Wikiprint Book

Title: How to install your environment on redhat8 (skl and rome)

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Porting on RedHat8

After maintenance of April 11 and 12 all the Irene machines of the TGCC will change OS (it will go from redhat7 to redhat8). As an addition of the change in OS old modules will not be available on redhat8 and we need to update compiler versions for our modules.

How to install your environment on redhat8 (skl and rome)

We suggest the user to use the igcmg environment (in bash) with a copy of the bashrc in his HOME.

```
ryyy999@irene: cp ~igcmg/MachineEnvironment/irene_next/bashrc  ~/.bashrc
ryyy999@irene: cp ~igcmg/MachineEnvironment/irene_next/bashrc_irene_next ~/.bashrc_irene_next
```

Additionally, you can complete the example of bashrc_irene_next file to create your favorite environment (alias, module load ...).

We strongly advice you to add the line `module switch dfldatadir dfldatadir/genXXXX` in your own .bashrc_irene_next.

WARNING : if you have a ~/.profile file, it's better to remove it to avoid any problem during the execution of a simulation with libIGCM

In this environment is specified:

the path to the compiler tool `fcm` and to the `rebuild` tool which recombines output files from a parallel model:

```
export PATH=$(ccc_home -u igcmg)/Tools/fcm/bin:$(ccc_home -u igcmg)/Tools/irene/bin:$PATH
```

- the load of modules giving access to analyze data or post processing libraries and tools needed on our platform (done in `ccc_home -u igcmg`/MachineEnvironment/irene_next/env_atlas_irene).

 WARNING : You cannot load in the same time the intel environment for compilation and models computation, AND ferret software. There are not compatible. It's why by default we propose an environment for post processing. The computation environment will be loaded by modipsl and libIGCM during the compilation and the running time.

Modifications need to be done in models

LMDZ

modify %BASE_LD in LMDZ/arch/arch-X64_IRENE.fcm

```
%BASE_LD   -i4 -r8 -auto -L/ccc/products/mkl-20.0.0/system/default/20.0.0/mkl/lib/intel64 -lmkl_intel_lp64 -lmkl_core -lmk
```

ORCHIDEE

The new version of modules we now use on redhat8 can not handle to many files opened at the same time. When running LMDZOR on hybrid mode (mixed MPI-OpenMP), too many files text output files were opened in ORCHIDEE (out_orchidee_000x.000y). This has been changed in newer versions of ORCHIDEE: in revision 7792 for branch ORHIDEE_2_2 and 7790 in the trunk.

If you work with another version, do the following work-around in the code :

In **modeles/ORCHIDEE/src_parallel/mod_orchidee_para.F90**, comment the opening of the text output files and change to have numout=6, the output will now be sent to standard output for all cores.

```
!!!    OPEN(UNIT=numout,FILE=TRIM(fileout),ACTION='write',STATUS='unknown',FORM='formatted',IOSTAT=ierr)
numout=6
```

INCA

If you are working with a version older than rev 1050, you need to modify lunout parameter to use standard output file. For this in INCA/src/INCA_MOD/print_inca.F90 comment the opening of the text output files and change to have lunout=6

```
    !    open(UNIT=lunout,file=fileout, action='write',status='unknown', form='formatted', iostat=ierr2)
    lunout = 6
```

XIOS

If you are working with a version on XIOS/branchs/xios-2.5, you need to modify XIOS/arch/arch-X64_IRENE.fcm

```
%BASE_CFLAGS    -std=gnu++98 -diag-disable 1125 -diag-disable 279 -D__XIOS_EXCEPTION
```

Modifications for V6.2 configurations

Compilation and computation

Modify ARCH/arch-X64_IRENE.env

```
# Compile and running environnemnet at Irene Skylake

module purge
module load intel/20.0.0
module load mpi/openmpi/4.1.4
module load flavor/hdf5/parallel
module load hdf5/1.12.0
module load netcdf-fortran/4.5.3
module load mkl/20.0.0
module load feature/bridge/heterogenous_mpmd
module load c++/gnu/8.3.0
module load c/gnu/8.3.0
```

post-processing

Modify libIGCM/libIGCM_sys/libIGCM_sys_irene.ksh or libIGCM_sys_irene-amd.ksh to source new env_atlas_irene file.

```
if [ X${TaskType} = Xcomputing ] ; then
 IGCM_debug_Print 1 "Modules will be loaded later in IGCM_sys_activ_variables."
else
 module purge > /dev/null 2>&1
 . $( ccc_home -u igcmg)/MachineEnvironment/irene_next/env_atlas_irene > /dev/null 2>&1

 export PCMDI_MP=/ccc/work/cont003/igcmg/igcmg/PCMDI-MP
 export UVCDAT_ANONYMOUS_LOG=FALSE
fi
```

Modification for v6.1 configurations and older ones

compilation

- Create a directory config/.../ARCH/ and create in it the file arch-X64_IRENE.env

```
# Compile and running environnemnet at Irene Skylake

module purge
module load intel/20.0.0
module load mpi/openmpi/4.1.4
module load flavor/hdf5/parallel
module load hdf5/1.12.0
module load netcdf-fortran/4.5.3
module load mkl/20.0.0
```

```
module load feature/bridge/heterogenous_mpmd
module load c++/gnu/8.3.0
module load c/gnu/8.3.0
```

- Modify AA_make to source this new environment file and indicate to XIOS which environment file it will use

```
submitdir=$(shell pwd)
arch_path=${submitdir}/ARCH/

all :
       if [ -s ./.resol ] ; then $(M_K) `head -1 .resol |cut -c 8-` ; else $(M_K) LMD144142-L79 ; fi

(...)

xios :
             (cd  ../../modeles/XIOS ; ./make_xios --prod --arch ${FCM_ARCH} --arch_path ${arch_path} --job 4 ; cp bin/x


libioipsl : ../../modeles/IOIPSL/src
       (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/IOIPSL/src ; $(M_K) -f Makefile)
```

For older configurations you may have to source the arch.env file for all the models other than XIOS (applies to IPSLCM5A2 but could be needed for other old configurations).

In that case add `. ${arch_path}/arch-X64_IRENE.env;` before the command that changes the directory in every models rules except for xios where the previous changes are enough.

- IPSLCM5A2 AA_Make

```
oasis3-mct:
   (. ${arch_path}/arch-X64_IRENE.env; cd $(OASIS_DIR)/util/make_dir ; cp $(MYSRC_DIR)/SOURCES/OASIS3-MCT/make_${FCM_ARC

liborchidee : ../../modeles/ORCHIDEE/
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/ORCHIDEE/ ; ./makeorchidee_fcm -parallel mpi_omp -arch $(FCM_ARC

...

lmdz: ../../modeles/LMDZ
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/LMDZ; ./makelmdz_fcm -d $(RESOL_LMDZ) -arch $(FCM_ARCH) -j 8 ce
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/LMDZ ; ./makelmdz_fcm -d $(RESOL_LMDZ) -mem -cosp false -v true

paleolmdz: ../../modeles/LMDZ
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/LMDZ; ./makelmdz_fcm -d $(RESOL_LMDZ) -arch $(FCM_ARCH) -j 8 ce
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/LMDZ ; ./makelmdz_fcm -d $(RESOL_LMDZ) -mem -cosp false -v true

...

orca2lim2:  ../../modeles/NEMOGCM/CONFIG
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/NEMOGCM/CONFIG; cp ../../../config/IPSLCM5A2/SOURCES/NEMO/arch-

paleorca2lim2:  ../../modeles/NEMOGCM/CONFIG
   (. ${arch_path}/arch-X64_IRENE.env; cd ../../modeles/NEMOGCM/CONFIG; cp ../../../config/IPSLCM5A2/SOURCES/NEMO/arch-
```

- create the Makefile as explain ■here
- clean everything on previous compilations :

```
gmake clean
```

- compile

Computation

- Extract a new version of libIGCM

```
svn co -r 1579 https://forge.ipsl.jussieu.fr/libigcm/svn/trunk/libIGCM libIGCM
```

Modify config.card file section `[UserChoices]` to add environment file parameter:

```
EnvFile=${SUBMIT_DIR}/../ARCH/arch.env
```