, arp/setup/suallo.F90, arp/setup/sugridspa.F90, arp/setup/suct0.F90, arp/setup/sumpini.F90, arp/setup/sucfu.F90, arp/setup/suoph.F90, arp/setup/suxfu.F90, arp/namelist/namdim.h, arp/namelist/namct1.h, arp/namelist/namct0.h

Impact on the scientific results : the modification in xla/internal/linalg/sgemmx.F is expected to change marginally the scientific results.

**Project:** aladin,arpege,algebre linéaire,auxiliaire

**ClearCase branch:** mrpm602\_CY38\_liolevg

**Modified:**

ald/parallel	eslxtpol.F90		
ald/utility	cchien.F90		
arp/dia	inifaout.F90	wrmlppa.F90	wrspeca.F90
arp/io_serv	io_serv_sumpioh.F90		
arp/module	yomct0.F90	yomct1.F90	yomdim.F90
	yomop.F90		

arp/namelist	namct0.h	namct1.h	namdim.h
arp/phys_dmn	aclspstl.F90		
arp/phys_ec	sugwd.F90		
arp/setup	su1yom.F90	suallo.F90	sucfu.F90
	suct0.F90	sudim1.F90	sudim2.F90
	sugridspa.F90	sugridua.F90	sump0.F90
	sumpini.F90	suoph.F90	suspeca.F90
	suvert.F90	suxfu.F90	
arp/utility	deallo.F90	openfa.F90	wrgp2fa.F90
xla/internal/linalg	sgemmx.F		
xrd/programs	facat.F90		

**Doc:**

*Miscellaneous bugfixes against uninitialized variables. This modset is expected to change the results marginally.*

**Project:** aladin,arpege,Meso-NH physique altitude,Meso-NH surface,transformées aladin,auxiliaire  
**ClearCase branch:** mrpm602\_CY38\_misc

**Added:**

arp/setup sumcclag.F90

**Modified:**

ald/adiab	elarmes.F90		
ald/setup	suedyn.F90	suemp.F90	
arp/adiab	larmes.F90		
arp/dia	sunddh.F90	wrgpa.F90	
arp/fullpos	sufpcfu.F90	sufpxfu.F90	
arp/module	elbc0b_mod.F90	iostream_mix.F90	yomnsv.F90
arp/phys_dmn	apl_arome.F90	aplpar.F90	
arp/phys_radi	suecrad.F90		
arp/setup	su0yoma.F90	su0yomb.F90	suct0.F90
	sudefo_gflatr.F90	sudim2.F90	sudyn.F90
	sugrclia.F90	sulsforc.F90	sumcc.F90
	sumcclag.F90	sump.F90	suoptroma.F90

arp/var	subj.F90	suvar.F90	
mpa/micro/module	modd_budget.f90		
mpa/turb/module	modd_diag_in_run.f90		
mse/externals	aroini_surfa.F90	aroini_surfb.F90	aroini_surfc.F90
mse/internals	fmlook.F90	read_surfl1_aro.F90	
tal/module	esnormd_mod.F90		
xrd/fa/mt	facade_mt.F		
xrd/support	gstats.F90		

**Doc:**

*Portability fixes for obstat :*

- use a cpp macro `ODB_API_SUPPORT` to protect the use of `ODB-2` .
- move `obstat "funcs.F90"` to `"obstat_funcs.F90"` to avoid confusion with `odb "funcs.c"` .

**Project:**

**ClearCase branch:**           mrpm602\_CY38\_obstat

**Modified:**

obt/src	iniitemloc.F90	odb2read.F90	odbread.F90
	updsoft.F90		

**Doc:**

*Workarounds for NEC-SX compiler to enable working with open-mp. This modset is justified by the aim to make this cycle an export version.*

*Details :*

- *arp/programs/master.F90, arp/utility/wrgp2fa.F90, odb/tools/Odbtools.F90, sat/programs/gensatim.F90 :*

*Workaround against a compiler regression reported as PSR METEOF0125 (compiler crash). The workaround consists in disabling the parallel regions if the cpp macro `NECSX` is defined. This has no impact on the performance since `NEC-SX` is not thread-safe, and furthermore `SET_ERR_TRAP` is actually used only if the cpp macro `RS6K` is defined.*

- *surfex/SURFEX/\* : add missing `SAVE` statements in modules (or the linker would fail).*

- *sat/\* :*

Workaround against a compiler problem reported as PSR METEOF0128 (linker failure). The workaround consists in suppressing the pre-initialisations in the definition of the type `rttov_options`, and use a new specific subroutine to perform these pre-initializations whenever a new structure is declared. This modset is under the `cpp` macro `NECSX`.

- `magics_correction.F` :

Dead code written if `f77`, for which promotion of reals to double precision is incompatible with `"-f2003 cbind"` options .

**Project:** arpege,odb,satrad,surfex

**ClearCase branch:** mrpm602\_CY38\_ompsx

**Added:**

sat/module rttov\_options\_default\_mod.F90

**Modified:**

arp/programs	master.F90		
arp/utility	wrgp2fa.F90		
odb/tools	Odbtools.F90		
sat/module	rttov_options_default_mod.F90	rttov_types.F90	
sat/mwave	mwave_get_rtcoeff.F90		
sat/onedvar	onedvar_get_rtcoeff.F90		
sat/programs	example_fwd.F90	example_pc_fwd.F90	example_rttovscatt.F90
	gensatim.F90	rttov_conv_coef.F90	rttov_test.F90
	rttov_test_get_pc_predictindex.F90	rttovscatt_test.F90	
sat/rttov/ifs	rttov_ec.F90	rttov_ec_ad.F90	rttov_ec_alloc.F90
	rttov_ec_alloc_ad.F90	rttov_ec_alloc_tl.F90	rttov_ec_tl.F90
	rttvi.F90		
sat/rttov/main	rttov_ad.F90	rttov_alloc_traj.F90	rttov_alloc_traj_sta.F90
	rttov_direct.F90	rttov_k.F90	rttov_tl.F90
sat/rttov/mw_scatt	rttov_iniscatt.F90	rttov_iniscatt_ad.F90	rttov_iniscatt_tl.F90
	rttov_scatt.F90	rttov_scatt_ad.F90	rttov_scatt_tl.F90
	rttovscatt_test_one.F90		
surfex/SURFEX	modd_prep_flake.F90	modd_prep_isba.F90	modd_prep_seaflux.F90
	modd_prep_teb.F90	modd_prep_teb_garden.F90	modd_prep_watflux.F90

**Doc:**

- *varbc\_pred.F90, varbc\_setup.F90 : static memory savings (a contribution on top of cycle 36T1 which had been lost while making cycle 37) ;*
- *sugem2.F90 : bugfix for Arpege ;*
- *cpwts.F90, sualdyn\_ddh.F90, yoe\_cuconvca.F90, su0yomb.F90, su\_surf\_flds.F90, arp/utility/pksurfa.F90 : fix bounds checking issues*
- *suct0.F90 : missing prints ;*
- *arp/adiab/cpg.F90, arp/module/yomdim.F90, arp/setup/sudim2.F90, arp/phys\_dmn/mf\_phys\_prep.F90 : memory management cleaning + portability fix for Open-MP (automatic arrays instead of dynamic arrays).*

**Project:** arpege  
**ClearCase branch:** mrpm602\_CY38\_rekbf1

**Modified:**

arp/adiab	cpg.F90	cpwts.F90	
arp/dia	sualdyn_ddh.F90		
arp/module	varbc_pred.F90	varbc_setup.F90	yoe_cuconvca.F90
	yomdim.F90		
arp/phys_dmn	mf_phys_prep.F90		
arp/setup	su0yomb.F90	su_surf_flds.F90	suct0.F90
	sudim2.F90	sugem2.F90	
arp/utility	pksurfa.F90		

**Doc:**

*ald/setup/suegem2.F90 :  
 Avoid use of Null pointer*

*arp/dia/posddh.F90, arp/dia/sunddh.F90, arp/fullpos/prespfpos.F90, arp/module/yomtvrads.F90, arp/nmi/sunmi.F90,  
 arp/obs\_preproc/obadat.F90, arp/obs\_preproc/sugoms.F90, arp/phys\_radi/suecrad.F90, arp/programs/merge\_varbc.F90,  
 arp/setup/suarg.F90, arp/setup/suctrl\_gflattr.F90, arp/setup/sudefo\_gflattr.F90, arp/setup/sumpini.F90,  
 arp/setup/surand2.F90, arp/var/sujbstd.F90, arp/var/sumoderr.F90 :  
 Fix uninitialised variables*

*arp/dia/wrgpa.F90, arp/module/wrgridua\_mod.F90 :  
 Post-phasing of NIOLEVG developments*

*arp/fullpos/vpos.F90, arp/setup/su0yomb.F90 :  
 Fix bounds checking issues*

*arp/setup/sudim1.F90 :*  
*Fix bounds checking issues + uninitialised variables*

**Project:** aladin,arpege  
**ClearCase branch:** mrpm602\_CY38\_rekbf2

**Modified:**

ald/setup	suegem2.F90		
arp/dia	posddh.F90	sunddh.F90	wrgpa.F90
arp/fullpos	prespfpos.F90	vpos.F90	
arp/module	wrgridua_mod.F90	yomtvrad.F90	
arp/nmi	sunmi.F90		
arp/obs_preproc	obadat.F90	sugoms.F90	
arp/phys_radi	suecrad.F90		
arp/programs	merge_varbc.F90		
arp/setup	su0yomb.F90	suarg.F90	suctrl_gflattr.F90
	sudefo_gflattr.F90	sudim1.F90	sumpini.F90
	surand2.F90		
arp/var	subjstd.F90	sumoderr.F90	

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**FAURE Ghislain**

**Doc:**

*The relative vorticity field of the guess is used to linearize the non linear balance in the Aladin minimization. Along with the use of pseudo wind observations, extreme values of relative vorticity in the vicinity of a tropical cyclone can lead to an overestimation of its intensity in the analysis.*

*To avoid that, an optional threshold can be applied to the absolute values of the first guess relative vorticity field.*

*To use this threshold, set LJB\_NONLINEAR\_BALANCE\_THR to TRUE (in NAMJG).*

*The value of this threshold is set by THRVORTNL (in NAMJG).*

Default values :

LJB\_NONLINEAR\_BALANCE\_THR = .FALSE.

THRVRTNL=0.001 (s-1)

**Project:** aladin,arpege  
**ClearCase branch:** faure\_CY38\_cy38minmodbk

**Modified:**

ald/var ebalnonlinad.F90 ebalnonlintl.F90  
arp/module yomjg.F90  
arp/var subj.F90

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**GCO**

**Doc:**

*Routine "ini3wrfp.F90" was moved to "arp/dia" by mistake, so it has been moved back in "arp/fullpos".*

**Project:**  
**ClearCase branch:** none

**Renamed:**

arp/dia ini3wrfp.F90 to arp/fullpos/ini3wrfp.F90

**Doc:**

*Going through version 441 of NEC SX Fortran compiler allow to get rid with some fixes introduced in cycle CY38 (NB: very strange compilation errors with use of statement functions).*

**Project:** arpege  
**ClearCase branch:** marp001\_CY38\_Rev441

**Deleted:**

arp/module yomjbchvar\_functions.F90

**Modified:**

arp	module		
arp/var	jbchvar.F90	jbchvarad.F90	jbchvari.F90
	jbchvariad.F90	pregprh.F90	sujbwavgen.F90
	symtransin.F90		

**Doc:**

Add LFPBOYD in namelist NAMFPC .

**Project:** arpege  
**ClearCase branch:** marp003\_CY38\_lfpboyd

**Modified:**

arp/namelist namfpc.h

**Doc:**

- 1) Rename mse/externals/aro\_oi\_main.F90 to surfex/OFFLIN/oi\_control.F90 (according to SURFEX V7).
- 2) Rename mse/interface/aro\_oi\_main.h to surfex/OFFLIN/oi\_control.h (according to SURFEX V7).
- 3) Modifications to take into account the renaming of ARO\_OI\_MAIN to OI\_CONTROL, and fix a phasing bug.

**Project:** arpege,Meso-NH surface,surfex  
**ClearCase branch:** marp003\_CY38\_mrpa647\_dbft

**Added:**

surfex/OFFLIN oi\_control.F90 oi\_control.h oi\_main\_ics.F90

**Deleted:**

mse/externals aro\_oi\_main.F90  
mse/interface aro\_oi\_main.h  
surfex/OFFLIN oi\_main\_ics.F90

**Modified:**

arp/canari canari\_sx\_ics.F90  
mse externals  
mse/externals ini\_prep\_surfex\_aro.F90

mse	interface		
mse/programs	oi_main.F90		
surfex	OFFLIN		
surfex/OFFLIN	oi_cacsts.F90	oi_control.F90	oi_control.h
	oi_tsl.F90		

**Doc:**

*PGI compiler portability.*

**Project:** Biper,surfex  
**ClearCase branch:** marp003\_CY38\_pgi

**Modified:**

bip/module	ewindowe_mod.F90		
surfex/SURFEX	snow_cover_1layer.F90	update_rad_seawat.F90	

**Doc:**

*Add new routine xrd/support/qsorti4.F90, missing from Philippe Marguinaud's contribution in CY38\_t1.05 .*

**Project:** auxiliaire  
**ClearCase branch:** marp003\_CY38\_qsorti4

**Modified:**

xrd/support	qsorti4.F
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**Doc:**

*1) Miscellaneous changes:*

- Remove all obsolete routines, renaming of some "mpa" routines, and adding of link to "odb98.flags" in some "odb/dll.\*" directories.
- Remove "mse" occurrences of duplicated routines between "surfex" and "mse".
- Fix miscellaneous phasing bugs.
- Fix phasing bugs.
- Move new module "eshrinkstretch\_mod.F90" from "ald/utility" to "ald/module" .
- Move new routine "cpdyddhlag.F90" from "arp/adiab" to "arp/dia" .

2) Rename *obt/module/funcs.F90* to *obt/module/obstat\_funcs.F90* , and change module name .

3) Add missing mandatory interfaces:

*arp/dia/wrgpa.F90*  
*arp/phys\_dmn/accdev.F90*  
*arp/phys\_dmn/acnebcond.F90*

4) Remove the (obsolete) call of *FPSPNORM* in *arp/fullpos/wrmlfp.F90* .

5) Add link to "*matchup\_gbrad.sql*" in "*odb/ddl.CCMA*" directory, and update "*CCMA.dep*".

6) Fix a typing error in "*bator\_util\_mod.F90*": a numerical variable (*ptab\_obs\_ratio*) was initialized to "O" instead of 0 ...

**Project:** arpege,odb  
**ClearCase branch:** marp003\_CY38\_t1fix\*

**Added:**

<i>mpa/chem/internals</i>	<i>ini_wet_dep.f90</i>		
<i>mpa/chem/module</i>	<i>modd_parameters_dep.f90</i>	<i>modd_wet_dep_descr.f90</i>	<i>modd_wet_dep_param.f90</i>
	<i>modi_ini_wet_dep.f90</i>		
<i>odb/ddl.CCMA</i>	<i>matchup_gbrad.sql</i>	<i>obsortca_auxiliary.sql</i>	<i>obsortca_hdr2auxiliary_body.sql</i>
<i>odb/ddl.COUNTRYRSTRHBIAS</i>	<i>odb98.flags</i>		
<i>odb/ddl.ECMA</i>	<i>obsortca_auxiliary.sql</i>	<i>obsortca_hdr2auxiliary_body.sql</i>	
<i>odb/ddl.RSTBIAS</i>	<i>odb98.flags</i>		
<i>odb/ddl.SONDETYPERSTRHBIAS</i>	<i>odb98.flags</i>		

**Renamed:**

<i>ald/utility</i>	<i>eshrinkstretch_mod.F90</i> to <i>ald/module/eshrinkstretch_mod.F90</i>
<i>arp/adiab</i>	<i>cpdyddhlag.F90</i> to <i>arp/dia/cpdyddhlag.F90</i>
<i>obt/module</i>	<i>funcs.F90</i> to <i>obt/module/obstat_funcs.F90</i>

**Deleted:**

<i>ald/adiab</i>	<i>espnhsiad.F90</i>		
<i>ald/c9xx</i>	<i>einclib.F90</i>	<i>einclir.F90</i>	
<i>ald/setup</i>	<i>elsin.F90</i>	<i>suebig.F90</i>	<i>suecuv.F90</i>
	<i>suegeo1.F90</i>	<i>suegeo2.F90</i>	<i>suesmap.F90</i>
<i>arp/adiab</i>	<i>gpendtr.F90</i>	<i>gpmprfc_gmvs.F90</i>	

arp/ald_inc/function	fchdif.h		
arp/c9xx	inclib.F90	inclir.F90	intrv2.F90
arp/canari	caissedm.F90		
arp/control	ini1scan2m.F90	scan2h.F90	scan2had.F90
	scan2htl.F90		
arp/fullpos	fplake.F90		
arp/module	yommald.F90	yomslid.F90	
arp/op_obs	co2cldairs.F90	co2cldiasi.F90	
arp/phys_dmn	acmripp.F90	hlcondcv.F90	
arp/setup	sudyn_setgflattr.F90	sugmre.F90	susmap.F90
	suspgm.F90		
mpa/chem/internals	ch_scopy.F	ichsamax.F	ichsamx.F
	saxpy.F	sdot.F	sscal.F
mpa/micro/internals	ini_wet_dep.f90		
mpa/micro/module	modd_conf1.f90	modd_conf_n.f90	modd_parameters_dep.f90
	modd_wet_dep_descr.f90	modd_wet_dep_param.f90	modddb_budget.f90
	modi_ini_wet_dep.f90		
mse/externals	aro_oi_main.F90	aroini_surf.F90	
mse/internals	error_read_surf_asc.F90	error_write_surf_asc.F90	error_write_surf_txt.F90
mse/programs	sxpost.F90		
obt/bias_sat	magics_correction.F		
surfex/SURFEX	default_dstn.F90	default_sltn.F90	dst_dep.F90
	dst_init_modes.F90	dst_init_names.F90	dst_velgrav1d.F90
	init_dstn.F90	init_sltn.F90	modd_dst.F90
	modd_sltn.F90	mode_dst_surf.F90	mode_dsttbl.F90
	mode_dsttbl_mb.F90	mode_sltn_surf.F90	read_default_dstn.F90
	read_default_sltn.F90	read_dst_confn.F90	read_sltn_confn.F90
	sltn_dep.F90	sltn_init_modes.F90	sltn_init_names.F90
	sltn_velgrav1d.F90		
<b>Modified:</b>			
ald/setup	suegem1a.F90	suegem2.F90	
arp/ald_inc	function		
arp/canari	calife.F90		

arp/control	scan2m.F90		
arp/dia	wrgpa.F90	wrmlpp.F90	wrmlppa.F90
arp/fullpos	wrmlfp.F90		
arp/phys_dmn	accdev.F90	acnebcond.F90	actke.F90
	suphy0.F90		
arp/setup	suvert.F90		
mpa/turb/internals	compute_updraft.f90		
mse/externals	aro_oi_main.F90	aroini_surfa.F90	
obt/module	obstat_funcs.F90		
odb	ddl.CCMA		
odb/ddl.CCMA	CCMA.dep		
odb/ddl.ECMA	ECMA.dep		
odb/pandor/module	bator_util_mod.F90		

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## **GUIDARD Vincent**

### **Doc:**

*arp/phys\_dmn/mts\_phys.F90*  
*arp/setup/sumts.F90*  
*sat/rttov/coef\_io/rttov\_distribute\_optpar\_ir.F90*  
*sat/rttov/ifs/phrtsetup.F90*  
*sat/rttov/main/rttov\_opdpscattir.F90*  
*sat/rttov/main/rttov\_integrate.F90:*  
*Fixes on ISP .*

*arp/op\_obs/hradp.F90*  
*arp/op\_obs/hradpad.F90*  
*arp/op\_obs/hradptl.F90:*  
*RTTOV top level adjustments for Arome assimilation.*

*+arp/op\_obs/co2slicing.F90*  
*-arp/op\_obs/co2cldairs.F90*  
*-arp/op\_obs/co2cldiasi.F90*

arp/op\_obs/hretr.F90  
arp/op\_obs/radtr.F90:  
Code simplification.

arp/obs\_preproc/sugoms.F90  
arp/op\_obs/hop.F90  
arp/op\_obs/hopad.F90  
arp/op\_obs/hoptl.F90  
arp/op\_obs/obshor.F90  
arp/op\_obs/obshorad.F90  
arp/op\_obs/obshortl.F90  
+arp/op\_obs/preintuv.F90  
+arp/op\_obs/preintuvad.F90  
+arp/op\_obs/preintuvtl.F90:

Rotation of the wind components in stretched and LAM geometry, reintroduced in TL/AD code using a new strategy (Alexandre Mary).

surfex/OFFLIN/oi\_control.F90:  
Bugfix in OI\_main (Françoise Taillefer).

**Project:** arpege,satrad,surfex  
**ClearCase branch:** mrpe710\_CY38\_VariousFixes

**Added:**

arp/op\_obs co2slicing.F90 preintuv.F90 preintuvad.F90  
preintuvtl.F90

**Modified:**

arp/obs_preproc	sugoms.F90		
arp/op_obs	co2slicing.F90	hop.F90	hopad.F90
	hoptl.F90	hradp.F90	hradpad.F90
	hradptl.F90	hretr.F90	obshor.F90
	obshorad.F90	obshortl.F90	preintuv.F90
	preintuvad.F90	preintuvtl.F90	radtr.F90
arp/phys_dmn	mts_phys.F90		
arp/setup	sumts.F90		
sat/rttov/coef_io	rttov_distribute_optpar_ir.F90		
sat/rttov/ifs	phrtsetup.F90		

sat/rttov/main  
surfex/OFFLIN

rttov\_integrate.F90  
oi\_control.F90

rttov\_opdpsscattir.F90

**Doc:**

1) *Catch-up from the current e-suite:*

*odb/pandor/module/bator\_init\_mod.F90  
catch up for sigma\_o modifications*

*arp/op\_obs/hop.F90  
arp/op\_obs/hopad.F90  
arp/op\_obs/hoptl.F90  
arp/op\_obs/hretr.F90  
Cloudy computation for IASI and AIRS*

*arp/op\_obs/hretr.F90  
Use bias corrected radiances to perform cloud diagnostics*

2) *Miscellaneous bug-fixes:*

*arp/control/scan2mtl.F90  
initialize YO3%MP and YO3%MP5 pointers to an arbitrary value in the case CDCONF(6:6) == 'A' or 'B' (i.e. sigma\_a or b computation).  
this has to be further investigated and better fixed !*

*arp/op\_obs/hop.F90  
arp/op\_obs/hopad.F90  
arp/op\_obs/hoptl.F90  
arp/op\_obs/hretr.F90  
use MDB\_CLDPTOP2\_AT\_RADIANCE and MDB\_CLDNE2\_AT\_RADIANCE instead of MDB\_CLDPTOP3\_AT\_RADIANCE and  
MDB\_CLDNE3\_AT\_RADIANCE to store the  
cloudy parameters to be used for AIRS and IASI in the case of the assimilation of cloudy radiances.*

*arp/op\_obs/co2cldairs.F90  
arp/op\_obs/co2cldiasi.F90  
bf on dimension of array ZRADCLDLEV*

*arp/module/gridpoint\_buffers\_mix.F90  
Nullify GPBUF at decleration and after DEALLOCATION*

*arp/module/varbc\_setup.F90*

*allocate some arrays if not already allocated (following REK optimisation of allocation)*

*3) Various modification with respect to RTTOV-10 and its 44 levels (instead of 43):*

*arp/op\_obs/radtr.F90*

*bf on ICHPF location following modifications on IFAIL + cleaning of useless INCH*

*arp/op\_obs/hradp.F90*

*code a bully extrapolation to new highest RTTOV level at 0.5 Pa*

*sat/module/mod\_cparam.F90*

*sat/module/cparam.F90*

*jplev=44 instead of jplev=43*

*arp/var/rtsetup.F90*

*sat/rttov/ifs/phrtsetup.F90*

*JPL100=44 instead of JPL100=43 and add one level in O3CLRT*

*sat/rttov/main/rttov\_check\_traj.F90*

*proper handling of pointers*

*sat/rttov/ifs/rttov\_ec\_setopts.F90*

*sat/rttov/ifs/rttov\_ec.F90*

*sat/rttov/ifs/rttov\_ec\_tl.F90*

*sat/rttov/ifs/rttov\_ec\_ad.F90*

*Use co2 profiles from coefficients*

*4) Various bug-fixes with respect to old problems recently found:*

*arp/control/cva2.F90*

*arp/control/forecast\_error.F90*

*perform check of the gradient only if L\_CHECK\_GRADIENT is .TRUE.*

*arp/op\_obs/hradp.F90*

*extrapolation above model top was not done for radiances preparation in HRETR call.*

*5) Various bug-fixes with respect to weird modifications:*

*arp/setup/su\_grib\_api.F90*

*remove an 'IF (.FALSE.)' test*

*6) Various bug-fixes with respect to ECMWF modifications:*

*arp/obs\_preproc/ngenada.F90*

*by-pass ugly tests coded by ECMWF desperate people and reintroduce old routine*

*arp/op\_obs/hop.F90*

*arp/op\_obs/hoptl.F90*

*Routine timdif.F90 has been modified in cy38 and its output is treated a new way in these routines. Which caused aborts from these routines. So the old treatment has been reintroduced. Should be further investigated and fixed a better way.*

*arp/module/varbc\_setup.F90*

*BF on a format for output (write with wrong format)*

*arp/module/varbc\_rad.F90*

*override ECMWF binning for AIRS and IASI predictor selection*

*arp/obs\_preproc/cloud\_detect\_setup.F90*

*Use LECMWF to determine which band to use for AIRS cloud detection*

*arp/var/getsatid.F90*

*reintroduce AMSUA on Aqua*

*arp/var/sualges.F90*

*add NULLIFY(JB\_STRUCTURE%JB\_DATA%GPBUF\_JBVCOORD%GPBUF) in case we do not allocate it*

*bla/mf\_blacklist.b*

*modifications accordingly to blinit.F90*

*odb/ddl/sat\_gpsro.sql*

*odb/ddl.CCMA/sat\_gpsro.sql*

*odb/ddl.ECMA/sat\_gpsro.sql*

*bugfix in FROM statement (add sat table)*

*odb/ddl/satbody\_gpsro.sql*

*odb/ddl.CCMA/satbody\_gpsro.sql*

*odb/ddl.ECMA/satbody\_gpsro.sql*

*bugfix in WHERE statement (wrong obstype tested)*

*7) Various bug-fixes with respect to GOM modifications:*

*arp/op\_obs/hoptl.F90*

*arp/op\_obs/hopad.F90*

Call PPOBSAC and PPOBSACAD/TL with YDGOM5 instead of YDGOM

8) Various bug-fixes with respect to sokka\_CY38\_hirlam\_contrib (from Sami S.):

*arp/obs\_preproc/readoba.F90*

*bugfix the following problem: Logical LECMWF replaced in tests by local variable LL\_ecmwf which is initialized to .TRUE. at the beginning of the routine.*

*odb/cma2odb/shuffle\_odb.F90*

*bugfix the following problem: Logical LECMWF replaced in tests by local variable LL\_ecmwf which is initialized to .TRUE. at the beginning of the routine.*

**Project:** arpege,black\_list,odb,satrad

**ClearCase branch:** mrpe710\_CY38\_fix4DVAR

**Modified:**

arp/control	cva2.F90	forecast_error.F90	scan2mtl.F90
arp/module	gridpoint_buffers_mix.F90	varbc_rad.F90	varbc_setup.F90
arp/obs_preproc	cloud_detect_setup.F90	ngenada.F90	readoba.F90
arp/op_obs	co2cldairs.F90	co2cldiasi.F90	hop.F90
	hopad.F90	hoptl.F90	hradp.F90
	hretr.F90	radtr.F90	
arp/setup	su_grib_api.F90		
arp/var	getsatid.F90	rtsetup.F90	sualges.F90
bla	mf_blacklist.b		
odb/cma2odb	shuffle_odb.F90		
odb/ddl	sat_gpsro.sql	satbody_gpsro.sql	
odb/pandor/module	bator_init_mod.F90		
sat/module	cparam.F90	mod_cparam.F90	
sat/rttov/ifs	phrtsetup.F90	rttov_ec.F90	rttov_ec_ad.F90
	rttov_ec_setopts.F90	rttov_ec_tl.F90	
sat/rttov/main	rttov_check_traj.F90		



**Project:** odb  
**ClearCase branch:** mrpa644\_CY38\_bg\_windcleaner

**Modified:**  
odb/pandor/module bator\_util\_mod.F90

**Doc:**

- 1) *Modifications of length of area codes buoyomm WMO from 5 to 7 characters (WMO recommendation - this code is inactive and presently under test) .*
- 2) *Decomposition of some tests (IF + .AND./OR.), with the aim to avoid a bad order interpretation of those tests by the compiler .*

**Project:** odb  
**ClearCase branch:** mrpa644\_CY38\_bugfix

**Modified:**  
odb/pandor/module bator\_decodbufr\_mod.F90

**Doc:**

*Change coding of BUOYOMM headers: Antarctic OMM area is now coded 0 instead of 7 .*

**Project:** odb  
**ClearCase branch:** mrpa644\_CY38\_buoyomm2

**Modified:**  
odb/pandor/module bator\_decodbufr\_mod.F90

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## **LABADIE Carole**

### **Doc:**

*Catch-up from current e-suite:*

- 1) *combi\_opti: modifications allowing to have a variable number of singular vectors for perturbations ;*
- 2) *combi\_pert: handle the mean value of AEARP for perturbations computation.*

**Project:** utilitaires  
**ClearCase branch:** mrmn269\_CY36T1\_combiPEARP2011

### **Modified:**

uti/combi    combi\_opti.F90    combi\_pert.F90

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## **MARGUINAUD Philippe**

### **Doc:**

*Integration of IO server into Fullpos and SURFEX; add comments to IO server. FA output is now supported by the IO server. Fields in historic files may be written in a different order. A tool to compare two LFI files article by article is provided (lfidiff.F90).*

**Project:** aladin,arpege,Meso-NH surface,auxiliaire  
**ClearCase branch:** mrpm609\_CY38\_ioservCC

### **Added:**

arp/dia	iospeca_mod.F90		
arp/io_serv	io_serv_create_fa.F90	io_serv_handlef.F90	io_serv_hdr_init.F90
	io_serv_prepacka1_compress.F90		
arp/utility	prepacka1.F90	prepacka1_mt.F90	

xrd/fa	fandata.F	
xrd/fa/mt	fandata_mt.F	
xrd/programs	faidx.F90	lfidiff.F90

**Renamed:**

arp/fullpos	ini3wrfp.F90 to arp/dia/ini3wrfp.F90
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**Modified:**

ald/fullpos	exarp.F90	exbip.F90	
arp/canari	canari_sx_ics.F90		
arp/dia	ini3wrfp.F90	inifaout.F90	iospeca_mod.F90
	suofname.F90	wrm1ppa.F90	wrsfx.F90
	wrspeca.F90	wrspeca_compress_mt.F90	
arp/fullpos	extfpf.F90	fp2sx1.F90	wrhfp.F90
arp/io_serv	io_serv_alloc_buf.F90	io_serv_alloc_non_blocking_std.F90	io_serv_close.F90
	io_serv_compress.F90	io_serv_compress_run.F90	io_serv_create_fa.F90
	io_serv_flush.F90	io_serv_handlef.F90	io_serv_hdr_grok_size.F90
	io_serv_hdr_init.F90	io_serv_log.F90	io_serv_open.F90
	io_serv_prepacka1_compress.F90	io_serv_reclaim_buf_space.F90	io_serv_recv.F90
	io_serv_recv_cleanup.F90	io_serv_recv_run.F90	io_serv_recv_setup.F90
	io_serv_send.F90	io_serv_suiosctmpl.F90	io_serv_sumpioh.F90
	io_serv_terminate.F90	io_serv_wrgp2fa_compress.F90	io_serv_write.F90
	io_serv_write_run.F90	io_serv_wrspeca_compress.F90	
arp/module	yomio_serv.F90	yomio_serv_cfield.F90	yomio_serv_cfield_fifo.F90
	yomio_serv_compress.F90	yomio_serv_ffield.F90	yomio_serv_ffield_fifo.F90
	yomio_serv_hdr.F90	yomio_serv_recv.F90	yomio_serv_write.F90
	yomop.F90		
arp/namelist	namoph.h		
arp/parallel	diwgrfp.F90	fptratod.F90	fptrdtoa.F90
arp/programs	io_serv.F90		
arp/setup	suoph.F90	suspeca.F90	
arp/utility	extgpf.F90	prepacka.F90	prepacka1.F90
	prepacka1_mt.F90	wrgp2fa.F90	wrgp2fa_compress_mt.F90
mse/externals	aroini_surfa.F90	aroini_surfb.F90	aroini_surfc.F90
mse/module	modd_io_surf_aro.F90		

xrd/fa	fandata.F			
xrd/fa/mt	fandata_mt.F			
xrd/fi_libc	fi_libc.c	fi_libc.h		
xrd/module	mpl_broadcast_mod.F90	mpl_rcv_mod.F90		
xrd/programs	faidx.F90	lfidiff.F90		lfilist.F90
	lfitools.F90			

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### **MOENE Toon**

#### **Doc:**

*The purpose of this update is to get the EDMFM scheme in Meteo France's ClearCase repository in line with the version used in HARMONIE-arome.*

**Project:** arpege

**ClearCase branch:** mrpe737\_CY38\_hirlam-edmfm-update2

#### **Modified:**

arp/phys\_dmn vdfhghthl.F90 vdfhghtnhl.F90 vdfparcelhl.F90

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### **MOLL Patrick**

#### **Doc:**

*Catch-up of current parallel suite CY37T1\_op1 .*

**Project:** arpege,black\_list,odb

**ClearCase branch:** mrpa646\_CY38\_dbl2cy38

#### **Modified:**

arp/module	yomscf.F90		
arp/namelist	namscf.h		
arp/obs_preproc	defrun.F90	pertobs.F90	pertobs_uncorr.F90
bla	mf_blacklist.b		
odb/ddl	sathdr_screen_atovs.sql		

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## **PAYAN Christophe**

### **Doc:**

- GOES-15 (satid=259) added, routines *bator\_init\_mod*, *satobfreq\_bynam* ;
- GOES-10 to GOES-14 grouped in same AMV imager serie (same characteristics), routines *bator\_init\_mod.F90*, *satobfreq\_bynam.F90* ;
- default values for METOP-2 AMV, routine *bator\_init\_mod.F90* ;
- scatt wind errors specified now with ECTERO array + cleaning, routines *bator\_ecritures\_mod.F90*, *bator\_init\_mod.F90*, *bator\_module.F90*
- wrong scatt wind solutions flagging in 3DVAR case, routines *hdepart.F90*, *hjo.F90*, *hqscatt.F90* ;
- LSCATT\_UPWDFLAG introduced, allows to update wrong scatt wind solutions flag at each trajectory (may be useful for post-processing diagnostics as DFS), routines *fcobs.h*, *yomcosjo.F90*, *namjo.h*, *defrun.F90*, *hjo.F90* ;
- the distance of wind scatt solutions is normalized by specified errors, which may be different on each component (u/v), routine *hqscatt.F90* ;
- the observation error printed in Jo part listing for winds is now an average of errors specified on each component (u/v), routine *hjo.F90* .

**Project:** arpege,odb  
**ClearCase branch:** mrpa642\_CY38\_37t1op1TO38t1

### **Modified:**

arp/function	fcobs.h		
arp/module	yomcosjo.F90		
arp/namelist	namjo.h		
arp/obs_preproc	defrun.F90		
arp/op_obs	hdepart.F90	hjo.F90	hqscatt.F90
odb/bufr2odb	satobfreq_bynam.F90		
odb/pandor/module	bator_ecritures_mod.F90	bator_init_mod.F90	bator_module.F90

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## **SAINT-RAMOND Nathalie**

### **Doc:**

*Reduce sigma\_o of GPSRO .*

**Project:** arpege  
**ClearCase branch:** mrpa641\_CY38\_nathalie

**Modified:**  
arp/op\_obs gpsro\_oberror.F90

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## **SEITY Yann**

### **Doc:**

*Introduction of SURFEX v7.2 .*

**Project:** arpege,Meso-NH surface,surfex  
**ClearCase branch:** mrpm637\_CY38\_SURFEX\_7.2

### **Added:**

mse/internals	read_namelists_io.F90	read_surft1_aro.F90	set_surfex_file_name_aro.F90
	write_surft1_aro.F90		
mse/programs	offline.F90		
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vegtype\_grid\_to\_patch\_grid.F90  
ver\_interp\_lin\_surf.F90  
water\_flux.F90  
write\_cover\_tex\_cover.F90  
write\_cover\_tex\_isba\_par.F90  
write\_cover\_tex\_water.F90  
write\_diag\_inland\_watern.F90  
write\_diag\_misc\_isban.F90  
write\_diag\_pgd\_grdnn.F90  
write\_diag\_sean.F90  
write\_diag\_seb\_oceann.F90  
write\_diag\_seb\_tebn.F90  
write\_diag\_tebn.F90  
write\_dst\_conf.F90  
write\_grid.F90  
write\_gridtype\_gauss.F90  
write\_gridtype\_lonlatval.F90  
write\_isban.F90  
write\_pgd\_inland\_watern.F90  
write\_pgd\_seafluxn.F90  
write\_pgd\_tebn.F90  
write\_seafluxn.F90  
write\_surf\_atmn.F90  
write\_watfluxn.F90  
writesurf\_covern.F90

	writesurf_dummys.F90	writesurf_flake_confn.F90	writesurf_flake_sbIn.F90
	writesurf_flaken.F90	writesurf_gr_snow.F90	writesurf_isba_canopyn.F90
	writesurf_isba_confn.F90	writesurf_isban.F90	writesurf_oceann.F90
	writesurf_pgd_flaken.F90	writesurf_pgd_isba_parn.F90	writesurf_pgd_isban.F90
	writesurf_pgd_seaf_parn.F90	writesurf_pgd_seafluxn.F90	writesurf_pgd_teb_parn.F90
	writesurf_pgd_tebn.F90	writesurf_pgd_tsz0_parn.F90	writesurf_pgd_watfluxn.F90
	writesurf_precipn.F90	writesurf_seaflux_confn.F90	writesurf_seaflux_sbIn.F90
	writesurf_seafluxn.F90	writesurf_sso_canopyn.F90	writesurf_sson.F90
	writesurf_teb_canopyn.F90	writesurf_teb_confn.F90	writesurf_teb_gardenn.F90
	writesurf_tebn.F90	writesurf_watflux_confn.F90	writesurf_watflux_sbIn.F90
	writesurf_watfluxn.F90	z0eff.F90	z0rel_1d.F90
	z0v_from_lai.F90	zoom_pgd_cover.F90	zoom_pgd_inland_water.F90
	zoom_pgd_isba.F90	zoom_pgd_isba_full.F90	zoom_pgd_nature.F90
	zoom_pgd_orography.F90	zoom_pgd_sea.F90	zoom_pgd_seaflux.F90
	zoom_pgd_surf_atm.F90	zoom_pgd_teb.F90	zoom_pgd_town.F90
	zsfilter.F90		
surfex/TRIP	default_trip.F90	diag_tripn.F90	flood_update.F90
	get_conf_tripn.F90	get_grid_conf_tripn.F90	get_lonlat_trip.F90
	get_trip_sizen.F90	goto_trip.F90	init_diag_tripn.F90
	init_param_tripn.F90	init_restart_tripn.F90	init_trip_par.F90
	init_tripn.F90	modd_trip_gridn.F90	modd_tripn.F90
	mode_convert.F90	mode_grid_trip.F90	mode_modeln_trip_handler.F90
	mode_rw_trip.F90	mode_trip_function.F90	mode_trip_init.F90
	mode_trip_netcdf.F90	modn_tripn.F90	prep_trip.F90
	read_nam_grid_trip.F90	read_namelist_tripn.F90	read_trip_confn.F90
	restart_tripn.F90	trip.F90	trip_ground_water.F90
	trip_interface.F90	trip_surface_water.F90	trip_surface_water_flood.F90
	trip_surface_water_velvar.F90		

**Doc:**

*Miscellaneous phasing fixes in SURFEX.*

**Project:** arpege,Meso-NH physique altitude,Meso-NH surface,surfex  
**ClearCase branch:** mrpm637\_CY38\_aro\_38\_t1\_pourv7

**Added:**

surfex/OFFLIN      soda.F90

**Modified:**

arp/fullpos	fp2sx1.F90	wrhfp.F90	
arp/module	yommse.F90		
arp/utility	freemem.F90		
mpa/turb/internals	ini_cturb.f90		
mse/externals	ini_prep_surfex_aro.F90	prep_surf_aro.F90	
mse/interface	prep_surf_aro.h		
mse/internals	read_surft1_aro.F90	write_surft1_aro.F90	
mse/module	modd_io_surf_aro.F90		
surfex/OFFLIN	init_outfn_isban.F90	modn_io_offline.F90	ol_read_atm_conf_ascii.F90
	ol_write_coord.F90	read_surf_atm.F90	soda.F90
surfex/SURFEX	coupling_isban.F90	get_lonlatn.F90	init_from_data_grdnn.F90
	modd_io_surf_asc.F90	pack_grid.F90	pgd_isba_par.F90
	prep_inland_water.F90	prep_surf_atm.F90	read_all_namelists.F90
	read_pgd_isba_parn.F90	read_precipn.F90	sso_z0_frictionn.F90
	write_cover_tex_water.F90		

**Doc:**

*Catch-up of parallel suite CY37T1\_op1, partial merge with MesoNH MASDEV49, modifications of shallow convection EDKF . Microphysique and turbulence to be able to run with arrays from top of atmosphere to ground.*

**Project:**                    aladin,arpege,Meso-NH physique altitude

**ClearCase branch:**        mrpm637\_CY38\_aro\_devpour38t1

**Added:**

arp/namelist	namppvi.h		
mpa/micro/externals	aroini_neb.f90		
mpa/micro/interface	aroini_neb.h		
mpa/micro/internals	ini_neb.f90		
mpa/micro/module	modd_elec_descr.f90	modd_neb.f90	modi_ini_neb.f90
mpa/turb/internals	compute_mf_cloud_bigaus.f90	compute_mf_cloud_direct.f90	compute_mf_cloud_stat.f90

	th_r_from_thl_rt_3d.f90		
mpa/turb/module	modi_compute_frac_ice1d.f90	modi_compute_mf_cloud_bigaus.f90	modi_compute_mf_cloud_direct.f90
	modi_compute_mf_cloud_stat.f90	modi_th_r_from_thl_rt_3d.f90	

**Modified:**

ald/adiab	elaskaw.F90		
arp/module	yomparar.F90	yomppvi.F90	
arp/namelist	namparar.h	namppvi.h	
arp/phys_dmn	apl_arome.F90	suparar.F90	suphmpa.F90
arp/pp_obs	apache.F90		
arp/setup	suppvi.F90		
mpa/micro/externals	aro_adjust.f90	aro_rain_ice.f90	aro_subbudget.f90
	aroini_budget.f90	aroini_micro.f90	aroini_neb.f90
mpa/micro/interface	aro_adjust.h	aro_rain_ice.h	aroini_budget.h
	aroini_micro.h	aroini_neb.h	
mpa/micro/internals	cart_compress.f90	condensation.f90	gamma.f90
	gamma_inc.f90	ice_adjust.f90	ini_budget.f90
	ini_neb.f90	ini_rain_ice.f90	rain_ice.f90
mpa/micro/module	modd_conf.f90	modd_cst.f90	modd_dyn.f90
	modd_elec_descr.f90	modd_les.f90	modd_lunit.f90
	modd_neb.f90	modd_nsv.f90	modd_param_c2r2.f90
	modd_param_ice.f90	modd_parameters.f90	modd_rain_ice_descr.f90
	modd_rain_ice_param.f90	modddb_budget.f90	modi_condensation.f90
	modi_gamma.f90	modi_ice_adjust.f90	modi_ini_budget.f90
	modi_ini_neb.f90	modi_ini_rain_ice.f90	modi_rain_ice.f90
mpa/turb/externals	aro_shallow_mf.f90	aro_turb_mnh.f90	aroini_turb.f90
	arp_shallow_mf.f90		
mpa/turb/interface	aro_shallow_mf.h	aro_turb_mnh.h	aroini_turb.h
mpa/turb/internals	bl89.f90	bl_depth_diag_1d.f90	bl_depth_diag_3d.f90
	compute_bl89_ml.f90	compute_entr_detr.f90	compute_frac_ice1d.f90
	compute_frac_ice2d.f90	compute_frac_ice3d.f90	compute_function_thermo_mf.f90
	compute_mf_cloud.f90	compute_mf_cloud_bigaus.f90	compute_mf_cloud_direct.f90
	compute_mf_cloud_stat.f90	compute_updraft.f90	gx_m_m.f90
	gx_m_u.f90	gx_u_m.f90	gx_v_uv.f90

	gx_w_uw.f90	gy_m_m.f90	gy_m_v.f90
	gy_u_uv.f90	gy_v_m.f90	gy_w_vw.f90
	gz_m_m.f90	gz_m_w.f90	gz_u_uw.f90
	gz_v_vw.f90	gz_w_m.f90	ini_cmfshall.f90
	ini_cturb.f90	mf_turb.f90	prandtl.f90
	rmc01.f90	sbl_depth.f90	shallow_mf.f90
	shuman_mf.f90	shumanaro.f90	th_r_from_thl_rt_1d.f90
	th_r_from_thl_rt_2d.f90	th_r_from_thl_rt_3d.f90	thl_rt_from_th_r_mf.f90
	tke_eps_sources.f90	tm06.f90	tm06_h.f90
	tridiag.f90	tridiag_massflux.f90	tridiag_thermo.f90
	tridiag_tke.f90	tridiag_wind.f90	turb.f90
	turb_ver.f90	turb_ver_dyn_flux.f90	turb_ver_sv_corr.f90
	turb_ver_sv_flux.f90	turb_ver_thermo_corr.f90	turb_ver_thermo_flux.f90
mpa/turb/module	modd_cmfshall.f90	mode_prandtl.f90	mode_thermo_mono.f90
	modi_bl89.f90	modi_bl_depth_diag.f90	modi_bl_depth_diag_3d.f90
	modi_compute_bl89_ml.f90	modi_compute_entr_detr.f90	modi_compute_frac_ice.f90
	modi_compute_frac_ice1d.f90	modi_compute_frac_ice3d.f90	modi_compute_function_thermo_mf.f90
	modi_compute_mf_cloud.f90	modi_compute_mf_cloud_bigaus.f90	modi_compute_mf_cloud_direct.f90
	modi_compute_mf_cloud_stat.f90	modi_compute_updraft.f90	modi_gradient_m.f90
	modi_gradient_u.f90	modi_gradient_v.f90	modi_gradient_w.f90
	modi_mf_turb.f90	modi_prandtl.f90	modi_rmc01.f90
	modi_shallow_mf.f90	modi_shumanaro.f90	modi_th_r_from_thl_rt_1d.f90
	modi_th_r_from_thl_rt_2d.f90	modi_th_r_from_thl_rt_3d.f90	modi_thl_rt_from_th_r_mf.f90
	modi_tke_eps_sources.f90	modi_tm06.f90	modi_tm06_h.f90
	modi_tridiag.f90	modi_tridiag_massflux.f90	modi_tridiag_thermo.f90
	modi_tridiag_tke.f90	modi_tridiag_wind.f90	modi_turb.f90
	modi_turb_ver.f90	modi_turb_ver_dyn_flux.f90	modi_turb_ver_sv_corr.f90
	modi_turb_ver_sv_flux.f90	modi_turb_ver_thermo_corr.f90	modi_turb_ver_thermo_flux.f90
	modi_updraft_sope.f90		

## Doc:

1) Bugfixes for mse (prep configuration [name of PGD file added in NAMPHMSE]), separation of arp/mse (new argument to aro\_surf\_diag to remove a USE arpege module), phasing of driver\_off\_omp.F90, mse/interfaces regenerated, fixes for mse setup (suphmse\_surface and aroini\_surf\*).

2) Bugfixes of 3 INTENT(IN) instead of (INOUT) arguments in ALARO physics (accdev.F90 and acnebsm.F90) .

**Project:** arpege,Meso-NH surface  
**ClearCase branch:** mrpm637\_CY38\_arome\_bf3

**Modified:**

arp/dia	aro_surf_diagh.F90		
arp/phys_dmn	accdev.F90	acnebsm.F90	suphmse_surface.F90
mse/externals	aro_ground_param.F90	aro_surf_diag.F90	aroini_surfa.F90
	aroini_surfb.F90	atm2sx_env.F90	atm2sx_field.F90
	ini_prep_surfex_aro.F90	suallmse.F90	xxyy2dxdy.F90
mse/interface	aro_ground_diag.h	aro_ground_param.h	aro_oi_main.h
	aro_put_zs.h	aro_surf_diag.h	aroini_surf.h
	aroini_surfa.h	aroini_surfb.h	aroini_surfc.h
	atm2sx_env.h	atm2sx_field.h	close_buffer_surfex.h
	close_prep_surfex_aro.h	deallmse.h	get_bufc0.h
	get_bufn0.h	get_bufn1.h	get_bufx0.h
	get_bufx1.h	ini_prep_surfex_aro.h	prep_surf_aro.h
	put_bufc0.h	put_bufn0.h	put_bufn1.h
	put_bufx0.h	put_bufx1.h	suallmse.h
mse/internals	fmclos.F90	read_surft1_aro.F90	read_surfx1_aro.F90
	read_surfx2_aro.F90	write_surfl1_aro.F90	write_surfn1_aro.F90
	write_surft1_aro.F90	write_surfx1_aro.F90	write_surfx2_aro.F90
	xxyy2lfi.F90		
mse/module	modd_io_surf_aro.F90		
mse/new	arowrgp_surf2.F90		
mse/programs	driver_off_omp.F90	offline.F90	

**Doc:**

*Phasing "driver\_off\_omp.F90" with modifications of Philippe Marguinaud.*

- 1) Catch-up of last bugfixes from SURVEX 7.2 .
- 2) Fix phasing problems.

**Project:** arpege,Meso-NH physique altitude,Meso-NH surface,surfex  
**ClearCase branch:** mrpm637\_CY38\_bfarome

**Added:**

surfex/SURFEX	allocate_physio.F90	common_parts.F90	common_parts2.F90
	default_dst.F90	default_slt.F90	dif_layer.F90
	dslt_dep.F90	dslt_init_modes.F90	dslt_init_names.F90
	dslt_velgrav1d.F90	dustflux_get.F90	dustflux_get_mb.F90
	init_chemicaln.F90	init_dst.F90	init_slt.F90
	modd_dstmb1.F90	mode_dslt_surf.F90	read_default_dst.F90
	read_default_slt.F90	read_dst_conf.F90	read_slt_conf.F90

**Modified:**

arp/module	yomparar.F90		
arp/phys_dmn	suphmse_surface.F90		
mpa/turb/interface	aroini_turb.h		
mse/externals	aro_ground_diag.F90	aro_ground_param.F90	aro_oi_main.F90
	aro_put_zs.F90	aro_surf_diag.F90	aroini_surfa.F90
	aroini_surfb.F90	aroini_surfc.F90	atm2sx_env.F90
	atm2sx_field.F90	deallmse.F90	ini_prep_surfex_aro.F90
	prep_surf_aro.F90	suallmse.F90	xxyy2dxdy.F90
mse/interface	aro_oi_main.h		
mse/internals	aroend_io_surf_n.F90	aroinit_io_surf_n.F90	read_surfx1_aro.F90
	read_surfx2_aro.F90	set_surfex_file_name_aro.F90	write_surfl1_aro.F90
	write_surfn1_aro.F90	write_surfx1_aro.F90	write_surfx2_aro.F90
	xxyy2lfi.F90		
mse/module	modd_io_surf_aro.F90		
mse/new	arordgp_surf2.F90	arowrgp_surf2.F90	
mse/programs	driver_off_omp.F90	offline.F90	prep.F90
surfex/OFFLIN	init_write_txt.F90	modd_write_txt.F90	mode_write_surf_ol.F90
	modn_io_offline.F90	oi_cacsts.F90	oi_control.F90
	oi_tsl.F90		
surfex/SURFEX	allocate_physio.F90	av_pgd.F90	build_emisstabn.F90
	ch_aer_emission.F90	ch_emission_fluxn.F90	co2_initn.F90
	common_parts.F90	common_parts2.F90	compute_isba_parameters.F90

convert\_patch\_isba.F90  
coupling\_flake\_orographyn.F90  
coupling\_isba\_canopyn.F90  
coupling\_seafluxn.F90  
coupling\_tebn.F90  
cover301\_573.F90  
default\_dstn.F90  
default\_prep\_seaflux.F90  
default\_prep\_watflux.F90  
diag\_teb\_garden\_initn.F90  
dslt\_dep.F90  
dslt\_velgrav1d.F90  
dst\_init\_names.F90  
dustflux\_get\_mb.F90  
horibl\_surf.F90  
init\_dstn.F90  
init\_isban.F90  
init\_sltn.F90  
init\_tebn.F90  
interpol\_npts.F90  
modd\_dstmbl.F90  
modd\_prep\_flake.F90  
modd\_prep\_teb.F90  
modd\_sltn.F90  
mode\_coupling\_canopy.F90  
mode\_dstmbl.F90  
mode\_read\_extern.F90  
modn\_dst.F90  
modn\_prep\_seaflux.F90  
modn\_prep\_teb\_garden.F90  
prep\_flake\_extern.F90  
prep\_hor\_isba\_field.F90  
prep\_hor\_snow\_fields.F90  
prep\_hor\_watflux\_field.F90

cotwo.F90  
coupling\_flaken.F90  
coupling\_isban.F90  
coupling\_seawat\_sbIn.F90  
coupling\_watflux\_orogn.F90  
dealloc\_isban.F90  
default\_prep\_flake.F90  
default\_prep\_teb.F90  
default\_sltn.F90  
diag\_townn.F90  
dslt\_init\_modes.F90  
dst\_dep.F90  
dst\_velgrav1d.F90  
flag\_diag\_update.F90  
init\_chemicaln.F90  
init\_flaken.F90  
init\_seafluxn.F90  
init\_surf\_atmn.F90  
init\_top.F90  
modd\_dst.F90  
modd\_dstn.F90  
modd\_prep\_isba.F90  
modd\_prep\_teb\_garden.F90  
modd\_sltn\_surf.F90  
mode\_dsltn\_surf.F90  
mode\_dstmbl\_mb.F90  
mode\_read\_grib.F90  
modn\_prep\_flake.F90  
modn\_prep\_surf\_atm.F90  
modn\_prep\_watflux.F90  
prep\_grib\_grid.F90  
prep\_hor\_seaflux\_field.F90  
prep\_hor\_teb\_field.F90  
prep\_inland\_water.F90

coupling\_dstn.F90  
coupling\_ideal\_flux.F90  
coupling\_seaflux\_orogn.F90  
coupling\_sltn.F90  
coupling\_watfluxn.F90  
default\_dst.F90  
default\_prep\_isba.F90  
default\_prep\_teb\_garden.F90  
default\_sltn.F90  
dif\_layer.F90  
dslt\_init\_names.F90  
dst\_init\_modes.F90  
dustflux\_get.F90  
hor\_interpol\_arome.F90  
init\_dst.F90  
init\_ideal\_flux.F90  
init\_sltn.F90  
init\_teb\_gardenn.F90  
init\_watfluxn.F90  
modd\_dst\_surf.F90  
modd\_flaken.F90  
modd\_prep\_seaflux.F90  
modd\_prep\_watflux.F90  
modd\_sltn.F90  
mode\_dst\_surf.F90  
mode\_dstmblutl.F90  
mode\_sltn\_surf.F90  
modn\_prep\_isba.F90  
modn\_prep\_teb.F90  
prep\_flake.F90  
prep\_hor\_flake\_field.F90  
prep\_hor\_snow\_field.F90  
prep\_hor\_teb\_garden\_field.F90  
prep\_isba.F90

prep_isba_extern.F90	prep_nature.F90	prep_sea.F90
prep_seaflux.F90	prep_seaflux_extern.F90	prep_snow_extern.F90
prep_surf_atm.F90	prep_teb.F90	prep_teb_extern.F90
prep_teb_garden.F90	prep_teb_garden_extern.F90	prep_town.F90
prep_watflux.F90	prep_watflux_extern.F90	read_all_namelists.F90
read_covers_param.F90	read_default_dst.F90	read_default_dstn.F90
read_default_sltn.F90	read_default_sltn.F90	read_dst_conf.F90
read_dst_confn.F90	read_flake_confn.F90	read_flake_date.F90
read_gr_snow.F90	read_ideal_flux_conf.F90	read_isba_date.F90
read_nam_prep_flaken.F90	read_nam_prep_gardenn.F90	read_nam_prep_isban.F90
read_nam_prep_seafluxn.F90	read_nam_prep_surfn.F90	read_nam_prep_tebn.F90
read_nam_prep_watfluxn.F90	read_namelists_dst.F90	read_namelists_sltn.F90
read_pgd_isba_parn.F90	read_prep_flake_conf.F90	read_prep_isba_conf.F90
read_prep_seaflux_conf.F90	read_prep_surf_atm_conf.F90	read_prep_teb_conf.F90
read_prep_teb_garden_conf.F90	read_prep_watflux_conf.F90	read_seaflux_date.F90
read_sltn_conf.F90	read_sltn_confn.F90	read_sso_canopyn.F90
read_surf_atm_date.F90	read_teb_date.F90	read_teb_gardenn.F90
read_tebn.F90	read_watflux_date.F90	set_surfex_filein.F90
sltn_dep.F90	sltn_init_modes.F90	sltn_init_names.F90
sltn_velgrav1d.F90	sso_z0_frictionn.F90	town_presence.F90
write_diag_seb_isban.F90	write_dst_conf.F90	writesurf_isban.F90
writesurf_pgd_isba_parn.F90	writesurf_teb_gardenn.F90	zoom_pgd_surf_atm.F90

**Doc:**

- 1) Last bugfixes from surfex v7.2 .
- 2) Minor fix in mf\_phys.F90 .
- 3) Computation of surface turbulent exchange coefficients under LCOEFK\_TOMS logical switch (achmtls.F90 - from Francois Bouysse).
- 4) Remove useless prints in SURFEX .
- 5) Fix in mpa/turb/ini\_cturb.f90 , in order to have same exchange coefficients (Canuto 2002) between turbulence scheme used in CANOPY (Surfex) and the one of the atmosphere (mpa/turb).

**Project:** Meso-NH physique altitude,surfex  
**ClearCase branch:** mrpm637\_CY38\_surfex7

**Added:**

mse/externals	aro_ground_diag_z0.F90		
mse/interface	aro_ground_diag_z0.h		
mse/programs	convert_ecoclimap_param.F90		
surfex/SURFEX	assim_inland_watern.F90	assim_isba_update_snow.F90	assim_isban.F90
	assim_nature_isba_ekf.F90	assim_nature_isba_oi.F90	assim_naturen.F90
	assim_read_sst_from_file.F90	assim_sean.F90	assim_surf_atmn.F90
	assim_tebn.F90	assim_townn.F90	read_assim_conf.F90
	read_namelists_assim.F90		

**Modified:**

arp/phys_dmn	achmtls.F90	aplpar.F90	mf_phys.F90
mpa/turb/internals	ini_cturb.f90		
mse/externals	aro_ground_diag_z0.F90		
mse/interface	aro_ground_diag_z0.h		
mse/programs	convert_ecoclimap_param.F90	oi_main.F90	
surfex/OFFLIN	get_date_ol.F90	init_outfn_sean.F90	init_outfn_surf_atmn.F90
	init_outfn_tebn.F90	init_outfn_watern.F90	mode_write_surf_ol.F90
	ncpost.F90	oi_cacsts.F90	oi_control.F90
	oi_hor_extrapol_surf.F90	open_aux_io_surf_lfi.F90	sxpost.F90
surfex/SURFEX	assim_inland_watern.F90	assim_isba_update_snow.F90	assim_isban.F90
	assim_nature_isba_ekf.F90	assim_nature_isba_oi.F90	assim_naturen.F90
	assim_read_sst_from_file.F90	assim_sean.F90	assim_surf_atmn.F90
	assim_tebn.F90	assim_townn.F90	average_diag_isban.F90
	canopy.F90	canopy_evol.F90	common_parts.F90
	compute_isba_parameters.F90	convert_cover_isba.F90	cotwores.F90
	coupling_dstn.F90	coupling_flake_orographyn.F90	coupling_flaken.F90
	coupling_isba_canopyn.F90	coupling_isba_orographyn.F90	coupling_isba_svatn.F90
	coupling_isban.F90	coupling_seaflux_orogn.F90	coupling_surf_atmn.F90
	coupling_teb_orographyn.F90	coupling_tebn.F90	coupling_tsz0n.F90
	coupling_watflux_orogn.F90	dealloc_isban.F90	default_assim.F90
	default_diag_flake.F90	default_diag_ideal.F90	default_diag_isba.F90
	default_diag_seaflux.F90	default_diag_surf_atm.F90	default_diag_teb.F90
	default_diag_watflux.F90	default_dst.F90	diag_evap_isban.F90
	diag_flake_initn.F90	diag_ideal_initn.F90	diag_isba_initn.F90

diag\_misc\_isban.F90  
diag\_teb\_garden\_initn.F90  
diag\_watflux\_initn.F90  
dustflux\_get.F90  
flake\_albedo.F90  
hor\_interpol.F90  
hor\_interpol\_cartesian.F90  
hor\_interpol\_latlon.F90  
hydro\_sgh.F90  
ini\_var\_from\_patch.F90  
init\_flaken.F90  
init\_isban.F90  
init\_teb\_gardenn.F90  
interpol\_npts.F90  
modd\_assim.F90  
mode\_coupling\_canopy.F90  
mode\_gridtype\_gauss.F90  
mode\_read\_grib.F90  
modn\_teb\_gardenn.F90  
prep\_ctrl\_isba.F90  
prep\_ocean\_unif.F90  
prep\_sso\_canopy.F90  
read\_gr\_snow.F90  
read\_isba\_conf.F90  
read\_namelists\_assim.F90  
read\_namelists\_idealn.F90  
read\_namelists\_seafluxn.F90  
read\_namelists\_watfluxn.F90  
read\_pgd\_seaflux\_parn.F90  
read\_seaflux\_sbIn.F90  
read\_surf\_atm\_date.F90  
read\_teb\_garden\_conf.F90  
soilstress.F90  
sso\_z0\_frictionn.F90

diag\_seaflux\_initn.F90  
diag\_teb\_initn.F90  
dif\_layer.F90  
dustflux\_get\_mb.F90  
get\_surf\_varn.F90  
hor\_interpol\_arome.F90  
hor\_interpol\_conf\_proj.F90  
hor\_interpol\_rotlatlon.F90  
hydro\_soildif.F90  
ini\_var\_from\_vegtype\_data.F90  
init\_ideal\_flux.F90  
init\_seafluxn.F90  
init\_tebn.F90  
latlonmask\_ign.F90  
modd\_dstn.F90  
mode\_dstmblutl.F90  
mode\_hydro\_dif.F90  
mode\_read\_netcdf\_mercator.F90  
pack\_grid\_ign.F90  
prep\_hor\_isba\_field.F90  
prep\_snow\_extern.F90  
read\_assim\_conf.F90  
read\_gridtype\_ign.F90  
read\_nam\_grid\_gauss.F90  
read\_namelists\_flaken.F90  
read\_namelists\_isba.F90  
read\_namelists\_surfn.F90  
read\_pgd\_isba\_parn.F90  
read\_pgd\_seafluxn.F90  
read\_sso\_canopyn.F90  
read\_surf\_isba\_parn.F90  
read\_watflux\_sbIn.F90  
sso\_be04\_frictionn.F90  
update\_esm\_flaken.F90

diag\_surf\_atmn.F90  
diag\_townn.F90  
dslt\_dep.F90  
extrapol\_fields.F90  
get\_xyall\_ign.F90  
hor\_interpol\_buffer.F90  
hor\_interpol\_gauss.F90  
hydro.F90  
ini\_data\_rootfrac.F90  
init\_dst.F90  
init\_isba\_sbIn.F90  
init\_surf\_atmn.F90  
init\_watfluxn.F90  
mixtIn.F90  
modd\_sltn.F90  
mode\_geo\_gauss.F90  
mode\_read\_extern.F90  
modn\_assim.F90  
pgd\_ecoclimap2\_data.F90  
prep\_isba\_extern.F90  
prep\_snow\_grib.F90  
read\_flake\_sbIn.F90  
read\_isba\_canopyn.F90  
read\_nam\_grid\_ign.F90  
read\_namelists\_garden.F90  
read\_namelists\_isban.F90  
read\_namelists\_tebn.F90  
read\_pgd\_isban.F90  
read\_pgd\_teb\_gardenn.F90  
read\_surf.F90  
read\_teb\_canopyn.F90  
snow\_cover\_1layer.F90  
sso\_beljaars04.F90  
update\_rad\_isban.F90

update\_rad\_seawat.F90  
write\_surf\_atmn.F90  
zoom\_pgd\_isba.F90

urban\_snow\_evol.F90  
writesurf\_teb\_gardenn.F90  
zoom\_pgd\_isba\_full.F90

vegetation\_update.F90  
zoom\_pgd\_cover.F90  
zoom\_pgd\_seaflux.F90

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## **SOCI Cornel**

### **Doc:**

*Introduce correlation function used at the SHMI in MESAN surface analysis.*

**Project:** arpege,odb,auxiliaire  
**ClearCase branch:** mrpa664\_CY38\_mescan

### **Modified:**

arp/canari	cacova.F90	cah2as.F90	cahuax.F90
	camera.F90	canada.F90	canali.F90
	canari.F90	cancer.F90	caneva.F90
	capotx.F90	capsax.F90	carnak.F90
	casela.F90	casgqa.F90	casgra.F90
	casgva.F90	casnas.F90	caspia.F90
	cassva.F90	castas.F90	cat2as.F90
	catrma.F90	cav1as.F90	cavodk.F90
	cavtax.F90		
arp/control	scan2m.F90		
arp/function	qastat.h		
arp/module	qalori.F90	qanada.F90	
arp/namelist	nalori.h		
arp/op_obs	hdepart.F90		
arp/pp_obs	ppobsac.F90		
odb/ddl	canaco_robhdr.sql	canaco_robody.sql	cancer_robhdr.sql
	cavodk_robhdr.sql		
xrd/fa/mt	farine_mt.F		

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## **SOKKA Niko**

### **Doc:**

#### *GENERAL DESCRIPTION:*

*This set of modifications constitutes the HIRLAM contribution to the CY38 bugfix version 7.  
All modifications have been merged to the level of cy38\_t1.06 and tested on the ECMWF's c1a platform.*

*1) Date and name of Contributor: 26/06/2012 - Ulf Andrae, SMHI Sweden*

*Model or configuration affected by the modset: LAM ( aladin, alaro, arome, harmonie )*

*Context and cycle: dev 38\_t1*

*Type of file/resource to be modified: Binary*

*Description of the set of modifications:*

*Add two missing ifdef statements.*

*Modified:*

*surfex/SURFEX/assim\_read\_sst\_from\_file.F90*

*surfex/SURFEX/assim\_tebn.F90*

*2) Date and name of Contributor: 14/04/2012 - Sami Saarinen, CSC Finland*

*Model or configuration affected by the modset: LAM ( aladin, alaro, arome, harmonie )*

*Context and cycle: dev 38\_t1*

*Type of file/resource to be modified: Binary*

*Description of the set of modifications:*

*Bugfixes and some modifications.*

*Modified:*

*arp/control/cnt0.F90*

*arp/control/stepo.F90*

*xrd/module/samio\_mod.F90*

*3) Date and name of Contributor: 01/04/2012 - Sami Saarinen, CSC Finland*

*Model or configuration affected by the modset: LAM ( aladin, alaro, arome, harmonie )*  
*Context and cycle: dev 38\_t1*  
*Type of file/resource to be modified: Binary*

*Description of the set of modifications:*

*Bugfix, check of logical variable through un-allocated pointer structure.*

*Modified:*  
*ald/utility/deello.F90*

*4) Date and name of Contributor: 14/06/2012 - Niko Sokka, FMI Finland*  
*Model or configuration affected by the modset: LAM ( aladin, alaro, arome, harmonie )*  
*Context and cycle: dev 38\_t1*  
*Type of file/resource to be modified: Binary*

*Description of the set of modifications:*

*C1a-induced portability fix.*

*Modified:*  
*arp/phys\_dmn/acevolet.F90*

**Project:** aladin,arpege,surfex,auxiliaire  
**ClearCase branch:** sokka\_CY38\_bfv7\_contrib\_hirlam

**Modified:**

ald/utility	deello.F90	
arp/control	cnt0.F90	
arp/phys_dmn	acevolet.F90	
surfex/SURFEX	assim_read_sst_from_file.F90	assim_tebn.F90
xrd/module	samio_mod.F90	

**Doc:**

*GENERAL DESCRIPTION:*

*This set of modifications constitutes the HIRLAM contribution to the CY38, except the EDMFM contribution which will be delivered later in a separate patch.*

*All modifications have been merged to the level of cy38\_main.01 and tested on the ECMWF's c1a platform. On c1a it is verified that all the mitraillette multiproc configurations, except the 801 failing already without the HIRLAM modifications, produce the same results with and without the HIRLAM modifications.*

*1) Date and name of Contributor:*

*16/02/2012  
Ulf Andrae, SMHI Sweden*

*Model or configuration affected by the modset:*

*LAM: harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary, namelist namhlopt*

*Description of the set of modifications:*

*Removal of obsolete HIRLAM options and physics routines from HARMONIE. The routines handled by the LHL flag and the corresponding interfaces in e.g. mf\_phys.F90 have been removed. Routines still worked with and therefore kept are hlrad.F90, hlradia.F90, hlcldiag.F90 and corresponding modules and setup routines. Note that these setup routines are not called from anywhere at the moment. The change has no impact on the current testbed configurations.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Deleted:*

*arp/function/hlesat.h  
arp/function/hlesatsfun.h  
arp/function/hlesatstab.h  
arp/module/yhlcond.F90  
arp/module/yhloption.F90  
arp/module/yhlturb.F90*

arp/namelist/namhlopt.h  
arp/phys\_dmn/hl\_aplpar.F90  
arp/phys\_dmn/hlaconds.F90  
arp/phys\_dmn/hlavcbr.F90  
arp/phys\_dmn/hlclidia.F90  
arp/phys\_dmn/hlcloudcv.F90  
arp/phys\_dmn/hlcondcv.F90  
arp/phys\_dmn/hlcondfc.F90  
arp/phys\_dmn/hlconds.F90  
arp/phys\_dmn/hlcondst.F90  
arp/phys\_dmn/hlnocondcv.F90  
arp/phys\_dmn/hlprevap.F90  
arp/phys\_dmn/hlqcamplic.F90  
arp/phys\_dmn/hlstraco.F90  
arp/phys\_dmn/hltabdef.F90  
arp/phys\_dmn/hltend2flx.F90  
arp/phys\_dmn/hltridiag.F90  
arp/phys\_dmn/hlturb.F90  
arp/phys\_dmn/hlvcbr.F90  
arp/setup/suhlcond.F90  
arp/setup/suhloption.F90  
arp/setup/suhlph.F90  
arp/setup/suhlturb.F90

**Modified:**

arp/adiab/cptend.F90  
arp/adiab/cputqy.F90  
arp/phys\_dmn/accdev.F90  
arp/phys\_dmn/cpchet.F90  
arp/phys\_dmn/hlclidiag.F90  
arp/phys\_dmn/hlevapprec.F90  
arp/phys\_dmn/hlrad.F90  
arp/phys\_dmn/mf\_phys.F90  
arp/setup/su0yoma.F90  
arp/setup/sudefo\_gflattr.F90  
arp/setup/suhlconst.F90  
arp/setup/suphy.F90  
sat/programs/screen\_1c.F90

2) Date and name of Contributor:

16/01/2012

*Ulf Andrae, SMHI Sweden*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*This changeset brings updates to include all code changes needed to be able to run a simple MUSC forecast with forcing from a 3D run. Please note that the forcing generation for MUSC is still under development. None of the special cases like GABLS1 or GABLS3 are taken care of in this changeset. The change has no meteorological impact on the 3D configurations.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Added:*

*odb/ddl.RSTBIAS/odb98.flags  
uti/aca  
uti/aca/acadfa1D\_main.F90  
uti/aca/acadfa\_sueframe.F90  
uti/aca/prepsurf\_arome.F90  
uti/aca/real2spec.F90*

*Modified:*

*arp/module/yom\_ygfl.F90  
arp/phys\_dmn/mf\_phys.F90  
arp/setup/suct0.F90  
arp/setup/sudefo\_gflattr.F90  
arp/setup/sulsforc.F90  
arp/setup/susc2b.F90  
mpa/micro/internals/ini\_budget.f90  
tal/external/etrans\_end.F90*

3) *Date and name of Contributor:*

25/10/2011

Ulf Andrae, SMHI Sweden

*Model or configuration affected by the modset:*

LAM: *aladin, alaro, arome, harmonie*

*Context and cycle:*

dev

38\_t1

*Type of file/resource to be modified:*

Binary

*Description of the set of modifications:*

*A set of simple bugfixes: addition of missing LELAM key, removal of return statement from main program, correction of local hour bounds, correction for uninitialized values and addition of dummy mpi routine.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/adiab/call\_sl.F90*

*arp/obs\_preproc/redrp\_no\_sq.F90*

*odb/extras/mpi\_serial/cmpi.c*

*sat/programs/rttov\_ascii2bin\_scattcoef.F90*

4) *Date and name of Contributor:*

21/09/2011

Ulf Andrae, SMHI Sweden

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Two bugfixes to make cy38 mitraillette multiproc to run on c1a:*

- 1. Correct SIGSEGV, subroutine dfi3 needs always different calls depending on YQ%LGP.*
- 2. Correct SIGFPE when the variable RFPMU is not allocated.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/dfi/dfi2.F90  
arp/dia/preset\_grib\_template.F90*

*5) Date and name of Contributor:*

*14/04/2011  
Trygve Aspeli, met.no Norway*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary, namelist namfpc*

*Description of the set of modifications:*

*A new namelist variable LCRITSNOWTEMP and a new horizontal correction method (ICORR=7) aimed for snow is introduced in fullpos. This correction does not remove snow depending on a critical surface temperature (normally 273.16K).*

*Default is the old way of doing it (LCRITSNOWTEMP=.true.) LCRITSNOWTEMP must be set to false to use the new method.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/fullpos/fpcorphy.F90  
arp/fullpos/fphor12.F90  
arp/fullpos/sufpc.F90  
arp/module/yomfpc.F90  
arp/namelist/namfpc.h*

*6) Date and name of Contributor:*

*09/02/2012*

*Trygve Aspelien, met.no Norway*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Test against an epsilon value when testing the cadre definitions for FA files.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*xrd/fa/mt/facadi\_mt.F*

*7) Date and name of Contributor:*

*05/12/2011*

*Lisa Bengtsson, SMHI Sweden*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev*

*38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Updates to CA scheme:*

- 1. Initialization of CA specific variables*
- 2. Updated computations of where the CA should be active as a function of CAPE*
- 3. Tuning*

*Tests on ECMWF platform with no data assimilation, 12 hour forecast, ifs boundaries, surfex, no dfi, alaro-physics, domain = sweden\_5.5.*

- *LCUCONV\_CA = FALSE to compare with reference (i.e none of the new code is activated and this experiment should not influence any meteorological fields). No impact on norms.*
- *LCUCONV\_CA = TRUE (activate CA-scheme). Results looks reasonable.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/phys\_dmn/accvud.F90*

*8) Date and name of Contributor:*

*28/10/2011*

*Lisa Bengtsson, SMHI Sweden*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev*

*38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Cloud diagnostic updates:*

- *Implement cloud class diagnostics based on geopotential height in AROME. With NAMPHY2:LWMOCLOUD=T the height for low/medium/high clouds are based on geopotential height rather than on eta level as in the current method, the change only effects the diagnostics of clouds. LWMOCLOUD=F as default.*
- *Implement maximum-random weighted overlap assumptions following C. Wittman approach for ALARO also in AROME. The weighted assumptions are activated setting NAMPHY:LACPANMX=T. The weight used is NAMPHY0:WMXOV. With WMXOV=1, maximum overlap is used. LACPANMXP=F as*

default.

- Change the default value of LWMOLOUD, and LACPANPX to TRUE in ALARO (harmonie), with the weight WMXOV=0.81 based on 60 levels

Details about the provided files:

clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":

Modified:

arp/phys\_dmn/apl\_arome.F90

9) Date and name of Contributor:

05/12/2011

Lisa Bengtsson, SMHI Sweden

Karl-Ivar Ivarsson, SMHI Sweden

Model or configuration affected by the modset:

LAM: aladin, alaro, arome, harmonie

Context and cycle:

dev

38\_t1

Type of file/resource to be modified:

Binary

Description of the set of modifications:

The additional code, and modifications to existing code regards the computations of condensation minus evaporation in the Rasch-Kristjansson scheme.

aplp.F90:

1. Initialization of RK historic fields of T, qv, and qc
2. Replace double call to acnebcond.F90 by an analytical solution of dRH/dCloud
3. Correction of computation of increment containing Qv due to turbulent diffusion
4. Correction of RK-tendency computations (correction of sign)

5. Add PTW wet-bulb temperature in the call to accdev.F90

accdev.F90:

1. Add PTW as input argument
2. Add calls to hlevapprec.F90 and hlsnowmelt.F90 for computation of evaporation and melting of rain and snow.
3. Bug-correction in computation of ZCMEC1

acnebcond.F90:

1. Modifications and cleaning in RK-scheme

accvud.F90:

1. Initialization of CA specific variables
2. Updated computations of where the CA should be active as a function of CAPE
3. Tuning

Tests on ECMWF platform:

No data assimilation, 12 hour forecast, ifs boundaries, surfex, no dfi, alaro-physics, domain = sweden\_5.5.

1. LRCDEV = FALSE to compare with reference (i.e none of the new code is activated and this experiment should not influence any meteorological fields). No impact on norms.
2. LRCDEV = TRUE and LXRDEV = FALSE (activate RK-scheme). Results looks reasonable.

Details about the provided files:

clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":

Added:

arp/phys\_dmn/hlevapprec.F90  
arp/phys\_dmn/hlsnowmelt.F90

Modified:

arp/phys\_dmn/accdev.F90  
arp/phys\_dmn/acnebcond.F90  
arp/phys\_dmn/aplpar.F90  
arp/phys\_dmn/hlcldiag.F90

10) Date and name of Contributor:

05/07/2011

Magnus Lindskog, SMHI Sweden

Model or configuration affected by the modset:

LAM: aladin, alaro, arome, harmonie

Context and cycle:

dev

38\_t1

Type of file/resource to be modified:

Binary

Description of the set of modifications:

Out of bounds fixes in RTTOV preparation.

Details about the provided files:

clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":

Modified:

arp/op\_obs/hradp.F90

arp/op\_obs/hradpad.F90

arp/op\_obs/hradptl.F90

11) Date and name of Contributor:

24/01/2011

Philippe Marguinaud, Meteo France

Model or configuration affected by the modset:

LAM: aladin, alaro, arome, harmonie

Context and cycle:

dev

*38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Remove obsolete padding.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/module/yomio\_serv\_hdr.F90*

*12) Date and name of Contributor:*

*12/12/2011*

*Toon Moene, KNMI The Netherlands*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev*

*38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Use correct Fortran code for assignment of array of different shape.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/control/scan2m.F90*

*13) Date and name of Contributor:*

*16/12/2011*

*Enda O'Brien, ICHEC Ireland*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev*

*38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Avoid computation for zero sized array.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*mpa/turb/externals/aro\_turb\_mnh.f90*

*14) Date and name of Contributor:*

*21/12/2011*

*Enda O'Brien, ICHEC Ireland*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Avoid return without second call to DrHook.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*mpa/turb/internals/compute\_updraft.f90*

*15) Date and name of Contributor:*

*20/02/2011*

*Sami Saarinen, CSC Finland*

*Model or configuration affected by the modset:*

*LAM: arome*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Corrected and updated version of the asynchronous write I/O (SAMIO) for AROME. CPP macro USE\_SAMIO, logical switch SAMIO\_NUM\_IOPES.*

*Other changes: most of the warning messages removed. Some of them were genuine bugs.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Deleted:*

*xrd/support/opfla\_perfmon.c*

*xrd/support/wrap\_ftn.c*

*Modified:*

*arp/control/cnt0.F90*

*arp/programs/master.F90*

*bla/library/dynamic\_linking.c*

*odb/aux/info.c*

*odb/aux/iosetbuf.c*

*odb/aux/lzw.c*

*odb/aux/memory.c*

*odb/aux/newio.c*

*odb/aux/odbi\_client.c*

*odb/aux/odbi\_common.c*

*odb/aux/odbi\_direct.c*

*odb/aux/odbi\_server.c*

*odb/aux/pcma.c*

*odb/aux/result.c*

*odb/compiler/yacc.y*

*odb/include/codb.h*

*odb/include/privpub.h*

*odb/lib/cmdbkeys.c*

*odb/lib/codb.c*

*odb/lib/ctx.c*

*odb/lib/eq\_regions.c*

*odb/lib/forfunc.c*

*odb/lib/poolmasking.c*

*odb/lib/tracing.c*

*odb/lib/var.c*

*odb/tools/dcagen.c*

*odb/tools/hcat.c*

*odb/tools/odb2rgg.c*

odb/tools/odbdump\_main.c  
odb/tools/odbi\_direct\_main.c  
odb/tools/sizeof.c  
xrd/fi\_pthread/fi\_pthread.c  
xrd/hack/paddrs.c  
xrd/lfi/mt/lfiicc\_mt.F  
xrd/lfi/mt/lfiedo\_mt.F  
xrd/lfi/mt/lfifer\_mt.F  
xrd/lfi/mt/lfilcc\_mt.F  
xrd/lfi/mt/lfildo\_mt.F  
xrd/lfi/mt/lfiouv\_mt.F  
xrd/module/samio\_mod.F90  
xrd/support/csamio.c  
xrd/support/drhook.c  
xrd/support/ifssig.c  
xrd/utilities/linuxtrbk.c

16) *Date and name of Contributor:*

14/07/2011

Sami Saarinen, CSC Finland

*Model or configuration affected by the modset:*

LAM: *aladin, alaro, arome, harmonie*

*Context and cycle:*

dev

38\_t1

*Type of file/resource to be modified:*

Binary

*Description of the set of modifications:*

*Bugfixes to various problems due to empty pools in Canari.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/canari/camelo.F90  
arp/canari/canaco.F90  
arp/canari/carcfo.F90  
arp/canari/cavodk.F90  
arp/obs\_preproc/readoba.F90  
odb/cma2odb/shuffle\_odb.F90*

*17) Date and name of Contributor:*

*08/11/2011*

*Sami Saarinen, CSC Finland*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Bugfixes to parallelisation and Fortran standard violation issues.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/parallel/diwrgrid\_surf\_ext.F90  
mse/new/diwrgrid\_surf\_ext2.F90  
sat/bias/suadvar.F90  
sat/module/mod\_emiskf.F90*

sat/pre\_screen/antenna\_read.F90  
xrd/ddh/lfa\_R8I4.F90

18) Date and name of Contributor:

12/02/2012  
Sami Saarinen, CSC Finland

Model or configuration affected by the modset:

LAM: aladin, alaro, arome, harmonie

Context and cycle:

dev  
38\_t1

Type of file/resource to be modified:

Binary

Description of the set of modifications:

Cleaning up from several of C-compilation warning messages.

Details about the provided files:

clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":

Modified:

bla/compiler/generate.c  
bla/compiler/tree.c  
bla/include/defs.h  
odb/aux/dca.c  
odb/aux/iogetsize.c  
odb/aux/iosetbuf.c  
odb/aux/memory.c  
odb/compiler/cmd.c  
odb/compiler/genc.c  
odb/compiler/odb98.c  
odb/compiler/tree.c

*odb/include/defs.h  
odb/include/odb\_macros.h  
odb/include/privpub.h*

*19) Date and name of Contributor:*

*15/12/2011  
Niko Sokka, FMI Finland*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary, Text files*

*Description of the set of modifications:*

*Unwanted DOS style carriage returns, control-Ms, removed.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*aeo/Matlab\_Tools/TOOLS/CreateAuxMet.m  
aeo/Matlab\_Tools/TOOLS/RBCorrection.m  
aeo/external/compute\_groundtrack.c  
aeo/groundtrack/swath\_data\_35deg.txt  
aeo/groundtrack/swath\_data\_nadir.txt*

*20) Date and name of Contributor:*

*10/05/2011*

*Ole Vignes, met.no Norway*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary, namelist nemct0*

*Description of the set of modifications:*

*Introduce option LSMIXBC, resembles LSMIX in Hirlam but instead of running re-forecasts the large scale waves of the first boundary file is mixed with small scale waves from the model's own first guess before assimilation. For technical reasons the computations are done in*

*Canari (conf 701). To be replaced by Jk at some stage.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*ald/setup/elsac.F90  
ald/setup/suect0.F90  
arp/ald\_inc/namelist/nemct0.h  
arp/module/yemct0.F90*

*21) Date and name of Contributor:*

*12/02/2011  
Ole Vignes, met.no Norway*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Remove hardcoding of max grid sizes in openfpfa.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

*Modified:*

*arp/fullpos/openfpfa.F90*

*22) Date and name of Contributor:*

*12/02/2011*

*Ole Vignes, met.no Norway*

*Model or configuration affected by the modset:*

*LAM: aladin, alaro, arome, harmonie*

*Context and cycle:*

*dev  
38\_t1*

*Type of file/resource to be modified:*

*Binary*

*Description of the set of modifications:*

*Improve stability of code, correct out of bounds problem (espcm) and set a few uninitialized variables (probably harmless though).*

*Spectral nudging (used in Arome) is broken without these fixes.*

*Details about the provided files:*

*clearcase branch "arp\_sokka\_CY38\_hirlam\_contrib":*

**Modified:**

ald/control/espcm.F90  
arp/module/elbc0b\_mod.F90  
xla/external/linalg/minv.F

**Project:** aeolus,aladin,arpege,black\_list,Meso-NH physique altitude,Meso-NH surface,odb,satrad,transformées  
aladin,utilitaires,algebre linéaire,auxiliaire

**ClearCase branch:** sokka\_CY38\_hirlam\_contrib

**Added:**

arp/phys\_dmn hlevapprec.F90 hlsnowmelt.F90

**Modified:**

aeo/Matlab_Tools/TOOLS	CreateAuxMet.m	RBCorrection.m	
aeo/external	compute_groundtrack.c		
aeo/groundtrack	swath_data_35deg.txt	swath_data_nadir.txt	
ald/control	espcm.F90		
ald/setup	elsac.F90	suect0.F90	
arp/adiab	call_sl.F90	cptend.F90	cputqy.F90
arp/ald_inc/namelist	nemct0.h		
arp/canari	camelo.F90	canaco.F90	carcfo.F90
	cavodk.F90		
arp/control	cnt0.F90	scan2m.F90	
arp/dfi	dfi2.F90		
arp/dia	preset_grib_template.F90		
arp/fullpos	fpcorphy.F90	fphor12.F90	openfpfa.F90
	sufpc.F90		
arp/module	elbc0b_mod.F90	varbc_rad.F90	yemct0.F90
	yom_ygfl.F90	yomfpc.F90	yomio_serv_hdr.F90
arp/namelist	namfpc.h		
arp/obs_preproc	readoba.F90	redrp_no_sq.F90	

arp/op_obs	hradp.F90	hradpad.F90	hradptl.F90
arp/parallel	diwrgrid_surf_ext.F90		
arp/phys_dmn	accdev.F90	accvud.F90	acnebcond.F90
	apl_arome.F90	aplpar.F90	cpchet.F90
	hlcldiag.F90	hlevapprec.F90	hhrad.F90
	hlsnowmelt.F90	mf_phys.F90	
arp/programs	master.F90		
arp/setup	su0yoma.F90	suct0.F90	sudefo_gflattr.F90
	suhlconst.F90	sulsforc.F90	suphy.F90
	susc2b.F90		
bla/compiler	generate.c	tree.c	
bla/include	defs.h		
bla/library	dynamic_linking.c		
mpa/micro/internals	ini_budget.f90		
mpa/turb/externals	aro_turb_mnh.f90		
mpa/turb/internals	compute_updraft.f90		
mse/new	diwrgrid_surf_ext2.F90		
odb/aux	dca.c	info.c	iogetsize.c
	iosetbuf.c	lzw.c	memory.c
	newio.c	odbi_client.c	odbi_common.c
	odbi_direct.c	odbi_server.c	pcma.c
	result.c		
odb/cma2odb	shuffle_odb.F90		
odb/compiler	cmd.c	genc.c	odb98.c
	tree.c	yacc.y	
odb	ddl.RSTBIAS		
odb/extras/mpi_serial	cmpi.c		
odb/include	codb.h	defs.h	odb_macros.h
	privpub.h		
odb/lib	cmdbkeys.c	codb.c	ctx.c
	eq_regions.c	forfunc.c	poolmasking.c
	tracing.c	var.c	
odb/tools	dcagen.c	hcat.c	odb2rgg.c
	odbdump_main.c	odbi_direct_main.c	sizeof.c

sat/bias	suadvar.F90		
sat/module	mod_emiskf.F90		
sat/pre_screen	antenna_read.F90		
sat/programs	rttov_ascii2bin_scattcoef.F90	screen_1c.F90	
tal/external	etrans_end.F90		
uti/aca	acadfa1D_main.F90	acadfa_sueframe.F90	prepsurf_arome.F90
	real2spec.F90		
xla/external/linalg	minv.F		
xrd/ddh	lfa_R814.F90		
xrd/fa/mt	facadi_mt.F		
xrd/fi_pthread	fi_pthread.c		
xrd/hack	paddrs.c		
xrd/lfi/mt	lfiecc_mt.F	lfiedo_mt.F	lfifer_mt.F
	lfilcc_mt.F	lfildo_mt.F	lfioouv_mt.F
xrd/module	samio_mod.F90		
xrd/support	csamio.c	drhook.c	ifssig.c
xrd/utilities	linuxtrbk.c		

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## **TAILLEFER Francoise**

### **Doc:**

*Bugfix: initialization of graupel array used in CACLSI .*

**Project:** arpege

**ClearCase branch:** mrpa647\_CY38\_can\_graup

### **Modified:**

arp/canari	caclsi.F90	capotx.F90
arp/control	scan2m.F90	

**Doc:**

- 1) *Correction of a problem in a variable definition and initialization introduced in the version 1 of the CY38\_t1 with the mesan correlation function modifications package. It was correct in canari but there was a bug in screening calculations.*
- 2) *Change in land-sea mask use in obs-guess calculation for buoys SST in order to get back to the CY37 results. A modification has been introduced in cy38 due to the "separation" of the canari code, the results are under investigation to know if the new method is better or not (this change leads to very small impact).*

**Project:** arpege  
**ClearCase branch:** mrpa647\_CY38\_db\_cs

**Modified:**

arp/canari	canali.F90	
arp/module	qalori.F90	yomobs.F90
arp/namelist	nalori.h	namobs.h
arp/obs_preproc	defrun.F90	
arp/op_obs	slint_canari.F90	
arp/pp_obs	ppobsac.F90	

**Doc:**

*This modset allows to build surfex FA files in all operational configurations (forecast, prep-surfex, surface analysis, dfi). At the same time the possibility of making files of surface containing only the fields which evolve was developed. To build a surface file of type FA after the surface analysis, OI\_MAIN was "raised" in CANARI (saving of time in entrances / exits).*

*All those modifications have been developed by Philippe MArguinaud, and validated by Mohamed Jidane and myself.*

**Project:** aladin,arpege,Meso-NH surface,auxiliaire  
**ClearCase branch:** mrpa647\_CY38\_fa\_sfx

**Added:**

ald/utility	eshrinkstretch_mod.F90
arp/canari	canari_sx_ics.F90
arp/dia	wrsfx.F90
arp/module	yommse.F90

arp/phys_dmn	suphmse_surface.F90		
arp/setup	sugridsfx.F90		
arp/utility	findminmaxg.F90		
mse/externals	aro_oi_main.F90	aroini_surfa.F90	aroini_surfb.F90
	aroini_surfc.F90	xxyy2dxdy.F90	
mse/interface	aro_oi_main.h	aroini_surfa.h	aroini_surfb.h
	aroini_surfc.h	xxyy2lfi.h	
mse/internals	xxyy2lfi.F90		
mse/programs	sfxfilter.F90	sfxutil.F90	
xrd/programs	lfilist.F90	lfixxxx.F90	
xrd/support	qsortc.F		
<b>Modified:</b>			
ald/fullpos	exarp.F90		
ald/utility	eshrinkstretch_mod.F90		
arp/canari	canali.F90	canari.F90	canari_sx_ics.F90
arp/dia	aro_surf_diagh.F90	inifaout.F90	wrmlppa.F90
	wrsfx.F90		
arp/fullpos	fp2sx1.F90	fpcica.F90	openfpfa.F90
	rdclimo.F90	wrhfp.F90	wrsfp.F90
arp/module	disgrid_mod.F90	diwrgrid_mod.F90	qactex.F90
	yomarphy.F90	yommse.F90	
arp/namelist	nactex.h	namarphy.h	
arp/phys_dmn	apl_arome.F90	suphmse.F90	suphmse_surface.F90
arp/phys_radi	rrtm_rtrn1a_140gp.F90		
arp/setup	su0phy.F90	su_grib_api.F90	su_surf_flds.F90
	sudim1.F90	sugridsfx.F90	
arp/utility	findminmaxg.F90	openfa.F90	wrgp2fa.F90
mse/externals	aro_oi_main.F90	aro_surf_diag.F90	aroini_surf.F90
	aroini_surfa.F90	aroini_surfb.F90	aroini_surfc.F90
	ini_prep_surfex_aro.F90	prep_surf_aro.F90	xxyy2dxdy.F90
mse/interface	aro_oi_main.h	aroini_surf.h	aroini_surfa.h
	aroini_surfb.h	aroini_surfc.h	ini_prep_surfex_aro.h
	xxyy2lfi.h		

mse/internals	read_surfc0_aro.F90 read_surfn0_aro.F90 read_surfx0_aro.F90 write_in_lfi_x2.F90 write_surfl1_aro.F90 write_surft0_aro.F90 write_surfx2_aro.F90	read_surfl0_aro.F90 read_surfn1_aro.F90 read_surfx1_aro.F90 write_surfc0_aro.F90 write_surfn0_aro.F90 write_surfx0_aro.F90 xxyy2lfi.F90	read_surfl1_aro.F90 read_surft0_aro.F90 read_surfx2_aro.F90 write_surfl0_aro.F90 write_surfn1_aro.F90 write_surfx1_aro.F90
mse/module	modd_io_surf_aro.F90		
mse/programs	oi_main.F90	sfxfilter.F90	sfxutil.F90
xrd/fa/mt	farine_mt.F		
xrd/lfi/mt	lfinfo_mt.F		
xrd/module	fa_mod.F		
xrd/programs	lfilist.F90	lfixxxx.F90	testfa.F
xrd/support	drhook.c	qsortc.F	
xrd/utilities	chien.F90		

**Doc:**

- Phasing with modifications introduced in parallel suite CY37T1\_op1 (mobhdrca\_obsort.sql).
- Updates for CANARI in some SQL requests, to avoid a warning.

**Project:** odb  
**ClearCase branch:** mrpa647\_CY38\_odb\_ca

**Added:**

odb/ddl obsortca\_auxiliary.sql obsortca\_hdr2auxiliary\_body.sql

**Deleted:**

odb/ddl canaco\_robhdr\_ccma.sql

**Modified:**

odb/cma2odb ctxinitdb.F90  
 odb/ddl mobhdrca\_obsort.sql obsortca\_auxiliary.sql obsortca\_hdr2auxiliary\_body.sql

**Doc:**

- Optimisations in nearly all OI routines; this allows a significant gain of CPU time .

- Update the blacklist flag of type 4 observations header (buoys) when they are eliminated by "screening" on the temporal range, and then not to take into account those observations during geographical selection by the analysis.

**Project:** arpege,odb  
**ClearCase branch:** mrpa647\_CY38\_optcan

**Added:**

arp/canari caisse.F90  
odb/ddl canaco\_robhdr\_ccma.sql

**Deleted:**

arp/canari canari\_sx\_ics.F90

**Modified:**

arp canari  
arp/canari cainsu.F90 caisse.F90 caissedm.F90  
calife.F90 calver.F90 capdgu.F90  
caredo.F90  
arp/module qacost.F90  
odb/cma2odb ctxinitdb.F90  
odb/ddl canaco\_robhdr\_ccma.sql caredo\_robhdr.sql

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**VANA Filip**

**Doc:**

*This modset allows to run some configurations in TL/AD with LSPRT=.TRUE. .*

**Project:** arpege  
**ClearCase branch:** mrpe706\_CY38\_Isprtfix

**Modified:**

arp/adiab cpg\_dyn.F90 cpglag.F90 cpglagad.F90

	cpglagtl.F90		
arp/control	gp_model.F90	gp_model_ad.F90	gp_model_tl.F90
	scan2mad.F90	scan2mtl.F90	
arp/module	traj_semilag_mod.F90		

**Doc:**

*Much improved version of the TOUCANS turbulence scheme(1D and 3D code) with several fixes, optimizations and stabilization. In addition the moist part was significantly extended to be fully compliant with recent proposals of Marquet and Geleyn allowing thus to suppress the moist anti-fibrillation treatment. Also the cloudiness used now in Toucans is more consistent with the Alaro cloud scheme.*

*The present version of Toucans is considered to be stabilized and safe. It is subject of extensive tests at CHMI to derive optimal tuning for operational implementation.*

*The new code changes norms with respect to previous versions of the turbulence scheme of Alaro for all the configurations once the LPTKE=TRUE . When LPTKE=FALSE, the norms are supposed to remain unchanged.*

**Project:** arpege  
**ClearCase branch:** mrpe706\_CY38\_toucans

**Added:**

arp/phys_dmn	acmrip.F90	acmris.F90	acmriss.F90
	acnebnsc.F90	actkecoefkh.F90	

**Modified:**

arp/module	surface_fields_mix.F90	yomphy.F90	yomphy0.F90
arp/namelist	namphy.h	namphy0.h	
arp/phys_dmn	acdifv3.F90	achmtls.F90	acmixelen.F90
	acmrip.F90	acmripp.F90	acmris.F90
	acmriss.F90	acnebnsc.F90	acptke.F90
	actkecoefk.F90	actkecoefkh.F90	actkehmt.F90
	actkehmtls.F90	aplpar.F90	arp_ground_param.F90
	mf_phys.F90	suphy0.F90	
arp/setup	su0phy.F90	su_surf_flds.F90	

## **VARELLA Hubert**

### **Doc:**

*Optimisation of wavelet correlations calculation (in sujbwavgen.F90). Firstly, the number of calls to routines which read files of perturbed states has been reduced (by deducing the pseudo-member N+1 from member 1). Secondly, the option LJBWFDMEM has been reintroduced to allow for storing in memory forecast differences, instead of reading them in temporary files (during the calculation step). The reading step of perturbed state files has also been separated from the step of forecast difference calculation, in order to reduce elapse time in this part too. Moreover, an option LJBWHYB has been introduced in sujbwavgen.F90. This option allows hybrid correlations to be calculated, in the form of a linear combination between ensemble correlations "of the day" in the troposphere and low stratosphere (i.e. below 100 hPa) and "static" correlations in the high stratosphere (i.e. above 100 hPa), derived from random draws of B (using the routine bgvecs.F90). In addition, an option LWRIBVEC\_FULL has also been introduced in the routine bgvecs.F90, in order to write files of perturbed states derived from random draws of B which are added to the ensemble mean of AEARP.*

**Project:** arpege  
**ClearCase branch:** mrpm627\_CY38\_wavelet\_optim

### **Modified:**

arp/dia	wrmlpp.F90		
arp/module	yomvar.F90	yomwavelet.F90	
arp/namelist	namvar.h		
arp/var	bgvecs.F90	readvec.F90	sujb.F90
	sujbwavgen.F90	sujbwavwri.F90	suvar.F90

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## **VOITUS Fabrice**

### **Doc:**

*New DDH dynamics diagnostics.*

**Project:** aladin,arpege,auxiliaire  
**ClearCase branch:** mrpm630\_CY38\_ddhdyn4\_38t1

**Added:**

arp/adiab cpdyddhlag.F90

**Modified:**

ald/transform	etransinv_mdl.F90		
arp/adiab	cpdyddhlag.F90	cpg.F90	cpg_gp.F90
	cpglag.F90	larcinb.F90	lattice_dnt.F90
	lattice_tnt.F90		
arp/control	gp_model.F90		
arp/dia	cpdyddh.F90	sunddh.F90	
arp/namelist	namddh.h		
arp/setup	suslb.F90		
arp/transform	transinv_mdl.F90		
xrd/module	ddh_mix.F90		

**Doc:***Modifications for spectral coupling.*

**Project:** aladin,arpege  
**ClearCase branch:** mrpm630\_CY38\_spectral\_nudging4\_38t1

**Modified:**

ald/control	espcm.F90		
ald/coupling	elwa3.F90	epak3wsp.F90	espcpl.F90
	espsc2r.F90		
arp/ald_inc/namelist	nemelbc0a.h		
arp/module	elbc0a_mod.F90	elbc0b_mod.F90	

**WATTRELOT Eric****Doc:**

Modifications for monitoring of X band of Mt-Maurel radar, and prepare the use of rain reducing correction for double-polarimetric radars.

**Project:** odb  
**ClearCase branch:** mrpa652\_CY38\_radarfrom37op1

**Modified:**  
odb/pandor/module bator\_decodbufr\_mod.F90

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## **YESSAD Karim**

### **Doc:**

*Modification code:*

*\* Scientific contents:*

- *New sponge (in spectral space).*
- *Alternate way to compute the vertical displacement in the SL scheme (direct code): new option LRALTVDISP in NAMDYNA.*
- *Anisotropic Rayleigh friction: proper use of the compass.*
- *New isotropic version of Rayleigh friction (LRFRICISOTR in NAMDYNA).*
- *RRFTAU in namelist for Rayleigh friction.*
- *More flexibility for vertical profiles used in spectral horizontal diffusion (in particular to put more diffusion in the stratosphere).*
- *More flexibility for horizontal functions used in spectral horizontal diffusion (possibility to use ECMWF one even if LECMWF=F).*
- *Contributions of J.M. Piriou and E. Bazile:  
some modifications introduce 4 new GFL (convective ql, qi, qr, qs).*
- *Contributions of J.F. Gueremy: dry convective adjustment (LAJUCV)*

*\* Technical contents:*

- *Momentum equation RHS gathered in GP\_TNDLAGADIAB\_UV (called under CPG\_GP):  
leads to code simplification in CPDYDDH, CPEULDYN, LAVENT, LACDYN.  
TL and AD adapted too.*
- *Call to CP\_FORCING has been moved from CPG\_DYN to CPG\_GP.*
- *Rationalisation of printings in (E)LARMES.*

- New versions of GMPFC with less dummy arguments, use GMPFC5 for trajectory.
- CPG5\_GP: bugfix for code under LPROCLDTL.
- New routine GPHPRE to replace GPPREH+GPXYB+GPPREF or GPPRE; replacement done at least in the dynamics, in FULL-POS and in a very limited number of set-up routines.  
TL and AD adapted too.  
A significant number of calls to GPPREH+GPXYB+GPPREF in other parts of the code have not been replaced (planned for after CY39).
- Dummy argument YDVAB passed to GPCTY and GPGRXYB; TL and AD adapted too.
- Dummy argument YDVETA passed to GPCTY; TL and AD adapted too.
- YRCSGEOM, YRSGEOM and YROROG passed in one step to routines called under CPG, CPGTL and CPGAD.
- GMV and GFL passed in one step to CPDYDDH.
- GMV and GMVS passed in one step to VPOS.
- Reducing complexity of call-tree:
  - \* Content of SCAN2H (+TL, AD) in-lined in callers which now call SCAN2M (+TL, AD).
  - \* FPLAKE encapsulated in FPCORPHY.
  - \* ELSIN in-lined in ELSAC.
  - \* GPENDTR in-lined in CPGLAG.
  - \* INI1SCAN2M in-lined in SCAN2M.
- Reducing complexity for CLCONF:
  - \* CLCONF(4:4): removal of obsolete CLCONF(4:4)='S' or 'M'; simplification of use of CLCONF(4:4) (no longer used under CPG\_DYN + TL + AD).
  - \* CLCONF(1:1): removal of obsolete CLCONF(1:1)='C' in IOPACK.
  - \* CLCONF(9:9): 'S' or 'T' removed in TL and AD codes, replaced by 'I' in direct code; removal of references to obsolete CLCONF(9:9)='F'.
- Former LAM routines SUEGEO1+SUEGEO2+SUEBIG adapted and renamed (resp. into SUEGEM1A+SUEGEM1B+SUEGEM2) to be the mirror of their global model counterparts.
- Useless variable RCOR2, RSLD1, RSLD2, RSLD3 have been removed.
- Remove obsolete commented lines in SUFPRFPBUF, DF13, CNT4, SUESCAL, SUDYNA, SUDYN, CORMASS3A, CORMASS3B, SUNH\_VERTFE3DD, SUOYOMB, FRASOLU, VERINT, VERINTAD, VERDDER.
- Remove references to shallow-water model in SUESCAL.
- Reorganisation of the GFL set-up (new SUGFL).
- Removal of old 923 option (LN923=F) => variables LN923, LMCC12 and LMCC19 disappear.
- Move SLHDP (YOMSLD) in YOMGC.
- Move XMALD (YOMMALD) in YEMDYN.
- Default of LRHDI\_LASTITERPC set to T in SUDYN.
- Take account of LRHDI\_LASTITERPC=F in DF13 too.
- Fix a bug for LPC\_CHEAP+SLHD (in (E)LASCAW).
- Simplification of tests under (E)SPCM(AD) (in particular LL3D, CDCONF).

- Pre-compute RBT and RBTS2 (YOMDYN) in SUDYN for spectral SI calculations.
- Pre-compute LR3D (3D model) and LR2D (2D model) in SUCT0/YOMCT0;  
replace a subset of occurrences of (LL2D,LL3D) by (LR2D,LR3D);  
replace some tests on NCONF by tests on (LR2D,LR3D).
- Set-up of horizontal diffusion for shallow-water model moved in new SUHDF2.
- New module SPGEOM\_MOD for spectral geometry (contribution of Alexandre Mary).
- Code reorganisation between SPGEOM\_MOD, SUDYN, SUEDYN (contribution of Alexandre Mary).
- New namelist threshold (RTHRESIDG) to activate LESIDG (contribution of Alexandre Mary).
- New attribute GMAPPA in structure GSGEOM (YOMGC).
- Miscellaneous minor cleanings.

*Influence on the results:*

Default of LRHDI\_LASTITERPC set to T in SUDYN ==> change results if NSITER>0  
 Bug correction for LPC\_CHEAP=T with SLHD => may change results  
 Bug correction in SUHDF => may change results when LSLHD=T and LSLHD\_STATIC=F  
 None or purely numerical differences otherwise.

**Project:** aladin,arpege  
**ClearCase branch:** mrpm603\_CY38\_dev38pour38t1

**Added:**

ald/setup	suegem1a.F90 suehdvnp.F90	suegem1b.F90	suegem2.F90
arp/adiab	gp_tndlagadiab_uv_ad.F90 gphpre.F90 gpmpfc5.F90	gp_tndlagadiab_uv_geogw.F90 gphpread.F90 gpnspng.F90	gp_tndlagadiab_uv_tl.F90 gphpretl.F90
arp/module	spgeom_mod.F90	spng_mod.F90	
arp/phys_dmn	acadvec.F90 acmtddd.F90 acmtudeul.F90	acajucv.F90 acmtentr.F90 acpcmt.F90	accorneg.F90 acmtud.F90
arp/setup	sugfl1.F90 suhdf2.F90	sugfl2.F90 suhdvp.F90	sugfl3.F90 suehdvnp.F90

**Modified:**

ald/adiab	elarmes.F90 espchorad.F90 espnhsi.F90	elasaw.F90 espcsi.F90 espnhsi_geogw.F90	espchor.F90 espcsiad.F90 espnhsiad.F90
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ald/c9xx	einclib.F90	einclir.F90	
ald/control	espcm.F90	espcmadv.F90	
ald/fullpos	etranscub.F90		
ald/setup	elsac.F90	elsin.F90	suebig.F90
	suedyn.F90	suegem1a.F90	suegem1b.F90
	suegem2.F90	suegeo1.F90	suegeo2.F90
	suehdf.F90	suehdvpr.F90	sueheg.F90
	sueldynb.F90	suello.F90	suenhheg.F90
	suesmap.F90		
ald/utility	deello.F90		
ald/var	suescal.F90		
arp/adiab	cp_forcing.F90	cpeuldyn.F90	cpeuldynadv.F90
	cpeuldyntl.F90	cpg.F90	cpg5_gp.F90
	cpg_dia.F90	cpg_dyn.F90	cpg_dyn_adv.F90
	cpg_dyn_tl.F90	cpg_end.F90	cpg_end_adv.F90
	cpg_end_tl.F90	cpg_gp.F90	cpg_gp_adv.F90
	cpg_gp_tl.F90	cpg_gpb_nhgeogw.F90	cpg_zero_adv.F90
	cpgadv.F90	cpglag.F90	cpgtl.F90
	cptend_new.F90	gnh_conv_nhvar.F90	gnh_conv_nhvar_geogw.F90
	gnhdlra.F90	gnhgw2svd.F90	gnhsvd2gw.F90
	gnhx.F90	gp_tndlagadiab_uv.F90	gp_tndlagadiab_uv_adv.F90
	gp_tndlagadiab_uv_geogw.F90	gp_tndlagadiab_uv_tl.F90	gpcty.F90
	gpctyadv.F90	gpctytl.F90	gpendtr.F90
	gpgrxyb.F90	gpgrxybad.F90	gpgrxybtl.F90
	gphpre.F90	gphpread.F90	gphpretl.F90
	gpmpfc.F90	gpmpfc5.F90	gpmpfc_gmvs.F90
	gpnspng.F90	lacdyn.F90	lacdynadv.F90
	lacyntl.F90	lapineb.F90	larmes.F90
	lascaw.F90	lasure.F90	lattes.F90
	lattestl.F90	lattex.F90	lattexadv.F90
	lattextl.F90	lavent.F90	laventadv.F90
	laventtl.F90	spc2.F90	spc2adv.F90
	spchor.F90	spchoradv.F90	spcimpfinit.F90
	spcimpfinitadv.F90	spcimpfpost.F90	spcimpfpostadv.F90

	spcmascor.F90	spsci.F90	spsciad.F90
	spnhsi.F90	spnhsi_geogw.F90	
arp/ald_inc/function	fchdif.h		
arp/ald_inc/namelist	nemdyn.h		
arp/c9xx	incli0.F90	inclib.F90	inclir.F90
	intrv2.F90		
arp/climate	cormass3a.F90	cormass3b.F90	
arp/control	cnt4.F90	cnt4ad.F90	cnt4tl.F90
	gp_model.F90	gp_model_ad.F90	gp_model_tl.F90
	ini1scan2m.F90	scan2h.F90	scan2had.F90
	scan2htl.F90	scan2m.F90	scan2mad.F90
	scan2mtl.F90	spcm.F90	spcmad.F90
	stepo.F90	stepoad.F90	stepotl.F90
	testli.F90		
arp/dfi	dfi3.F90		
arp/dia	cpcuddh.F90	cpdyddh.F90	cpdysldia.F90
	cpphddh.F90	ppsydh.F90	sunddh.F90
arp/fullpos	endpos.F90	fpcorphy.F90	fplake.F90
	gridfpos.F90	sufprfpbuf.F90	sufpuf.F90
	vpos.F90	vpos_prep.F90	
arp/module	gfl_subs_mod.F90	intdyn_mod.F90	spgeom_mod.F90
	spng_mod.F90	type_gflflds.F90	yemdyn.F90
	yom_ygfl.F90	yomct0.F90	yomdyn.F90
	yomdyna.F90	yomfa.F90	yomgc.F90
	yomgem.F90	yomleg.F90	yommald.F90
	yommcc.F90	yomphy.F90	yomphy0.F90
	yomslid.F90		
arp/namelist	namdyn.h	namdyna.h	namfa.h
	namgfl.h	nammcc.h	namphy.h
	namphy0.h		
arp/nmi	sunmi.F90		
arp/phys_dmn	acadvec.F90	acajucv.F90	accorneg.F90
	accvimp.F90	accvimpd.F90	accvimpdgy.F90
	accvimpgy.F90	acmtddd.F90	acmtentr.F90

	acmtud.F90	acmtudeul.F90	acnebn.F90
	acpcmt.F90	aplpar.F90	frasolu.F90
	initaplpar.F90	mf_phys.F90	mf_physad.F90
	mf_phystl.F90	suphy0.F90	
arp/pp_obs	apache.F90	pos.F90	ppleta.F90
arp/setup	su0phy.F90	su0yoma.F90	su0yomb.F90
	su_surf_flds.F90	sualdynb.F90	suct0.F90
	suctrl_gflattr.F90	sudefo_gflattr.F90	sudim1.F90
	sudim2.F90	sudyn.F90	sudyn_setgflattr.F90
	sudyna.F90	sufa.F90	sugem1b.F90
	sugem2.F90	sugfl.F90	sugfl1.F90
	sugfl2.F90	sugfl3.F90	sugmre.F90
	suhdf.F90	suhdf2.F90	suhdfvareps.F90
	suhdu.F90	suhdvp.F90	suhdvpn.F90
	suheg.F90	sumcc.F90	sunh_vertfe3dd.F90
	sunhbmat.F90	sunhbmat_geogw.F90	sunhheg.F90
	sunhsi.F90	suphy.F90	surayfric.F90
	susc2b.F90	susi.F90	susmap.F90
	suspectcfou.F90	suspgm.F90	susta.F90
arp/utility	deallo.F90	freemem.F90	gstats_label_ifs.F90
	iopack.F90	verdder.F90	verint.F90
	verintad.F90		
arp/var	nmijc.F90	nmijctl.F90	

### Doc:

- 1) Move some allocations from SUALLO to SUVERT .
- 2) Optimal computation of NRLEVX, now made in SUVERT ; default value of NRLEVX (not present in namelist) is no more 480000 but the minimal value which is necessary for the optimal interpolations of the SL ; in eulerian, NRLEVX is set to 1 .
- 3) Print of NRLEVX is moved from SUDIM2 to SUVERT (+ cleaning of useless declarations in SUDIM2).
- 4) Call to SUVERT in SUVERTDLR : this allows to have a more concise routine, and not to duplicate the same code.
- 5) Reorganisation of the computations in SUVERT, in order to get a more readable routine, and to perform computations in the good order.

**Project:** arpege  
**ClearCase branch:** mrpm603\_CY38\_newsuvert

**Modified:**

arp/setup	su0yomb.F90	suafn3.F90	suallo.F90
	sudim1.F90	sudim2.F90	suvert.F90
	suvertdlr.F90		

**Doc:**

*Miscellaneous fixes, mainly norm violations.*

*arp/dia/wrgpa.F90: add missing code part ".NOT.LELAM" .*

*arp/module/spng\_mod.F90: minor fix in sponge setup, in order to "cancel" sponge when Dt goes toward 0 .*

*ald/setup/suedyn.F90: add missing prints .*

*ald/adiab/elarchetl.F90, ald/adiab/elarchead.F90: fix a division by 0 when LMRT=.TRUE. .*

**Project:**

aladin,arpege

**ClearCase branch:**

mrpm603\_CY38\_pre38t1bf

**Modified:**

ald/adiab	elarchead.F90	elarchetl.F90	
ald/fullpos	sufpmove.F90		
ald/programs	holo.F90	unholo.F90	
ald/setup	elsac.F90	suedyn.F90	
ald/sinvect	erdtllcz.F90		
arp/adiab	call_sl.F90		
arp/dia	cpdyddhlag.F90	wrgpa.F90	
arp/fullpos	fp2sx1.F90		
arp/module	elbc0a_mod.F90	spng_mod.F90	yomfpc.F90
arp/phys_dmn	acdifv3.F90	acmrip.F90	acmris.F90
	acmriss.F90	acnebnsc.F90	acnebsm.F90
	acptke.F90	actkecoefk.F90	actkehmt.F90
	actkehmtls.F90	aplpar.F90	mf_phys.F90
	suphmpa.F90	suphmse_surface.F90	
arp/setup	sudim1.F90	sugridsfx.F90	

**Doc:**

*Bugfixes.*

**Project:** arpege,surfex

**ClearCase branch:** mrpm603\_CY38\_pre38t1bf6

**Modified:**

arp/setup suvert.F90

surfex/SURFEX read\_pgd\_isba\_parn.F90 sso\_z0\_frictionn.F90