

ARPEGE MEMORANDUM

From: GCO
Date: Nov 17, 2016
Subject: New cycle CY43T2

A new cycle CY43T2 has been created. This is not a common cycle with ECMWF. The different contributions for this cycle are described in the following pages.

Contributors:

BOUTELOUP Yves	boutelou_CY43T1_b447 boutelou_CY43T1_b450 boutelou_CY43T1_b456
EL KHATIB Ryad	khatib_CY43T1_fpos khatib_CY43T1_t2.01%fix khatib_CY43T1_t2.02%fix khatib_CY43T1_t2.03%fix
FAURE Ghislain GCO	faure_CY43T1_CMO_bugifx gco_CY43T1_t2 gco_CY43T1_t2.03%fix_pgd_orography
GERARD Luc GUIDARD Vincent	gerardl_CY43T1_t1t2 guidardv_CY43T1_IASIts guidardv_CY43T1_mergeVarbc
GUILLAUME Frank	guillaum_CY43T1_bugfix_sev guillaum_CY43T1_phasing_rr_for_fcqodb
MARGUINAUD Philippe	marguina_CY43T1_42op marguina_CY43T1_t2fps marguina_CY43T1_t2portSPpart1+2 marguina_CY43T1_t2portSPpart3+4
MARY Alexandre	mary_CY43T1_libs4py mary_CY43_ororad
MASEK Jan MEUNIER Louis-Francois	masekj_CY43T1_alaro meunierlf_CY43T1_compiler_bf_for_rttov
MOLL Patrick	moll_CY43T1_bugsCY43 moll_CY43T1_phase42to43t1
PIRIOU Jean-Marcel SEITY Yann	piriou_CY43_resolpcmt seity_CY43T1_bfddh seity_CY43T1_from42op_AROME
SUZAT Florian TAILLEFER Françoise	suzat_CY43T1_MWHS2_GMI taillefer_CY43T1_phas42_1 taillefer_CY43T1_phas42_2 taillefer_CY43T1_upd_e923
YESSAD Karim	yessad_CY43T1_t2V01cor yessad_CY43T1_t2V02cor yessad_CY43T1_t2V03cor

BOUTELOUP Yves

Doc:

Phasing 42_op1 modifications. Rename LEDKFI into LEDMFI. New mixing length for PEARP. Split of EDMF fluxes into ED and MF for diagnostic.

EXPECTED IMPACT:

Numerical noise

Projects: arpifs

Git branch: boutelou_CY43T1_b447

Added:

arpifs/phys_dmn aclender.F90

Modified:

arpifs/module yomphy.F90

arpifs/namelist namphy.nam.h

arpifs/phys_dmn acdifv1.F90, acdifv2.F90, acmtud.F90, actke.F90, aplpar.F90,
tridifv1.F90

arpifs/setup su0phy.F90

Doc:

Re-activation of dust configuration for Arome and Aladin. Bugfix developed by Mohamed Mokhtari and Abdenour Amdar.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs, mpa, mse, surfex

Git branch: boutelou_CY43T1_b450

Added:

mpa/chem/module inv_levels.F90, modi_inv_levels.F90

Modified:

arpifs/namelist namarphy.nam.h

arpifs/phys_dmn apl_arome.F90, aplpar.F90, mf_phys.F90, suphmse.F90

arpifs/setup su0phy.F90

mpa/chem/externals aro_mnhdust.F90, aro_rainaero.F90, aro_wetdep.F90

mpa/chem/internals aer_wet_dep.F90, aer_wet_dep_kmt_warm.F90, ini_wet_dep.F90,
sedim_dust.F90

mpa/chem/module modi_sedim_dust.F90

mpa/micro/externals aroini_frommpa.F90

mse/externals aro_ground_param.F90

surfex/SURFEX dustflux_get_mb.F90

Doc:

1) Modifications to run SRTM with SURFEX.

2) Removal of array overflow in SRTM.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: boutelou_CY43T1_b456

Modified:

arpifs/module

yoesrta16.F90, yoesrta17.F90, yoesrta18.F90, yoesrta19.F90,
yoesrta20.F90, yoesrta21.F90, yoesrta22.F90, yoesrta23.F90,
yoesrta24.F90, yoesrta25.F90, yoesrta27.F90, yoesrta28.F90,
yoesrta29.F90

arpifs/phys_radi

radina.F90, radintg.F90, radlswr.F90, recmwf.F90, srtm_spcvrt.F90,
srtm_srtm_224gp.F90

EL KHATIB Ryad

Doc:

Fullpos halo management (targetting the use of the biperiodicization of Boyd) :

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- Revisit the halos management of Aladin-Fullpos in order to allow interpolations over C+I+E. This modification allows a change of resolution of Aladin without reducing the domain area.
- Recode LWIDER_DOM. The gridpoint outside the model domain are virtually moved to the limits of the model domain. This modification can have a small impact on the results because the model domain is actually slightly larger than it was thought to be in the previous cycles.

Interoperability aspects (targetting the replacement of the conf. 901 by the conf. 903) :

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- Allow NFPCLI=2 again :
NFPCLI=2 is equivalent to NFPCLI=1 but it allows to read more fields that just orography and land-sea mask.
NFPCLI=1 is reserved only for orography and land-sea mask in output.
Beware that with this modset certain namelists might need to be changed from NFPCLI=1 to NFPCLI=2.
- Extend VCLIX with more fields
- Flexible FFT package (FFT992 or FFTW) per domain of Fullpos (namelist variable NFPFFTW=0 or 1)
- Use "ICMUA\${CNMEXP}INIT" instead of "ICMGG\${CNMEXP}INIUA" for gridpoint upper air GRIB2 fields in input of the configuration 903. This modification enables to run the configuration 903 in server mode together with LECMWF=.TRUE.
- Remove LGRBOP and replace by LARPEGEF
- miscellaneous other enhancements for interoperability GRIB2 vs FA
- namelist key LLMODGRIN in conf. 901 to modify fields in input like what is done in IFS.
- printout norms of Fullpos auxiliary fields if NFPSURFEX==1
- add PRVRSMIN in surf_in! q
- use option 1 with the proper arguments instead of 7 for .not.LCRITSNOWTEMP

Fullpos refactoring (towards OOPS) :

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- Pass the output date in argument.
- Move suoph up from su0yomb to su0yoma and move down sufa
- Move NFPSLWIDE to NAMFPSC2
- Remove suarpio

Bugfixes :

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Bugfix for LIOLEVG. LIOLEVG can be used to save memory and CPU time in the task "couplingsurf".

Bugfix for the case NFPBW > 0 with the biperiodicization of Boyd*

Bugfix for the configuration 901 when a parameter was unattended or had an incorrect resolution

Bugfix on the call to Fullpos monitoring file

Bugfix to support fullpos server in the task couplingsurf

Bugfix for Surfex compilation

Bugfix for the support of gri_api 2 in FA.

Portability fix for Cray

Optimizations :

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- Optimization of the biperiodicization of Boyd
- Optimization of RTTOV interface to Fullpos.
- NJPPF in namelist NAMSATS. Default is 50 (same order of magnitude than NPROMA) to limit allocation/deallocation cycles, except for NECSX (256) and Cray (8, as before).
- Optimization by directive "!DEC\$ OPTIMIZE:3" for certain subroutines which do take advantage of it without any change of the results.
Note that this directive is not taken into account if the general optimization level is less or equal to 2 : it needs a specific compilation script.
- More use of memcpy
- More use of mpi_waitany
- More use of automatic arrays + overlap send/rcv with pack/unpack
- Optimization of RRTM
- Reduce FFTs overhead

Compile time optimization :

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- Split HPOS
- reduce optimization level in setup of ECMWF physics

EXPECTED IMPACT:

Possible impact if LWIDER_DOM=.TRUE. on the limit of the domain.

Beware that with this modset certain namelists might need to be changed from NFPCLI=1 to NFPCLI=2.

Projects: aladin, algor, arpifs, biper, ifsaux, mse, satrad, surf, surfex

Git branch: khatib_CY43T1_fpos

Added:

arpifs/fullpos	checkinclin.F90, fptensor.F90, hpos_cfu.F90, hpos_dyn.F90, hpos_xfu.F90, incfpf.F90
arpifs/parallel	fpstrgoa.F90

Modified:

aladin/c9xx	ebicli.F90
aladin/fullpos	fpezo2h.F90, fpezzone.F90, fpfillb.F90, suefpg3.F90, sufpezo.F90
aladin/interpol	eslxtpol.F90, suehow1.F90
aladin/setup	suemapf.F90
algor/external/fourier	fft992.F
algor/internal/fourier	qpassf.F, rpassf.F
arpifs/adiab	call_sl.F90
arpifs/c9xx	grtestr.F90
arpifs/canari	caisse.F90, calice.F90, canife.F90
arpifs/climate	updcli.F90, updcli_mse.F90
arpifs/control	cnt4.F90, cprep1.F90, cprep3.F90, fpwrncf.F90, iopack.F90, scan2m.F90
arpifs/dia	cpphddh.F90, extfpnorm.F90, fpgpnorm.F90, preset_grib_template.F90, wrbudg.F90, wrmlpp.F90
arpifs/fullpos	cpclimi.F90, dynfpos.F90, endpos.F90, endvpos.F90, extfpf.F90, fpcordyn.F90, fpcorphy.F90, fpmoaprec.F90, fpnilphy.F90, fposhor.F90, fposhorlag.F90, fpsampl.F90, fpts_dir.F90, gridfpos.F90, hpos.F90, ini3wrfp.F90, iofpos.F90, scan2m_hpos.F90,

	scan2m_mpos.F90, stepo_fpos.F90, subfpos.F90, sufp_ctl.F90, sufpc.F90, sufpcip.F90, sufpclifname.F90, sufpd.F90, sufpdistrib.F90, sufpdyn.F90, sufpfg.F90, sufpfg2.F90, sufpios.F90, sufprfpbuf_clim.F90, sufprfpbuf_geom.F90, sufprfpds.F90, sufpssc2.F90, sufpssuw.F90, sufpstr2.F90, sufptrans.F90, sufpwfpbuf.F90, sufpwfpds.F90, sufpwide.F90, sumpfpos.F90, updvpos.F90, wrhfp.F90
arpifs/interpol	fpint12.F90, fpint4.F90, fpscaw.F90, slcomm.F90, slcomm2a.F90, slcset.F90
arpifs/module	extfpselect_mod.F90, model_mod.F90, parfpos.F90, sats_mix.F90, surface_fields_mix.F90, yemfpg.F90, yomfpc.F90, yomfpg.F90, yomfpgind.F90, yomfpios.F90, yomfpssc2.F90, yomoph.F90, yomoph0.F90, yomsats.F90, yomwfpb.F90
arpifs/namelist	namfpc.nam.h, namfpg.nam.h, namfpios.nam.h, namfpssc2.nam.h, nammars.nam.h, namsats.nam.h
arpifs/oops	fields_io_mod.F90, ifs_init.F90
arpifs/op_obs	cobsall.F90, cobsalltl.F90
arpifs/parallel	dresddh.F90, fptratod.F90, fptrdtoa.F90
arpifs/phys_dmn	acmtddd.F90, acmtud.F90, advprcs.F90, mts_phys.F90
arpifs/phys_ec	suecaebc.F90, suecaec.F90, suecaeor.F90, suecaesd.F90, suecaess.F90, suecaesu.F90, sumaccbc1.F90, sumaccbc2.F90, sumaccor1.F90, sumaccor2.F90, sumaccsd1.F90, sumaccsd2.F90, sumaccsd3.F90, sumaccss1.F90, sumaccss2.F90, sumaccss3.F90, sumaccsu1.F90, suphec.F90
arpifs/phys_radi	rrtm_ecrt_140gp.F90
arpifs/setup	print_gfp.F90, su0phy.F90, su0yoma.F90, su0yomb.F90, su_surf_flds.F90, suafn.F90, suafn1.F90, suafn2.F90, suafn3.F90, suarpio.F90, suct0.F90, suct1.F90, sudyn.F90, sufa.F90, sufpinif.F90, sugridf.F90, sugridug.F90, sump0.F90, suoph.F90, suoph0.F90, suppvi.F90
arpifs/utility	dealfpos.F90, filedate.F90, sigpost.F90
biper/external	fpbipere.F90
biper/module	ewindowe_mod.F90
ifsaux/fa	faccpl.F90, facgra.F90
ifsaux/lfi	lfiouv.F90
mse/externals	fp2sx1.F90, hpossfx.F90
mse/interface	hpossfx.h
satrad/module	cparam.F90
satrad/rttov/ifs	phrtsetup.F90, rttov_ec.F90
surf/external	surf_inq.F90
surf/interface	surf_inq.h
surfex/ASSIM	default_assim.F90

Doc:

Miscellaneous bugfixes.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: aladin, arpifs, odb

Git branch: khatib_CY43T1_t2.01%fix

Modified:

aladin/fullpos suefpg3.F90

aladin/interpol	eslextpol.F90
arpifs/fullpos	hpos_cfu.F90
arpifs/interpol	slcomm2a.F90
arpifs/setup	su_surf_flds.F90
odb/pandor/module	bator_decodbufr_mod.F90

Doc:

Fix typo.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: khatib_CY43T1_t2.02%fix

Modified:

arpifs/interpol	slcomm2a.F90
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Doc:

1) *Bugfix for conf. 601.*

2) *Use automatic arrays.*

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: khatib_CY43T1_t2.03%fix

Modified:

arpifs/interpol	slcomm2a.F90
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FAURE Ghislain

Doc:

Bugfix for 1D ocean model.

EXPECTED IMPACT:

Improvement of the diurnal cycle thanks to a better solar radiation impact.

Projects: surfex

Git branch: faure_CY43T1_CMO_bugifx

Modified:

surfex/SURFEX

ocean_mercatorvergrid.F90

GCO

Doc:

Remove obsolete SQL request "hretr_canari_satbody.sql".

Projects: odb

Git branch: gco_CY43T1_t2

Deleted:

odb/ddl.CCMA	hretr_canari_satbody.sql
odb/ddl.ECMA	hretr_canari_satbody.sql
odb/ddl	hretr_canari_satbody.sql

Doc:

Uncomment following lines:

651: !CALL FSSO(UG, USS)

669: !CALL HORIZON_OROG(UG, USS, CSVF, LFSSOSVF)

Projects: surfex

Git branch: gco_CY43T1_t2.03%fix_pgd_orography

Modified:

surfex/SURFEX	pgd_orography.F90
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GERARD Luc

Doc:

* *arpifs/phys_dmn/acnsdo.F90:*

Fix coding bugs (S. Briceag) + special use of gddwps and gddtausig to tune the closure.

* *arpifs/phys_dmn/acnebcond.F90:*

Modify condition for reset to zero of protected fraction.

* *arpifs/phys_dmn/acnebn.F90:*

- *Argument PNEBC becomes INOUT (instead of OUT).*
- *Suppress 2 redundant elsif (code was written twice).*

* *arpifs/phys_dmn/aplpar.F90:*

- *Initialize ZNEBC0 passed to acnebn now as INOUT in LCVCSO case.*
- *Replace ZNEBH by ZNEBCH in call to acnebn.*
- *Replace ZNEBCH by ZNEBH in 2nd call to acnebcond and subsequent call to accdev.*

Projects: arpifs

Git branch: gerardl_CY43T1_t1t2

Modified:

arpifs/phys_dmn acnebcond.F90, acnebn.F90, acnsdo.F90, aplpar.F90

GUIDARD Vincent

Doc:

Catchup of branch guidardv_CY42_IASIts: implement emissivity atlases and LST retrieval for IASI, VarBC monitoring of ozone channels of SEVIRI and AHI.

EXPECTED IMPACT:

Modifications only are for monitoring and diagnostic purposes. Nevertheless, minor numerical impact may be expected on IASI surface-sensitive channels over land (which are not assimilated).

Projects: arpifs, blacklist, satrad

Git branch: guidardv_CY43T1_IASIts

Added:

satrad/emiss land_iasi.F90, land_iasi_data.h

Modified:

arpifs/module sats_mix.F90, varbc_rad.F90, yomemis.F90

arpifs/namelist namemis_conf.nam.h

arpifs/op_obs emis_atlas.F90, hretr_rad.F90, rad1cemis.F90, radtr_ml.F90

arpifs/setup suemis_conf.F90

blacklist mf_blacklist.b

satrad/emiss atlas_iniall.F90

Doc:

OOPS compliance + e-suite catchup.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: guidardv_CY43T1_mergeVarbc

Modified:

arpifs/module varbc_class.F90, varbc_setup.F90

arpifs/programs merge_varbc.F90

GUILLAUME Frank**Doc:**

Phasing with CY42_op1. Bugfix for BATOR: processing of sensor (56) from Himawari-8 for CSR datas could lead to an array overflow.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: odb

Git branch: guillaum_CY43T1_bugfix_sev

Modified:

odb/pandor/module bator_ecritures_mod.F90

Doc:

In order to allow the elaboration of scores for rain accumulations from BDMO table SOLVERIF, it is necessary to change the preference order in which ODB recovers this parameter for SOLOMM & RADOMEH datas. It will be now recovered, by decreasing priority, on 6, 12, 3, and 24 hours.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: odb

Git branch: guillaum_CY43T1_phasing_rr_for_fcqodb

Modified:

odb/pandor/fcq fcqodb_solverif.F90
odb/pandor/module bator_decodbufr_mod.F90

MARGUINAUD Philippe

Doc:

Import bugfixes from CY42_op1/op2.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs, ifsaux, utilities

Git branch: marguina_CY43T1_42op

Modified:

arpifs/io_serv	io_poll, io_serv_create_fa.F90
ifsaux/fa	fasgra.F90
ifsaux/module	fa_mod.F90
utilities/combi	combi_opti.F90

Doc:

1) Allow model output files to have dates and terms shifted by an offset.

2) Fix bug in post-processing server.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: marguina_CY43T1_t2fps

Modified:

arpifs/control	cnt4.F90
arpifs/fp_serv	fp_serv_sync.F90, suinif_fp.F90
arpifs/io_serv	io_serv_hdr1_init.F90, io_serv_init_part1.F90, io_serv_map_send_part1.F90, io_serv_sync.F90
arpifs/module	yomio_serv.F90

Doc:

First part of modifications to enable single precision in ARPEGE and AROME: port of IO and other technical routines.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs, ifsaux, mpa, mse, odb, surfex, trans

Git branch: marguina_CY43T1_t2portSPpart1+2

Added:

ifsaux/hack	setsigfpe.c
ifsaux/support	qsortr.F, qsortr8.F
ifsaux/utilities	ssort.F

Modified:

arpifs/adiab	cptend_new.F90
arpifs/dfi	sufw.F90
arpifs/dia	wrgathflnm.F90, wrspeca_compress_mt.F90
arpifs/fullpos	cpfpfilter.F90, ini1wrfp.F90, rdfpfilter.F90, wrfpfilter.F90
arpifs/io_serv	io_serv_expfpf.F90, io_serv_get_req.F90, io_serv_hdr_grok_size.F90, io_serv_prepacka1_compress.F90, io_serv_read_send.F90, io_serv_recv_term.F90, io_serv_suiosctmpl.F90, io_serv_wrgp2fa_compress.F90, io_serv_write.F90,

	io_serv_wrspeca_compress.F90
arpifs/module	elbc0b_mod.F90, factx_mod.F90, iocptdesc_mod.F90, ioflddesc_mod.F90, iofu_mod.F90, iogrida_mod.F90, iogridua_mod.F90, iospeca_mod.F90, iospecspa_mod.F90, ioxfu_mod.F90, traj_physics_mod.F90, yomio_serv.F90
arpifs/phys_dmn	acnebcond.F90, acnebn.F90, acnebsm.F90, actke.F90, apl_arome.F90, aplmpphys.F90, aplpar.F90, initaplpar.F90, mf_phys.F90
arpifs/phys_ec	nemoaddflds_layer.F90, suclid.F90
arpifs/phys_radi	acraneb.F90, swde.F90
arpifs/setup	suvfe_matrix.F90
arpifs/utility	pkgrida.F90, pkspeca.F90, pksurfa.F90, prepacka.F90, prepacka1_mt.F90, verintad.F90, wrgp2fa_compress_mt.F90
ifsaux/fa	facade.F90, facadi.F90, faccpl.F90, facgra.F90, facgrm.F90, facil1.F90, facile.F90, facine.F90, facoch.F90, facodega.F90, facodx.F90, facon1.F90, fadcpl.F90, fadec1.F90, fadeci.F90, fadeco.F90, fadecoga.F90, fadecx.F90, fadgra.F90, fadoco.F90, fagribex.h, faien1.F90, faigra.F90, faisau.F90, faitou.F90, falais.F90, fanion.F90, fasgra.F90, fatcha.F90, favori.F90
ifsaux/grib_mf	codega.F, confi.F, confp_mf.F, decfp_mf.F, decoga.F, gbyte_mf.F, gbytes_mf.F, gsbite_mf.F, gsbyte_mf.F, mxmn_mf.F, offset_mf.F, packgb.F, prtbin_mf.F, sbyte_mf.F, sbytes_mf.F, unpagb.F
ifsaux/lfi	lfidah.F90, lfiecd.F90, lfiecr.F90, lfiecx.F90, lfiedo.F90, lfifer.F90, lfiist.F90, lfilap.F90, lfilas.F90, lfildo.F90, lfilec.F90, lfiled.F90, lfimoe.F90, lfiouv.F90, lfivid.F90
ifsaux/misc	extractgrib.F90, falist.F90, testfa.F90, tstlfi.F90
ifsaux/module	fa_mod.F90, grib_api_interface.F90, lfi_precision.F90, lfimod.F90, mpl_recv_mod.F90, mpl_send_mod.F90, parkind1.F90
ifsaux/support	drhook.c
ifsaux/utilities	eggx_n.F90
mpa/micro/internals	ini_cst.F90
mse/externals	wrsfx.F90
mse/module	modd_io_surf_aro.F90
odb/module	odbmap_reportype.F90
surfex/SURFEX	modd_wp.F90
trans/external	trans_pnm.F90
trans/module	ledirad_mod.F90, leinvad_mod.F90

Doc:

Port of ARPEGE and AROME to single precision; avoid divisions by zero and too large numbers in the physics.

EXPECTED IMPACT:

These modifications have been validated over one month both for AROME and ARPEGE; there is an impact, but it is very small.

Projects: arpifs, surfex

Git branch: marguina_CY43T1_t2portSPpart3+4

Modified:

arpifs/function	fcctrm.func.h
arpifs/phys_dmn	acfluso.F90, achmt.F90, acmodo.F90, actqsat.F90, acturb.F90
arpifs/phys_radi	acralu.F90
surfex/SURFEX	average_rad.F90, averaged_tsrاد_teb.F90, avg_urban_fluxes.F90,

diag_isban.F90, diag_seafluxn.F90, diag_tebn.F90, diag_watfluxn.F90,
ecume_flux.F90, read_covers_param.F90, soil.F90,
unpack_diag_patchn.F90, update_data_cover.F90, urban_lw_coef.F90,
veg_height_from_lai.F90

MARY Alexandre

Doc:

Bugfixes and getting derivatives for Gauss spectral fields.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: ifsaux

Git branch: mary_CY43T1_libs4py

Modified:

ifsaux/fa faipar.F90

ifsaux/py_interface FA4py.F90, transforms4py.F90

Doc:

Ororad phased upon SurfexV8.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: mse, surfex

Git branch: mary_CY43_ororad

Added:

surfex/SURFEX fsso.F90, horizon_orog.F90

Modified:

mse/programs sfxtools.F90

surfex/SURFEX pgd_orography.F90

MASEK Jan

Doc:

ALARO phasing contribution for CY43T2.

Content:

- 1) Delta-scaling of the surface direct solar flux applied only in the clearsky part of gridbox. Proper diagnostics of sunshine duration, taking into account subgrid variability of direct solar flux.
(concerns only ACRANEB2 radiation, in both ALARO and AROME)*
- 2) Possibility to scale decorrelation depth in diagnostic cloud cover.
(concerns only exponential-random cloud overlap)*
- 3) Corrected diagnostics of 10m/2m quantities when the lowest model level falls below observation height.
(concerns only TOUCANS turbulence)*
- 4) Cleaned version of subroutine ACDIFV3, prepared by P. Smerkol.
(concerns only TOUCANS turbulence)*

Contributors: J. Masek, P. Smerkol

GIT branch: masekj_CY43T1_alaro

Base cycle: cy43t1

Target cycle: cy43t2

List of modified files (12):

*arpifs/module/yomphy0.F90
arpifs/namelist/namphy0.nam.h
arpifs/phys_dmn/acdifv3.F90
arpifs/phys_dmn/acnpart.F90
arpifs/phys_dmn/actkecls.F90
arpifs/phys_dmn/actkehmt.F90
arpifs/phys_dmn/apl_arome.F90
arpifs/phys_dmn/aplpar.F90
arpifs/phys_dmn/suphy0.F90
arpifs/phys_radi/acraneb2.F90
arpifs/phys_radi/acraneb_coefs.F90
arpifs/phys_radi/acraneb_solvs.F90*

Description of modifications:

arpifs/module/yomphy0.F90

Added variable RDECRDRED (scaling factor for decorrelation depth in diagnostic cloud cover).

arpifs/namelist/namphy0.nam.h

Added variable RDECRDRED.

arpifs/phys_dmn/acdifv3.F90

Subroutine rewritten in a cleaner way, without touching functionality. Some reorderings change the numerical results, however.

arpifs/phys_dmn/acnpart.F90

Added dummy argument PCLCT_RAD (total cloud cover consistent with ACRANE2 radiation), needed for correct diagnostics of sunshine duration.

arpifs/phys_dmn/actkecls.F90

Correct treatment of the case when lowest model level falls below observation height. Dummy argument PDPHI made 2-dimensional (added KLEV dimension).

arpifs/phys_dmn/actkehmt.F90

Local array ZDPHI passed to ACTKECLS made 2-dimensional (added KLEV dimension).

arpifs/phys_dmn/apl_arome.F90

Modified call to ACNPART moved before ACRANE2, so that radiation cloud cover ZCLCT_RAD is properly filled. Update of sunshine duration inside ACRANE2. Removal of most norm checker warnings.

arpifs/phys_dmn/aplpar.F90

Modified calls to ACNPART and ACRANE2, passing radiation cloud cover via local array ZCLCT_RAD. Update of sunshine duration inside ACRANE2. Removal of some norm checker warnings.

arpifs/phys_dmn/suphy0.F90

Initialization of the new variable RDECRDRED. Removal of some norm checker warnings.

arpifs/phys_radi/acraneb2.F90

New dummy arguments PCLCT and PSDUR, improved diagnostics of the surface direct solar flux and sunshine duration.

arpifs/phys_radi/acraneb_coefs.F90

Proper naming of variables containing delta-unscaled quantities.

arpifs/phys_radi/acraneb_solvs.F90

Use of true direct solar flux in surface reflective condition. Proper naming of variables containing delta-unscaled quantities.

Tests:

12 hour ALARO integrations were performed on prolix. Modified subroutine

ACDIFV3 changes spectral norms, ensuring only meteorological reproducibility (3 digits kept identical during 2 hour integration). With unmodified version of ACDIFV3, spectral norms are bit identical with cy43t1_main reference. AROME configuration is not influenced when ACRANE2 radiation is off.

Projects: arpifs

Git branch: masekj_CY43T1_alaro

Modified:

arpifs/module	yomphy0.F90
arpifs/namelist	namphy0.nam.h
arpifs/phys_dmn	acdifv3.F90, acnpart.F90, actkecls.F90, actkehmt.F90, apl_rome.F90, aplpar.F90, suphy0.F90
arpifs/phys_radi	acraneb2.F90, acraneb_coefs.F90, acraneb_solvs.F90

MEUNIER Louis-Francois

Doc:

Fix for rttov_integrate.F90 compiler's directive (otherwise the code crashes with Segmentation Fault).

NO NUMERICAL IMPACT IS EXPECTED.

Projects: satrad

Git branch: meunierlf_CY43T1_compiler_bf_for_rttov

Modified:

satrad/rttov/main

rttov_integrate.F90

MOLL Patrick

Doc:

Bugfixes for CY43T2.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: moll_CY43T1_bugsCY43

Modified:

arpifs/module	varbc_rsonde.F90, varbc_setup.F90
arpifs/op_obs	obsop_conv.F90
arpifs/pp_obs	ppobsac.F90, ppobsacad.F90, ppobsactl.F90, ppobsap.F90

Doc:

Import bugfixes from CY42_op1/op2.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: moll_CY43T1_phase42to43t1

Modified:

arpifs/obs_preproc	fgwnd.F90
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PIRIOU Jean-Marcel

Doc:

Computes resolution dependency of the PCMT convection scheme, from local model resolution.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: piriou_CY43_resolpcmt

Modified:

arpifs/module	yomphy0.F90
arpifs/namelist	namphy0.nam.h
arpifs/phys_dmn	acmtud.F90, acpcmt.F90, aplpar.F90, suphy0.F90

SEITY Yann

Doc:

Bugfix DDH AROME for VNT field.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: seity_CY43T1_bfddh

Modified:

arpifs/dia cpdyddh.F90

Doc:

Catch-up of bugfixes from branches seity_CY42_bfFluxLatAro and seity_CY42_bfArome.

EXPECTED IMPACT:

Latent heat fluxes diagnostic multiplied by rho, albedo over sea corrected; very small impact expected.

Projects: arpifs, surfex

Git branch: seity_CY43T1_from42op_AROME

Modified:

arpifs/phys_dmn apl_arome.F90

surfex/SURFEX albedo_ta96.F90

SUZAT Florian

Doc:

Merging P. Chambon branches (chambonp_CY42_rttov_sfc_co2slc, chambonp_CY42_gmi_monitoring, chambonp_CY42_enable_MWHS2_GMI, chambonp_CY42_bf_MWHS2) for MF GMI/MWHS2 assimilation.

EXPECTED IMPACT:

This modification has a numerical impact as it does allow the assimilation of new observations.

Projects: arpifs, blacklist, satrad

Git branch: suzat_CY43T1_MWHS2_GMI

Modified:

arpifs/obs_preproc	black.F90, new_thinn.F90, new_thinner_no_sq.F90
arpifs/op_obs	departure_jo.F90, emis_mw_n.F90
blacklist	mf_blacklist.b
satrad/emiss	atlas_iniall.F90

TAILLEFER Francoise**Doc:**

Phasing of some cleaning/update of cy42_op code for various surface configurations (clim, ice, canari prints ...) and SATOB lsm navigation.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: aladin, arpifs, blacklist, mse, utilities

Git branch: taillefer_CY43T1_phas42_1

Modified:

aladin/c9xx	eincli3.F90
arpifs/c9xx	cseaice.F90
arpifs/canari	can1.F90
arpifs/setup	sugridf.F90
blacklist	mf_blacklist.b
mse/module	sfxflddesc_mod.F90
utilities/ice	ice_grb.F90

Doc:

Add new fields in the surfex descriptors list due to modifs for Gauss grid in V8.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: mse

Git branch: taillefer_CY43T1_phas42_2

Modified:

mse/module	sfxflddesc_mod.F90
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Doc:

The name of the fields in a FA format file produced by PGD code (let's say GMGEC FA format, used only by the PNT models in the e923 configuration)

has been changed from the surfex V8 ... this modif allows to run e923 whatever the fields prefix is ('SID_' [old] or 'SFX.' [new]).

And still in 923: remove of an internal system copy file (which is useless and may causes damages in case of big clim files).

NO NUMERICAL IMPACT IS EXPECTED.

Projects: arpifs

Git branch: taillefer_CY43T1_upd_e923

Modified:

arpifs/c9xx	incli3.F90, relnew.F90
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YESSAD Karim

Doc:

MITRAILLETTE updates for CY43T2.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: mitraille

Git branch: yessad_CY43T1_t2V01cor

Added:

mitraille/protojobs/beaufix config_CY43T2

Modified:

mitraille/doc history_difnam

mitraille/namelist namg_c901, namg_fpmb, namg_fpmc, naml_ah9e_e927_fp_aru,
naml_ah9e_ee927_fp_arunes, naml_ahme_e001_fp_lamars,
naml_an1t_e001_nhsad_d4_sl2, naml_an2s_e001_nh2dm_d4_sl3,
naml_an2t_e001_nh2dm_d4_sl2, sel_axsy_makepgd_fa_arome_frangp

mitraille/pro_file PRO_FILE.currentcycle_aldmonoref,
PRO_FILE.currentcycle_aldmultiref,
PRO_FILE.currentcycle_arpmonoref,
PRO_FILE.currentcycle_arpmultiref

mitraille/protojobs/beaufix config, config_CY43T1, config_CY44

mitraille/protojobs config, config_CY43T1, config_CY44, jobg_c923, jobl_axcx_e923

Doc:

Update file history_difnam.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: mitraille

Git branch: yessad_CY43T1_t2V02cor

Modified:

mitraille/doc history_difnam

Doc:

MITRAILLETTE environment update.

NO NUMERICAL IMPACT IS EXPECTED.

Projects: mitraille

Git branch: yessad_CY43T1_t2V03cor

Modified:

mitraille/doc history_difnam

mitraille/namelist naml_ahut_e001_sl2, naml_arut_e001_sl2