ARPEGE MEMORANDUM

From: GCO

To: GMAP, COMPAS, GMGEC, GMME, DIR/RE/CRC, Mats Hamrud

Subject: New cycle CY31T1

A new cycle CY31T1 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: CY31T1

Modified libraries: arpege, aladin, odb, utilities, ifsaux, trans_ald

Contributors:

ALIAS Antoinette
- Project: arpege CCASE branch: mrga589_CY31T0_aa
- Project: arpege CCASE branch: mrga589_CY31_eac

ANDERSEN Bjarne Stig
- Project: arpege CCASE branch: mrpe697_CY31T0_hirphys

AUGER Ludovic
- Project: arpege CCASE branch: mrpa645_CY31_varp

DESROZIERS Gerald
- Project: arpege CCASE branch: mrpm611_CY31T0_bgos31t1
- Project: arpege CCASE branch: mrpm611_CY31_mrpm611

Eric BAZILE
- Project: arpege CCASE branch: mrpm604_CY31T0_gmgec

FAURE Ghislain
- Project: arpege CCASE branch: mcrc001_CY31_BalNLO

Francoise TAILLEFER
- Project: arpege CCASE branch: mrpa647_CY31T0_ftmod

GCO
- Project: arpege CCASE branch: marp001_CY30T1_none
- Project: arpege CCASE branch: marp001_CY31T0_eac
- Project: arpege CCASE branch: marp001_CY31T0_gmgec
- Project: arpege CCASE branch: marp001_CY31T0_gcc

IVATEK-SAHDAN Stjepan
- Project: arpege CCASE branch: mrpm620_CY31T0_501
- Project: arpege CCASE branch: mrpm620_CY31T0_e923-elislap

Jean-Marcel PIRIOU
- Project: arpege CCASE branch: mrpm606_CY31T0_ddhk

Karim YESSAD
- Project: arpege CCASE branch: mrpm603_CY31T0_bugfixpour31t1

POLI Paul
- Project: arpege CCASE branch: mrpa679_CY31T0_dev

PUECH Dominique
- Project: arpege CCASE branch: mrpa660_CY31T0_dev

Patrick MOLL
- Project: arpege CCASE branch: mrpa646_CY31T0_none
- Project: arpege CCASE branch: mrpa646_CY31T0_vents

Ryad El KHATIB
- Project: arpege CCASE branch: mrpm602_CY31T0_fix

SEITY Yann
- Project: arpege CCASE branch: mrpm637_CY31T0_bfchimie
- Project: arpege CCASE branch: mrpm637_CY31T0_bfcomplig95

TROJAKOVA Alena
- Project: arpege CCASE branch: mrpe694_CY31T0_phasing

VANA Filip
- Project: arpege CCASE branch: mrpe706_CY31T0_slhdstr
**ALIAS Antoinette**

**Doc:**

1/ Allow to modify the value of R10 in namelist.

2/ The processing of gust max will not be introduced in ARPEGE code.

3/ Correction to test that SDSAT and CVV are not coded in spectral.

**Project:** arpege  
**ClearCase branch:** mrga589_CY31T0_aa

**Modified:**

<table>
<thead>
<tr>
<th>Path</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>arp/adiab cpg_dia.F90</td>
<td></td>
</tr>
<tr>
<td>arp/dia cpxfu.F90</td>
<td></td>
</tr>
<tr>
<td>arp/module ptrxfu.F90</td>
<td></td>
</tr>
<tr>
<td>arp/namelist namscen.h</td>
<td></td>
</tr>
<tr>
<td>arp/phys_dmn surdi15.F90</td>
<td></td>
</tr>
<tr>
<td>arp/setup sugfl.F90</td>
<td></td>
</tr>
<tr>
<td>arp/phys_dmn/acozone.F90</td>
<td></td>
</tr>
<tr>
<td>arp/phys_dmn/aplpar.F90</td>
<td></td>
</tr>
<tr>
<td>arp/phys_dmn/accvimp_v3.F90</td>
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</tbody>
</table>

**Doc:**

1/ Cleaning the source code.

**Modified:**

<table>
<thead>
<tr>
<th>Path</th>
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</thead>
<tbody>
<tr>
<td>arp/adiab gpmpfc.F90</td>
<td></td>
</tr>
<tr>
<td>arp/module/yomaerd15.F90</td>
<td></td>
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<tr>
<td>arp/namelist/namtoph.h</td>
<td></td>
</tr>
<tr>
<td>arp/transform/speuv.F90</td>
<td></td>
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<tr>
<td>arp/utility/updtim.F90</td>
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</table>

2/ Relaxation of deep reservoir.

**Modified:**

<table>
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<tbody>
<tr>
<td>arp/adiab/cpws.F90</td>
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</table>

3/ - Nudging with time variable coefficients  
- Nudging with vertical variable coefficients

**Modified:**

<table>
<thead>
<tr>
<th>Path</th>
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<tbody>
<tr>
<td>arp/adiab/spchor.F90</td>
<td></td>
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</tbody>
</table>

4/ Min and Max output added.

**Modified:**

<table>
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<tr>
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<tbody>
<tr>
<td>arp/dia/gnorma.F90</td>
<td></td>
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</tbody>
</table>

5/ Introduce heterogeneous chemical (P.Simon) and bugfix on zenith angle (M.Déqué)

**Modified:**

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<tr>
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<td>arp/phys_dmn/aplpar.F90</td>
<td></td>
</tr>
</tbody>
</table>

7/ Cloud forcing diagnostics.
Modified: arp/setup/sugem2.F90

8/ - Add VCLIS for ozone forcing files
   - Allows NVCLIS=1 with LOZONE=.F.

Modified: arp/setup/sugridadm.F90

9/ MXGUST added.

Modified: arp/dia/cpxfu.F90
   - Introduction of the routines calculating the deep convection through the logical key LCVPGY.
   - Addition of 2 GFLs fields to be used by the convection scheme
     ACCVIMP/ACCVIMPDG:
     YSDSAT : standard Deviation of the SATuration depression (Sigma_s)
     YCVV   : Convective Vertical Velocity

Added : arp/phys_dm/accvimpdg.F90
   - Introduction of keys : LAJUCV,LNEBGR,LNEBGY,LCVKF,LCVRAV3,LBLCOND,LPBLE to activate the use of different convection or turbulence schemes.
   - Introduction of key LZ0HSREL to activate the use of thermical Z0 without relief.

Modified: arp/namelist/namphy.h

Project: arpege
ClearCase branch: mrga589_CY31_eac

Modified:

arp/adiab  cpg.F90  cpg_dia.F90  cpg_gp.F90
cpwts.F90  gpmpfc.F90  spchor.F90
arpcnt4.F90
arp/dia    cpxfu.F90  grnorma.F90
arp/module ptrxfu.F90 yom_ygfl.F90
arp/namelist namfa.h  namgfl.h  namphy.h
ANDERSEN Bjarne Stig

Doc:

Introduction of the Turbulent Kinetic Energy scheme (Default LECT=F) (E. Bazile), logical for the Smith’s adjustment (Default LADJCLD=T) (F. Bouyssel) and the HIRLAM physics (Default LHL=F) (B. Andersen and B. Sass).

Project:     arpege
ClearCase branch:  mrpe697_CY31T0_hirphys

Added:
arptocean namphy0.h
arp/phys_dmn namtoph.h
arp/setup
arp/transform
arp/utility

Modified:
arptoadiab
arp/function
arp/module
arp/namelist
arp/phys_dmn
arp/setup

ANDERSEN Bjarne Stig

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Introduction of the Turbulent Kinetic Energy scheme (Default LECT=F) (E. Bazile), logical for the Smith’s adjustment (Default LADJCLD=T) (F. Bouyssel) and the HIRLAM physics (Default LHL=F) (B. Andersen and B. Sass).

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Project:     arpege
ClearCase branch:  mrpe697_CY31T0_hirphys

Added:
arptocean namphy0.h
arp/phys_dmn namtoph.h
arp/setup
arp/transform
arp/utility

Modified:
arptoadiab
arp/function
arp/module
arp/namelist
arp/phys_dmn
arp/setup
**AUGER Ludovic**

Doc:

*Modifications for VARPACK.*

**Project:** arpege  
**ClearCase branch:** mrpa645_CY31_varp  
**Modified:**

- `arp/module` `yomfpc.F90` `yomphy.F90`  
- `arp/namelist` `namfpc.h` `namphy.h`  
- `arp/phys_dmn` `acntcls.F90` `acntclsad.F90` `acntclsl.F90`  
- `arp/pp_obs` `phymfpos.F90`  
- `arp/setup` `su0phy.F90` `sufpc.F90` `suxfufp.F90`  

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**DESROZIERS Gerald**

Doc:

*Modifications for sigmab cycling.*

**Project:** arpege  
**ClearCase branch:** mrpm611_CY31T0_bgobs31t1  
**Modified:**

- `arp/obs_preproc` `defrun.F90` `fgchk.F90`  

Doc:

*Add SSMI channels for sigmab randomization if LECMWF=FALSE.*

**Project:** arpege  
**ClearCase branch:** mrpm611_CY31_mrpm611  
**Modified:**

- `arp/setup` `susc2b.F90`  

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**Eric BAZILE**

Doc:

*Bugfixes.*

**Project:** arpege  
**ClearCase branch:** mrpm604_CY31T0_gmgec  
**Modified:**

- `arp/module` `yomphy.F90`
FAURE Ghislain

Doc:

Introduce non-linear balances and omega in ALADIN assimilation. These balances are used to make the model, which handles guess error covariances, dependent on the flux (of the guess), forcing some spatial heterogeneity: stronger is the wind (his gradient or his curve), locally higher are the guess standard deviations. These balances allow a better jets description for temperate latitudes, even though we expect that they increase high resolution cyclones analysis in tropical areas. Theses balances already exist in ARPEGE, and are handled in ALADIN source code since december 2005.

Project: arpege, aladin
ClearCase branch: mcr001_CY31_BalNLO

Added:

ald/var ebalnonlin.F90 ebalnonlinad.F90 ebalnonlintl.F90
ebalomega.F90 ebalomegaad.F90 ebalomegaatl.F90

Modified:

ald/var ebalnonlin.F90 ebalnonlinad.F90 ebalnonlintl.F90
ebalomega.F90 ebalomegaad.F90 ebalomegaatl.F90
arp/var sqrtb.F90 sqrtbad.F90 sqrtbin.F90 sqrtbinad.F90

Francoise TAILLEFER

Doc:

1/ arp/setup/sufpsc2.F90 : bad array allocation in case of e923 (correction done by M. Jidane).

2/ arp/canari/caupfle.F90 : better setting of the tags for the MP routines.

Project: arpege
ClearCase branch: mrpa647_CY31T0_ftmod

Modified:

arp/canaricaupfle.F90
arp/setup sufpsc2.F90

GCO

Doc:

Create dummy routine mpa/dummy/mask_compress.mnh.

Project: mpa
ClearCase branch: marp001_CY30T1_none

**Added:**

mpa dummy
mpa/dummy    mask_compress.mnh

**Doc:**
*Miscellaneous stuff from current parallel suite, which has become operational at the end of June.*

**Project:** arpege, odb, utilities

ClearCase branch: marp001_CY30T1_op1

**Modified:**

arp/canari   canaco.F90   canali.F90   caupfig.F90
arp/module   qactex.F90
arp/namelist nactex.h
odb/ddl      matchup_atovs_pred.sql    matchup_body.sql
            matchup_hdr.sql
            matchup_update_1.sql    matchup_update_2.sql    matchup_update_3.sql
            new_thinn_robhdr_4.sql    new_thinn_robhdr_5.sql
pre_thinn_robhdr_4.sql
                               pre_thinn_robhdr_5.sql
uti/bator    bator_lectures.F90

**Doc:**
*Miscellaneous stuff from the new parallel suite.*

**Project:** arpege, odb, utilities

ClearCase branch: marp001_CY30T1_op2

**Added:**

uti/pregpssol filter_gpssol.F90 get_tslot_gpssol.F90
pregpssol.F90  read_list_gpssol.F90  read_obsoul_gpssol.F90
write_obsoul_gpssol.F90

**Modified:**

arp/namelist   namvar.h
arp/obs_preproc blacksat.F90    defrun.F90
fgchk.F90
arp/pp_obs     bgobs.F90
arp/setup       susc2b.F90
arp/var         ftbgerr.F90    vec2gp.F90
odb/ddl        black_atovs.sql    hretr_canari_robhdr.sql
uti/bator      bator.F90    bator_decdbufr.F90    bator_decodgrib.F90
                bator_ecritures.F90    bator_impr.F90    bator_init.F90
                bator_lectures.F90    bator_saisies.F90    bator_util.F90
uti/controdb   controdb.F90
uti/extrtovs   biasconv_1c.F90    calc_bias_1c.F90    cycle_bias_1c.F90
uti/include    oulan_yomdirs.h
uti/namelist   bator_namelist.h    oulan_nadirs.h
uti/oulan      ext_gpssol.F    ext_synop.F
                oulan_extract.F    oulan_init.F    oulan_namelist.F
Modifications for portability on NEC platform.

**Project:** utilities
**ClearCase branch:** marp001_CY31T0_NEC

**Modified:**
uti/pregpssol filter_gpssol.F90 get_tslot_gpssol.F90 pregpssol.F90
data_list_gpssol.F90 read_obsoul_gpssol.F90
write_obsoul_gpssol.F90

**Doc:**

Miscellaneous stuff from current parallel suite, which has become operationnal at the end of June.

**Project:** arpege, aladin, odb, utilities
**ClearCase branch:** marp001_CY31T0_dble

**Modified:**
ald/adiab espcm.F90
ald/programs blend.F90
arp/canari caupfng.F90
arp/dfi edfi2.F90
arp/module yomfpf.F90
arp/obs_preproc blackcln.F90 defrun.F90
arp/pp_obs spos.F90
arp/setup suafn1.F90 sufp.F90
arp/utility dealfpos.F90
odb/bufr2odb satobjson.F90
uti/bator bator.F90 bator_decodbufr.F90
bator_decodgrib.F90
bator_ecritures.F90 bator_lectures.F90 bator_saisies.F90
bator UTIL.F90
uti/module bator_module.F90
uti/oulan ext_acar.F ext_airsbt.F ext_atovs.F
ext_ers1.F ext_gpssol.F ext_radomeh.F
ext_ssmi.F ext_ssmice.F ext_synop.F
ext_tovs.F ext_tovsamsua.F ext_tovsamsub.F
ext_tovshirs.F ext_tovshirs_ech.F ext_tovsmai.F
oulan_extract.F
uti/progrid profac.F

**Doc:**

Little modset from Jean-Daniel Gril:
* eggx_n.F90: bugfix;
* eggangles.F90: split a too long line.

**Project:** aladin
**ClearCase branch:** marp001_CY31T0_eggx

**Modified:**
ald/module       eggangles.F90
ald/utility      eggx_n.F90

Doc:

1/ Add "Static_Init(MTOCOMP);" in odb/include/static.h to handle new database "MTOCOMP".

2/ Create dummy file odb/lib/MTOCOMP_static_init.c.

3/ Remove obsolete routines.

Project:    arpege, mpa, mse, odb
ClearCase branch: marp001_CY31T0_none

Added:

odb/lib MTOCOMP_static_init.c

Deleted:

arp/obs_preproc  blackcln.F90
mpa/chem/internals ch_set_photo_rates_n.mnh
mpa/chem/module modi_ch_set_photo_rates_n.mnh
mse/dummy       budget.mnh

Modified:

odb/include static.h

Doc:

1/ Modifications allowing to handle ECMWF blacklist.

2/ Modifications in BATOR:
   - replace YOMGLP (coh) by YOMANA (arp);
   - check dates: possibility to create bases without tslot using ficdate;
   - insert gpsro: use limb table;
   - modifications for LAMFLAG;
   - re-write GRIB program: formatting to prepare introduction of new GRIB data
     (insertion in general loop to be processed with other observations);
   - modifications of prints.

3/ Modifications in ODBTOOLS:
   - odbddr1.F90, odbddr2.F90: portability modifications for g95 (formats);
   - suffle.F90: basetime initialization;
   - swapoutdb.F90: delete "-x" option, now useless.

4/ Add a new database "MTOCOMP", allowing to produce compressed bases.

Project:    arpege, odb, utilities
ClearCase branch: marp001_CY31_bla

Added:

odb/ddl.MTOCOMP MTOCOMP.ddl alloc.h    mdi.h
   obstype.h    odb.h     odb98.flags
   privpub.h    sensor.h varno.h

Modified:
**IVATEK-SAHDAN Stjepan**

**Doc:**

*Bugfix for configuration 501.*

**Project:** arpege

**ClearCase branch:** mrpm620_CY31T0_501

**Modified:**

arp/setsupsudyn.F90

**Doc:**

*Bugfixes for configuration 923.*

**Project:** aladin

**ClearCase branch:** mrpm620_CY31T0_e923-elislap

**Modified:**

ald/c9xxeincl1.F90 einclir.F90

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**Jean-Marcel PIRIOU**

**Doc:**

*Introduction of DDH diagnostics in AROME.*

**Project:** arpege, mpa

**ClearCase branch:** mrpm606_CY31T0_ddhk

**Added:**

arp/dia aro_cpphdhh.F90
arp/module yommnh.F90 yomphft.F90
arp/phys_dmnn addft.F90 aro_iniapft.F90 suphmnh.F90
surfext.F90
mpa/micro/externals aro_buprocn.mnh aro_convbu.mnh
aro_startbu.mnh aro_subbudget.mnh aro_end_budget.mnh testapft.mnh
mpa/micro/interface aro_buprocn.h aro_convbu.h aro_startbu.h
Karim YESSAD

Doc:

1/ arp/phys_dmn/mf_phys.F90: fix the problem of PGP1 pointers which generates arrays overflows in leap-frog if LVGSN=TRUE, and fix some bad indentations.

2/ ald/setup/suegeo1.F90: cleanings and replace "PRINT*" by WRITE(NULOUT), and move big prints under key LOUTPUT.

3/ arp/setup/sudyn.F90: fix a phasing bug, and replace (LEPHYS.OR.LMPHYS) by LLDIAB in the definition of LLPT.

Project: arpege, aladin

ClearCase branch: mrpm603_CY31T0_bugfixpour31t1

Modified:

ald/setup suegeo1.F90
arp/phys_dmn mf_phys.F90
arp/setup sudyn.F90

Doc:
Modification code:
------------------

**BUG** : bug correction.

**NETADTLDYN** : update the TL and AD codes according to the direct code under CPGTL and CPGAD, and remove old scorries of obsolete AD and TL code of (NPDVAR,NVDVAR)=(0,0) NH code.

**MISC** : miscellaneous.

**OPTSP** : optimisation of the memory used in the SI and horizontal diffusion schemes in the stretched version of ARPEGE.

Case branch name:
------------------
mrpm603_CY30T1_dev31pour31t1

Modified elements:
------------------

ald/coupling/eseimpls.F90 : **BUG**

arp/adiab/cpg5_gp.F90 : **NETADTLDYN**
arp/adiab/cpg_dyn_ad.F90 : **NETADTLDYN**
arp/adiab/cpg_dyn_tl.F90 : **NETADTLDYN**
arp/adiab/cpg_end_ad.F90 : **NETADTLDYN**
arp/adiab/cpg_end_tl.F90 : **NETADTLDYN**
arp/adiab/cpg_gp_ad.F90 : **NETADTLDYN**
arp/adiab/cpg_gp_tl.F90 : **NETADTLDYN**
arp/adiab/cpg_zero_ad.F90 : **NETADTLDYN**
arp/adiab/cpgad.F90 : **NETADTLDYN**
arp/adiab/cpgtl.F90 : **NETADTLDYN**
arp/adiab/gpgrgeo.F90 : **NETADTLDYN**
arp/adiab/gpgrpad.F90 : **NETADTLDYN**
arp/adiab/gpgrptl.F90 : **NETADTLDYN**
arp/adiab/gpgrxyb.F90 : **NETADTLDYN**
arp/adiab/gphluv.F90 : **NETADTLDYN**
arp/adiab/gphluvad.F90 : **NETADTLDYN**
arp/adiab/gphluvtl.F90 : **NETADTLDYN**
arp/adiab/gphlwi.F90 : **NETADTLDYN**
arp/adiab/gphlwiad.F90 : **NETADTLDYN**
arp/adiab/gphlwiad.F90 : **NETADTLDYN**
arp/adiab/lattexad.F90 : **NETADTLDYN**
arp/adiab/lattextl.F90 : **NETADTLDYN**
arp/adiab/spc2.F90 : **OPTSP**
arp/adiab/spc2ad.F90 : **OPTSP**
arp/adiab/spchor.F90 : **OPTSP**
arp/adiab/spchorad.F90 : **OPTSP**
arp/adiab/spcsi.F90 : **OPTSP**
arp/adiab/spcsiad.F90 : **OPTSP**
arp/adiab/spnhsi.F90 : **OPTSP**
arp/control/cnt4.F90 : **MISC**
arp/control/spc2m.F90 : **OPTSP**
arp/control/spc2mad.F90 : **OPTSP**
arp/control/spcm.F90 : **OPTSP**
Added elements:
---------------

```
arpa/adiab/cpeuldynad.F90 : NETADTLDYN
arpa/adiab/cpeuldyntl.F90 : NETADTLDYN
arpa/adiab/gpgrgeoad.F90 : NETADTLDYN
arpa/adiab/gpgrgeotl.F90 : NETADTLDYN
arpa/adiab/gpgrxybad.F90 : NETADTLDYN
arpa/adiab/gpgrxybtl.F90 : NETADTLDYN
arpa/adiab/gpuvsad.F90 : NETADTLDYN
arpa/adiab/gpuvsadt.F90 : NETADTLDYN
```

Removed elements:
-----------------

```
arpa/adiab/cpdynad.F90 : NETADTLDYN
arpa/adiab/cpdyntl.F90 : NETADTLDYN
arpa/adiab/gnhdynad.F90 : NETADTLDYN
arpa/adiab/gnhdyntl.F90 : NETADTLDYN
arpa/adiab/gnhgrpad.F90 : NETADTLDYN
arpa/adiab/gnhgrptl.F90 : NETADTLDYN
arpa/adiab/gnhpdvad.F90 : NETADTLDYN
arpa/adiab/gnhpdvdtl.F90 : NETADTLDYN
```

Modifications in namelists:
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None excepted the fact that some default values have changed (for example LVERAVE_HLUV in NAMBDYN, now default is .F.), default values for Y[X]_NL%LPT and Y[X]_NL%LPC have been adapted, it becomes not necessary to specify them in the namelist.

Scientific description of your modification(s):
-----------------------------------------------

See paragraph 'Code modif.'

Influence on the results:
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- Modification NETADTLDYN can generate some numerical differences, especially in configurations using adjoint and TL code.
- Modification OPTSP does not generate any differences in the norms, and allows to save memory for multiproc ARPEGE runs with stretching. Reduction of memory consumption is 250Mb/proc for TL358L41c2.4 forecasts with 4 procs.
- Modification MISC requires to be careful with the namelist options especially for LPC_OLD=T or LPC_FULL runs, or NH runs. In case of doubt check that reference and experience NH runs use the same value of LVERAVE_HLUV (please use .F., .T. is an obsolescent option to stabilize obsolete (and often disappeared) NH options). Default value is .T. in CY31 but .F. in the current modset. For the horizontal diffusion with PC schemes, note that it is now activated for all steps of the predictor-corrector scheme (hard-coded in CY31, optional default value in the current modset, new variable LRHDI_LASTITERPC in NAMDYN): better to activate it at all steps of the predictor-corrector scheme (LRHDI_LASTITERPC=.F.).

- In the contribution MISC, there is a bug correction in ald/coupling/eseimpls.F90 which can change the results in SL2TL NH ALADIN runs forced by NH LBC (when SITRA is not equal to SITR).

- Remember that the default value of LREPHD is now .F. (this is already the case in CY31), this is the value in the current oper and from now on all the validations will use LREPHD=F. LREPHD=T is an obsolescent option which has not been yet removed from the code for the time being.

Project: arpege, aladin
ClearCase branch: mrpm603_CY31_dev31pour31t1

Added:

arp/adiab cpdynad.F90 cdyntl.F90 cpeuldynad.F90
   cpeuldynl.F90 gnhdynam.F90 gnhdyntl.F90
   gnhgrpad.F90 gnhgrptl.F90 gnhpdvdat.F90
   gnhpdvdtl.F90gpgrgeoad.F90 gpggrgeotl.F90
   gpgrxybad.F90 gpggrxyblt.F90 gpvusad.F90

Modified:

ald/adiab espcsi.F90 espcsiad.F90 espnhsi.F90
   espnhsiad.F90
ald/coupling/eseimpls.F90
ald/setup suemp.F90
ald/var ebalvert.F90 ebalvertl.F90 ebalvertad.F90
   ebalverti.F90 ecvaru2i.F90 ecvaru2iad.F90
cpeuldynad.F90 cpeuldynl.F90 cpg5_gp.F90
cpg_dynam.F90 cpg_dyn_tl.F90 cpg_end_ad.F90
cpg_end_tl_F90 cpg_gp_F90 cpg_gp_tl.F90
cpg_zero_ad.F90 cpgad.F90 cpgtl.F90
gpggeo.F90 gpggeoad.F90 gpggrgeotl.F90
gpgpad.F90 gpgptl.F90 gpgrzebl.F90
gpgrzybad.F90 gpgrzyblt.F90 gpgvusad.F90
glhlwli.F90 gphlwi.F90 gphlwdl.F90
gphlwitl.F90 gpvusad.F90 gpvusbl.F90
gpxybl.F90 lxestad.F90 lstatexl.F90
cpc2.F90 spc2ad.F90 spchor.F90
cphorad.F90 spcsi.F90 spcsiad.F90
spnhsi.F90

Doc:
Remove obsolete routines.

**Project:** arpege

**ClearCase branch:** mrpm603_CY31_none

**Deleted:**


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**POLI Paul**

**Doc:**

1/ arp/obs_preproc/blacksat.F90   Retains only 20 AIRS stratospheric channels over sea and land. All other channels not active. Channels over high orography not active.

2/ arp/obs_preproc/defrun.F90   AIRS observation error standard deviations (sigma_o) for MF now read from file rmtberr_airs.dat. Added check to verify AIRS sigma_o are found between 1E-3 K and 1E+3 K ; set to 10 K otherwise.

3/ arp/pp_obs/rad1cnne.F90   AIRS observation minus first-guess biases now read from file rmtberr_airs.dat.

4/ arp/pp_obs/gpszen_delay.F90   Added optional outputs for zenith hydrostatic delay and zenith wet delay.


7/ uti/bator/bator_ecritures.F90   Set GPS ZTD observation error standard deviation to that found in OBSOUL file. If physically not possible (smaller than 1E-6 m or larger than 1 m), set observation error to 10 mm.

**Project:** arpege, utilities

**ClearCase branch:** mrpa679_CY31T0_dble31poli

**Modified:**

- arp/obs_preproc  blacksat.F90  defrun.F90
- arp/pp_obs  gpszen_delay.F90  gpszen_delayad.F90  gpszen_delaytl.F90  rad1cnne.F90
- uti/bator  bator_ecritures.F90

---

**PUECH Dominique**

**Doc:**

1/ Update modifications for gps and gpsro, according to the future parallel suite.

2/ BATOR: phasing of last modifications for AIRS, from new parallel suite.

4/ Modifications in radar table.

**Project:** arpege, odb, utilities  
**ClearCase branch:** mrpa660_CY31T0_dev

**Modified:**

- **arp/common**
  - yomdb_defs.h
  - yomdb_vars.h

- **arp/module**
  - parcma.F90
  - yomdb.F90
  - initmdb.F90

- **odb/cma2odb**
  - cma.h

- **uti/bator**
  - bator_decodbufr.F90
  - bator_ecritures.F90
  - bator_init.F90
  - bator_lectures.F90
  - bator_saisies.F90
  - bator_util.F90

- **uti/controdb**
  - controdb.F90

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**Doc:**

Remove call to BLACKCLN.

**Project:** arpege  
**ClearCase branch:** mrpa660_CY31_dev

**Modified:**

- **arp/pp_observ.F90**

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**Patrick MOLL**

**Doc:**

Bugfix.

**Project:** arpege  
**ClearCase branch:** mrpa646_CY31T0_none

**Modified:**

- **arp/setupsuinif.F90**

**Doc:**

Bugfix on processing the thinning of SATOB winds (validated on 5 days of assimilation).

**Project:** odb  
**ClearCase branch:** mrpa646_CY31T0_vents

**Modified:**

- **odb/ddl**
  - new_thinn_robhdr_4.sql
  - new_thinn_robhdr_5.sql
  - pre_thinn_robhdr_4.sql
  - pre_thinn_robhdr_5.sql

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**Ryad El KHATIB**

**Doc:**
Correction on the dimensionning of a local array. It caused an overflow of array when NPROMA was smaller than the number of physical fields requested in the post-processing.

Project:    arpege
ClearCase branch: mrpm602_CY31T0_fix

Modified:

arp/pp_obsfpinthphy.F90

Doc:

Compatibility with g95 compiler.

Project:    arpege, mpa, mse, sur, trans_ald, utilities, ifsaux
ClearCase branch: mrpm602_CY31T0_g95

Modified:

ald/adiab    espchor.F90    espchorad.F90    espcsi.F90
ald/module    espnhsi.F90    espnhsiad.F90
ald/setup    suehdf.F90
arp/module    yoecldp.F90
arp/phys_ec    ec_phys_drv.F90
mpa/chem/externals    aro_mnhc.mnh    aro_mnhdust.mnh
mpa/chem/module    modi_ch_aer_rhcalcn.mnh
mpa/chem/externals    aro_ground_param.mnh
mse/externals    ini_sun_aro.mnh    offline.mnh    sunpos.mnh
sur/module    susveg_mod.F90
tal/programs    aatetestprog.F90    test_adjoint.F90
uti/fcq    fcqodb_DRIBU.F90    fcqodb_PILOT.F90    fcqodb_SYNOP.F90
uti/prescat/etimesort    timesort.F
uti/prescat/qretrieve    var_col.F
xrd/ddh    ddhr.F90

Doc:

1/ modi_ch_interp_jvalues_n.mnh : fix for g95 compiler;
2/ drhook.c, svipc.c : fix for Darwin-based systems (use -DDARWIN at compilation time).

Project:    mpa, ifsaux
ClearCase branch: mrpm602_CY31T0_gcc

Modified:

mpa/chem/module    modi_ch_interp_jvalues_n.mnh
xrd/support    drhook.c
xrd/svipc    svipc.c

SEITY Yann

Doc:

Bugfixes for chemical.

Project:    mpa
**ClearCase branch:** mrpm637_CY31T0_bfchimie

**Added:**

mpa/chem/internals        ch_set_photo_rates.mnh    ichsamax.F
mpa/chem/module          modi_ch_set_photo_rates.mnh

**Modified:**

mpa/chem/externals       aromn_hc.mnh            aroini_mnhc.mnh
mpa/chem/internals       ch_allocate_taccs.mnh
ch_deallocate_taccs.mnh  ch_init_ccs.mnh
                       ch_interp_jvalues_n.mnh  ch_jac.mnh
                       ch_nonzero_terms.mnh
                       ch_prodloss.mnh          ch_set_photo_rates.mnh
                       ch_sparse.mnh            ch_set_rates.mnh
                       ch_set_photo_rates.mnh
                       chupdate_jvalues_n.mnh
                       ichsamax.F               sgbfa.F
                       troe.mnh
                       troe_equil.mnh
mpa/chem/module         modi_ch_m9_scheme.mnh
                        modi_ch_interp_jvalues_n.mnh
                        modi_ch_set_photo_rates.mnh

**Doc:**

**Bugfixes:**
* ald/c9xx/cchien.F90: clean some prints;
* ald/setup/sugeo1.F90: removing useless prints;
* arp/dia/wrspec.F90: idem;
* arp/module/yomphy.F90: fix double declaration variables;
* arp/module/yomphy0.F90: idem;
* arp/phys_dmn/suparar.F90: removing useless prints;
* arp/setup/suhloption.F90: change a setup to have less prints in output.
* arp/setup/suhph.F90: clean some prints;
* arp/setup/suphmf.F90: removing call to sulsforc which has already been displaced in su0yomb;
* arp/setup/suspeca.F90 bugfix for Fullpos (removing special treatment of GFL CVQQ);
* uti/oulan/ext_radomeh.F: fix double declaration variables.

**Project:** arpege, aladin, utilities

**ClearCase branch:** mrpm637_CY31T0_bfcompl95

**Modified:**

ald/c9xx          cchien.F90
ald/setup         sugeo1.F90
arp/dia           wrspec.F90
arp/module        yomphy.F90  yomphy0.F90
arp/phys_dmn      suparar.F90 suphmf.F90
arp/setup         suhloption.F90 suhlph.F90 suspeca.F90
uti/oulan         ext_radomeh.F

**Doc:**

1/ Bugfixes for the configuration Fullpos Prepsurfex in AROME.
2/ suinif.F90: bugfix.

**Project:** arpege

**ClearCase branch:** mrpm637_CY31T0_bfprepsurfex

**Modified:**
Portability modifications.

**Project:** arpege, mpa, mse
**ClearCase branch:** mrpm637_CY31T0_compil

**Modified:**
- arp/adiab: cpg.F90, cpg_gp.F90
- arp/namelist: namgfl.h
- arp/phys_dmn: acnebr.F90, actke.F90, apl_arome.F90
- arp/setup: sugfl.F90
- mpa/chem/interface: ch_aer_init.h, ch_aer_mod_init.h
- mpa/micro/interface: aro_adjust.h, aro_buprocn.h
- mpa/micro/internals: aro_rain_ice.h, aro_startbu.h, aroini_budget.h, testapft.h
- mse/internals: ch_aer_dep.mnh, ch_aer_emission.mnh, grid_from_file.mnh
- mse/module: modi_grid_from_file.mnh
- zoom_pgd_cover.mnh, zoom_pgd_isba_full.mnh, zoom_pgd_orography.mnh
- mse/module: modi_grid_from_file.mnh

**Doc:**
Those routines are deleted and replaced by arp/adiab/gpcty_forc.F90 and arp/adiab/cp_forcing.F90.

**Project:** arpege
**ClearCase branch:** mrpm637_CY31T0_none

**Deleted:**
- arp/adiabforc_dyn.F90, forcing.F90

**Doc:**
This ClearCase branch contains:
- The version 1.3 of externalized surface: add some fluxes in output, modifications in T2M diagnostic, modifications in computing ice reserve, and modifications in the case of snow;
- Rachid's modifications for the surface call into the NPROMA loop in APL_AROME.
- Rationalization of the setup and the call to AROME physics, according to the specifications done by Karim. Total separation between surface and atmospheric parametrisations;
- Modifications for 1D model from Sylvie Malardel. Add two more GFLs and a new namelist for forcings;
- Bugfix in mpa/micro/internals/condensation.mnh.

**Project:** arpege, aladin, mse
**ClearCase branch:** mrpm637_CY31_arome
**Added:**

- arp/phys_dmn: suphnmh.F90, suphmpa.F90, suphmse.F90, surfext.F90, diag_surf_budget_teb.mnh, diag_surf_budget_isba.mnh, get_var_n.mnh, get_var_nature_n.mnh, get_var_town_n.mnh, get_var_water_n.mnh, modi_get_z0_n.mnh, modi_get_var_n.mnh, modi_get_var_nature_n.mnh, modi_get_var_town_n.mnh, modi_get_var_water_n.mnh
- mse/internals: diag_inline_surf_atm_n.mnh, diag_surf_budget_teb.mnh, error_read.mnh, get_surf_var_n.mnh
- get_var_nature_n.mnh, get_var_sea_n.mnh, get_var_town_n.mnh, get_var_water_n.mnh
- modi_average_diag_isba_n.mnh, modi_diag_surf_budget_isba.mnh, modi_diag_surf_budget_teb.mnh, modi_get_var_n.mnh, modi_get_var_nature_n.mnh, modi_get_var_sea_n.mnh, modi_get_var_town_n.mnh, modi_get_var_water_n.mnh, modi_get_z0_n.mnh

**Modified:**

- ald/pp_obs: fpfillb.F90, suegeo1.F90
- ald/setup: suebig.F90, cpg.F90, cpg_end.F90, cpfphinp.F90, cputqy_arome.F90
- lavent.F90
- arp/ald_inc/namelist: nemgeo.h, stepo.F90
- arp/control: gp_model.F90, yom_ygfl.F90
- arp/phys_dmn: apl_arome.F90, mf_phys.F90
- arp/phys_dmn: namlslforc.h, mphys.F90
- suphmpa.F90: suparar.F90, suphm.F90, surfext.F90
- hpos.F90: su0phy.F90, suct0.F90
- arp/setup: su0phy.F90, suct0.F90
- sufpc.F90: sufpc.F90
- sufpd.F90: sufpc.F90
modn_watflux_n.mnh

Doc:

1/ Bugfixes and modifications for 1D-model.
2/ Portability modifications.

Project: arpege, aladin
ClearCase branch: mrpm637_CY31_bfSyl

Added:

arp/adiab cp_forcing.F90 cpdynam.F90 cpdyntl.F90
gnhdynam.F90gnhdynntl.F90 gnhgrpad.F90
gnhgrptl.F90 gnhpdvdad.F90 gnhpdvdtl.F90
gpcty_forc.F90
arp/module yomlsforc.F90 yommnh.F90
arp/setup sulsforc.F90

Modified:

ald/c9xx cchien.F90
arp/adiab cp_forcing.F90 cpdynam.F90
cpg.F90 cpg_dyn.F90
cpg_gp.F90 gpcty_forc.F90
arp/module yomlsforc.F90
arp/phys_dmn acradin.F90 suphm.F90
arp/setup su0yomb.F90 sulsforc.F90

Doc:

Remove obsolete routines.

Project: arpege
ClearCase branch: mrpm637_CY31_none

Deleted:

arp/module yommnh.F90
arp/phys_dmn suphmnh.F90 surfext.F90

TROJAKOVA Alena

Doc:

All modifications concern ALADIN 3DVAR model configuration.

Blacklist file blacklist.b (currently not content of pack) was modified to obtain the same number observations (except geopotential of SYNOP observation, where is a difference less than 2% for a tested case). There was added blacklisting of 2m relative humidity of SYNOP observation in case of difference between model and real orography bigger than 200 m (previously in BLACKCLN routine, removal of channel 13 of AMSU-A from blacklisting (BLACKSAT). (This modification can have an impact also for ARPEGE 4DVAR because there in no LELAM key in blacklisting procedure). And correction of blacklisting of HR_MSG (SEVIRI) data.

Next modification (by Bernard Chapnik) fixed weights used for computation of inverse horizontal prediction error correlation matrix in SUEJBCOR.
Modifications for storing trajectory in grid-point space (LTRAJGP). In SUBFGS one crash on abort of GET_TRAJ_GRID: CALL ABOR1(‘TRAJ_MAIN:NOT YET DONE/GFL’) in case of LTRAJGP=F (current setting for ALADIN). Assuming that it would be enough to correct number of GFL fields (trajectory) YGFL%NUMFLDS5, decremented of YGFL%NUMFLDS5 and deactivation of convective precipitation flux (YCPF) was added in DEACT_CLOUD_GFL (module GFL_SUBS). Unfortunately it was not enough because YGFL%NUMFLDS5 counts all fields, e.g. grid-point and spectral and there remain spectral humidity as last variable to be kept. So as temporary solution the key LTRAJGP was used to avoid entering GET_TRAJ_GRID. The correction of YGFL%NUMFLDS5 was kept as it can be found useful later on.

Last correction applies a bug of for mean-wind in SUECGES where instead of initialization of SP7A1 was initializes SPA1 and which caused double Jo for wind observation of all types in ALADIN minimization.

Modified routines:

arp/obs_preproc/mkglobstab.F90
Misplaced deallocation statement corrected.

al/var/suejbcor.F90
Bf of weights used for computation of inverse horizontal prediction error correlation matrix

arp/module/gfl_subs.F90
added deactivation of YCPF and derementing of YGFL%NUMFLDS5

arp/utility/subfgs.F90
fix for LTRAJGP=F

arp/control/cva1.F90
call DEACT_CLOUD_GFL in all cases except 3DFGAT

All modifications concern ALADIN 3DVAR model configuration.

Blacklist file blacklist.b (currently not content of pack) was modified to obtain the same number observations (except geopotential of SYNOP observation, where is a difference less than 2% for a tested case). There was added blacklisting of 2m relative humidity of SYNOP observation in case of difference between model and real orography bigger than 200 m (previously in BLACKCLN routine, removal of channel 13 of AMSU-A from blacklisting (BLACKSAT) (This modification can have an impact also for ARPEGE 4DVAR because there in no LELAM key in blacklisting procedure). And correction of blacklisting of HR_MSG (SEVIRI) data.

Next modification (by Bernard Chapnik) fixed weights used for computation of inverse horizontal prediction error correlation matrix in SUEJBCOR.

Modifications for storing trajectory in grid-point space (LTRAJGP). In SUBFGS one crash on abort of GET_TRAJ_GRID: CALL ABOR1(‘TRAJ_MAIN:NOT YET DONE/GFL’) in case of LTRAJGP=F (current setting for ALADIN). Assuming that it would be enough to correct number of GFL fields (trajectory) YGFL%NUMFLDS5, decremented of YGFL%NUMFLDS5 and deactivation of convective precipitation flux (YCPF) was added in DEACT_CLOUD_GFL (module GFL_SUBS). Unfortunately it was not enough because YGFL%NUMFLDS5 counts all fields, e.g. grid-point and spectral and there remain spectral humidity as last variable to be kept. So as temporary solution the key LTRAJGP was used to avoid entering GET_TRAJ_GRID. The correction of YGFL%NUMFLDS5 was kept as it can be found useful later on.
Last correction applies a bug of for mean-wind in SUECGES where instead of initialization of SP7A1 was initializes SPA1 and which caused double Jo for wind observation of all types in ALADIN minimization.

Modified routines:

arp/obs_preproc/mkglobstab.F90
Misplaced deallocation statement corrected.

ald/var/suejbcor.F90
Bf of weights used for computation of inverse horizontal prediction error correlation matrix

arp/module/gfl_subs.F90
added deactivation of YCFP and derementing of YGFL%NUMFLDS5

arp/utility/subfgs.F90
fix for LTRAJGP=F

arp/control/cva1.F90
call DEACT_CLOUD_GFL in all cases except 3DFGAT

Project: arpege, aladin
ClearCase branch: mrpe694_CY31T0_phasing

Modified:

ald/var suejbcor.F90
arp/control cva1.F90
arp/module gfl_subs.F90
arp/obs_preproc mkglobstab.F90
arp/utility subfgs.F90
arp/var suecges.F90

Doc:

These modifications concern mainly the bug in the routine ELISLAP which is used to smooth the soil water index; this routine is an ALADIN routine and it is used also in the configuration e923 (this one is run in monotask). Although there were correctly arranged collecting the soil water index on one processor where ELISLAP is called, then inside ELISLAP the map factor array is used (the GM array from the module YOMGC). The trouble is that GM is local on the processor while the array addressing inside ELISLAP is global.

Next modification concerns adding NEC compiler directives to arp/canari/cacsts.F90

Modified routines:

ald/c9xx/elislap.F90:
Map factor added as dummy argument to ensure correct addressing inside ELISLAP. And small cleaning (NLOENG corresponds to local variable KLONG, NDGUNG=NDLUNG=1 all the time).

arp/canari/casmswi.F90:
Collecting of map factor and change of corresponding ELISLAP call (dummy argument added).

ald/c9xx/eincl1.F90:
Change of corresponding ELISLAP call (dummy argument added).

ald/c9xx/einclir.F90:
Change of corresponding ELISLAP call (dummy argument added).
arp/canari/cacsts.F90:
NEC compiler directive added. This compiler option must be placed on the line before
SUBROUTINE statement (no empty lines allowed), so it cannot be implemented via #ifdef
SX4 CPP macro.

Project: arpege, aladin
ClearCase branch: mrpe694_CY31_bfSWI

Modified:
ald/c9xx einclid1.F90 einclir.F90 elislap.F90
arpcanaricacsts.F90casmswi.F90

VANA Filip

Doc:
The modification introduces the proper tuning for the gridpoint part of the SLHD in case of
non-uniform resolution. The existing tuning for spherical geometry has been also rescaled
in order to be consistent with the one of LAM.

Project: arpege, aladin
ClearCase branch: mrpe706_CY31T0_slhdst

Modified:
ald/setup sueldynb.F90
arp/adiab cpg.F90 cpg_dyn.F90lacdyn.F90
         latte_kappa.F90
arp/module yomdyn.F90
arp/setup sualdynb.F90 sudyn.F90 sugem2.F90
arpuility deallo.F90