

# Getting started with the IPSL compile and run environment

## Exercises for Training course

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The goal of these exercises is to learn how to install, compile and launch simulations with reference configurations using **modipsl** and **libGCM** environment. You will also learn to re-launch a simulation that stopped previously, continue a simulation and restart from a coupled simulation. Finally exercises for the post-treatment are proposed.

All exercises can be done at **Irene/TGCC** or at **Ada/IDRIS** and most of them at **obelix/LSCE**, read specifications in the text.

**Note that for this training session we will work only on IDRIS on temporary accounts.**

All commands needed for the basic exercises are listed in the text. Exercise using NEMO configuration is proposed as complement.

### Today at Ada: use training account

During the training session specific training accounts at Ada will be distributed. They have login cforXXX with password \*\*\*\*. Connect first to the machine **ipcours** and then use your temporary login.

If you need to switch between qwerty and azerty you can use the command **alt+shift**

To access Ada, open a terminal and type the command:

```
ssh -Y ada337
```

These accounts do not have access to the archive machine ergon. You'll therefore create a dedicated directory on ada workdir called ERGON. Specify in each config.card to use this directory by setting in the UserChoices section:

```
ARCHIVE=$WORKDIR/ERGON
```

Install the IPSL environment at your account during the first connexion to Ada. Do the following:

```
cp ~rps1035/.bash_login $HOME/. # warning it's rps"L" and not rps"one"
rm $HOME/.bash_profile
source $HOME/.bash_login
```

Set following environment variable (complete with the return of command **llqres**) :

```
export LL_RES_ID=*****
```

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## 0 Subscribe to platform-users mailing list

Before working with **modipsl/libIGCM** and IPSL's models, you need to subscribe to the **platform\_users mailing list**. Do this by following the link :

<https://listes.ipsl.fr/sympa/info/platform-users>

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## 1 Install and compile

Start with creating a new directory in your \$WORKDIR.

```
mkdir $WORKDIR/MYFIRSTTEST ; cd $WORKDIR/MYFIRSTTEST
```

### 1.0 Install modipsl

Download modipsl.

```
svn co http://forge.ipsl.jussieu.fr/igcmg/svn/modipsl/trunk modipsl
```

Other method : As you install IPSL environment, you can use the command **svn\_ano** instead of previous one to download modipsl.

```
mkdir $WORKDIR/MYTESTALIAS ; cd $WORKDIR/MYTESTALIAS ; svn_ano
```

Now explore what is inside this directory "modipsl" : it contains some tools in the directory util. In util, scripts are found needed to extract (**model**, **mod.def**), create makefiles (**ins\_make**, **AA make.gdef**) and some more. Modipsl is also a file tree that later will contain models and tools.

```
cd $WORKDIR/MYFIRSTTEST/modips1/util
ls
```

### **1.1 Extract LMDZOR\_v6 configuration**

Description : The script *model* is used to download a specific predefined configuration with the model source codes and tools needed. The script uses the file *mod.def* that contains specifications for each predefined configuration. Use *./model -h* to see all existing configurations and *./model -h config\_name* for information of a specific configuration. Same information can be found in *mod.def*. The default versions of the components making up v6 configurations change often as they are under development.

**Question 1a** Using *./model -h* command, find which version of LMDZ, ORCHIDEE and libGCM are currently defined in the configuration LMDZOR\_v6.1.5 ? Note the revision number and branch or tag name. Verify that you can find the same information in *mod.def* file.

```
cd $WORKDIR/MYFIRSTTEST/modips1/util
./model -h
./model -h LMDZOR_v6.1.5
vi mod.def
```

Now download the configuration LMDZOR\_v6.1.5. Remember for the first extraction the password for ORCHIDEE is needed :

```
cd modips1/util
./model LMDZOR_v6.1.5
```

Now explore the directories in *modips1*. You can see in *modips1/modeles* that you have one directory per model. You also find the directory *modips1/config/LMDZOR\_v6* and the directory *modips1/libGCM*. Type *svn info* in each model directory to get information about the extracted version and compare them with your answer to the question 1.a.

#### Note on Subversion (SVN) - a version control software :

IPSL models are saved via *svn*, this allows to keep track of changes done over the time, backup and store all previous versions, centralize all existing developments done on each model.

Each modification on svn will match with a revision number and a save path (with prefix trunk, tag or branches). To know them you should use the command “svn info”.

## **1.2 Compile with the resolution 144x142x79**

The makefiles were created by the script *ins\_make* that was launched by the script *model*. *ins\_make* will detect your environment and will create adapted makefiles. By default *ins\_make* recognizes the following environnements : irene at TGCC, ada at IDRIS, obelix at LSCE and ciclad at IPSL. *ins\_make* can also be launched manually. For example this is needed if you move the *modipsl* directory or if you create makefiles for another target machine. The main *makefile* is found in *config/LMDZOR\_v6* directory.

**Question 1b** Open the main Makefile and try to find all resolutions available for the compilation. Find which resolution is the default one, then launch compilation for the resolution 144x142x79.

### 1.2.1. All other day than the training day

Now start compiling of the default resolution :

```
cd modipsl/config/LMDZOR_v6
gmake LMD144142-L79
```

### 1.2.2 Questions on compilation

When the compilation is over you will find executables in the directory *modipsl/bin* and a file *.resol* is created in *modipsl/config/LMDZOR\_v6*. The compilation takes between 30 and 60 minutes depending on the platform. After the compilation, if you run *gmake* again, only modified files and files depending on them will be compiled.

**Question 1c** How can you do if you want to recompile the whole code? Open the Makefile and check the different targets.

### Specific installation at obelix/LSCE

LMDZ has an option set in *run.def* parameter file to use different filters close to the north and south pole. The default filter set in v6 configurations is the *fft* filter. In the obelix compile options no specific FFT has been added and therefore this option can not be used. It must be changed before running LMDZ. This is done by setting *use\_filtre\_fft=n* in

GENERAL/PARAM/run.def file. This directory is copied at each creation of a submit directory by ins\_job. Now change run.def:

```
cd modips1/config/LMDZOR_v6/GENERAL/PARAM
vi run.def # => change to set use_filtre_fft=n
```

---

## 2 Basic simulations

### 2.1 Create first experiment directory

In **EXPERIMENTS** directory you can find different predefined experiments which you can possibly run using the configuration you extracted. For the LMDZOR\_v6 case, you can choose between LMDZOR and LMDZ type of experiments.

For this exercise we will create an experiment from **LMDZOR/clim\_360d**. To do this we copy the **config.card** found in **EXPERIMENTS/LMDZOR/clim\_360d** to the directory **config/LMDZOR\_v6/**.

At obelix only, change in config.card the number of MPI processes to use 7, OMP threads to use 1, and XIOS to use 1MPI.

At Irene and Ada change in config.card the number of MPI processes to use 71MPI, and OMP threads to use 2 (and change the memory to 7gb on Ada).

**For the training day : to avoid memory problem, you need to use 2MPI for XIOS. For other day you can use 1MPI for XIOS.**

```
cd modips1/config/LMDZOR_v6
cp EXPERIMENTS/LMDZOR/clim_360d/config.card .

vi config.card # Modify JobName=MyJobTest
                # At obelix only, change to 7 MPI and 1 OMP in [Executable]
                # At Ada/Irene, change to 71 MPI and 2 OMP in [Executable]
                # At Ada training day, 71MPI / 2 OMP + 1 MPI XIOS [Executable]

../../libIGCM/ins_job # At Ada enter IBM to answer the question
                      # At Irene enter your project ID and 4 to answer
                      questions

cd MyJobTest
```

The submission directory has been created with the same name as the **JobName**.

### Creation of LMDZ initial state files

Specific for the LMDZOR configuration is the experiments LMDZ/CREATE\_clim\_360d and LMDZ/CREATE\_amiip. These experiments are only set up to create initial state files and boundary condition file on the model grid resolution chosen during compilation. Today we'll use a standard resolution 144x142x79 and these files will be copied directly from the shared account.

## **2.2 define and launch your first simulation of 1 day**

Now we are going to work in the directory specifically created for your simulation. In config.card **CalendarType** must be compatible with the boundary condition file **limit.nc** (need by lmdz, and define in **COMP/lmdz.card**) that you want to use. The clim experiment is set up for a calendar with 30 days each month :

```
CalendarType=360d
```

Now setup **config.card** to do a short 1 day simulation. This is a first test simulation so keep **SpaceName=TEST**. This option will deactivate pack functions and no archiving will be done. Output will therefore be found on SCRATCHDIR (Irene) or WORKDIR (Ada).

We will deactivate all post-treatment in config.card

```
#D-- Post -  
[Post]  
#D- PackFrequency determines the frequency of pack submission  
PackFrequency=NONE  
#D- TimeSeriesFrequency determines the frequency of post-processing submission  
#D- Set NONE to deactivate the creation of all time series  
TimeSeriesFrequency=NONE  
#D- SeasonalFrequency determines the length for each seasonal average  
#D- Set NONE to deactivate the creation of all seasonal average  
SeasonalFrequency=NONE  
#D- Offset for seasonal average first start dates ; same unit as SeasonalFrequency  
#D- Usefull if you do not want to consider the first X simulation's years  
SeasonalFrequencyOffset=0  
#D- If you want to produce compute PCMDI metrics from seasonal average  
#D- Set TRUE or FALSE to activate/deactivate the metrics computation.  
MetricsPCMDI=FALSE
```

Verify the headers in the main job **Job\_MyJobTest** (for all other day than the training day, on Ada modify the memory to 14gb) and submit the job (ada/irene/obelix):

```
llsubmit Job_MyJobTest / ccc_msub Job_MyJobTest / qsub Job_MyJobTest
```

Explore the **Script\_Output\_\*.0001** file and **run.card** in the submit directory. Explore the output directories.

**Question 2a** Which files are produced and where are they stored? You did not find any files in the archive directory at ergon or STOREDIR? Why not?

### **If needed, how to clean up and relaunch**

If an error occurred and you need to relaunch the whole experiment, you need to erase all output created during previous submission, stored in the different **IGCM\_OUT/LMDZ/JobName** directories: At IDRIS on ada's WORKDIR and at ergon, at TGCC on CCCSTOREDIR, SCRATCHDIR and WORKDIR, at obelix within /home/scratch01/login. In the submit directory you also have to remove run.card.

To ease the cleaning, the script **clean\_PeriodLength.job** in **libIGCM** can be used. This script will clean up everything related to the last period that failed. This script does not work if the run.card is missing or if in run.card PeriodState=Completed.

Note also that this script does not work on the CREATE\_clim\_360d experiment because this simulation saves output files on a specific format using suffix \_clim instead of \_\${PeriodDateEnd}.

To use this script, stay in the submit directory **modipsl/config/LMDZOR\_v6/mysimul**:

```
../../../../libIGCM/clean_PeriodLength.job # Read questions and  
answer yes to erase files.
```

### **2.3 Continue the simulation 4 more days**

To continue a simulation that was completed you need to change in **config.card** the **DateEnd**. **NB**: Do not change DateBegin.

You also need to indicate to **run.card** that you will re-launch the simulation by changing **PeriodState=Completed** into **PeriodState=OnQueue**:

Do this for 4 more days.

```
vi config.card # → Modify DateEnd  
vi run.card # → modify PeriodState  
llsubmit Job_MyJobTest / ccc_msub Job_MyJobTest / qsub Job_MyJobTest
```

**Question 2b** How many times did the job go into the queue? How could you avoid this? Explore the output directory. Which files are produced and where are they stored?

**Question 2c** Look in run.card. How long time did one day take? Did all days take the same time?

## **2.4 Simulation using hybrid parallelization mode**

In this exercise you'll activate hybrid parallelization mode MPI-OMP in LMDZOR. By default the configuration LMDZOR\_v6 compiles for hybrid run mode so you do not need to change the compilation. It is possible to create another experiment directory beside the first one.

This exercise can not be done at obelix.

Create a new submission directory with the experiment LMDZOR/clim\_360d. Use another JobName and prepare to run a couple of days. Activate 71 process MPI and 4 threads OMP in the gcm. **For the training day keep 2MPI for the xios server.**

```
cp EXPERIMENT/LMDZOR/clim_360d/config.card .

vi config.card # change as before and also change the number of
                cores to:
    ATM= (gcm.e, lmdz.x, 71MPI, 4OMP)
    IOS= (xios_server.exe, xios.x, 2MPI)

vi config.card #deactivate post-treatment as before

../../libIGCM/ins_job
```

Compare the new job with the one in the previous exercise. The only difference should be the number of threads OMP and the JobName.

At Ada it is often necessary to increase the memory. It is possible to have 3.5gb\*number of threads. For this case you can set `@as_limit = 14.0gb` at Ada in the header of the Job file.

Before launching the job change PeriodNb in the main job to have only one submission for a 5 days simulation. Submit the job as before.

```
cd JobName
vi Job_JobName          # Modify PeriodNb
llsubmit Job_Jobname    /   ccc_msub Job_JobName
```

**Question 2d** Which is the difference in real time for one day compared with the first simulation? Which is the difference in consumed cpu time?



## 2.5 Create another simulation with pack

This exercise can not be done at obelix because the pack function is not activated at obelix.

Create a new experience of type LMDZ/clim\_360d. This time we'll also activate the archiving Pack functionality. The pack is activated when **SpaceName=PROD** or **DEVT**. In this example, put **SpaceName=DEVT**.

To test the pack functionality, set **PackFrequency=2M** in this exercise.

Launch 4 months with 1 month period length. **During the training session don't forget to add ARCHIVE=\$WORKDIR/ERGON just after the line [userChoices] in config.card.**

Use hybrid parallelization in 71 MPI x 2 OMP + 2MPI.

```
cp EXPERIMENTS/LMDZOR/clim_360d/config.card .

vi config.card # => Modify JobName, DateEnd=1980-04-30, PeriodLength=1M
                # To activate pack: set SpaceName=DEVT, PackFrequency=2M
                # Desactivate TimeSeries and Seasonnal average as before
                # for the training session add ARCHIVE=$WORKDIR/ERGON

../../libIGCM/ins_job

cd MyJobTest3

vi Job_MyJobTest3

llsubmit Job_MyJob / ccc_msub Job_MyJob
```

Continue with next exercises while this job is running. Check how it is proceeding in the queue every now and then.

**Question** : explore output directories, can you understand what was do ?

## 2.6 Add more output

Continue the first experiment for one more day. We want more specific output for LMDZ, you can change the levels in the different **modeles/LMDZ/DefLists//file\_def\_\*\_lmdz.xml** files. To have high frequency history files, add HF in section **[ATM] WriteFrequency** in **config.card**. Now change the following:

```
vi COMP/lmdz.card # OutLevel=high
vi config.card # WriteFrequency="1M 1D HF HF3h HF3hm" in section [ATM]
```

Modify the number of **Script\_Output** in your Job after checking the number of the next period in **run.card**

```
vi run.card # read the value of CumulPeriod
vi Job_*** # modify the value of Script_Output_* in the header
            (give the same number than CumulPeriod)
```

Continue the simulation one more day. (you can find the protocol in exercise 2.3)  
Verify in the Script\_Output after launching the job. Verify in the ATM/Output/ directory in the archive.

## **2.7 CREATE\_clim and CREATE\_amip : Experiments to create initial state files and boundary conditions for LMDZ**

**EXPERIMENT/LMDZ/CREATE\_clim\_360d** and **EXPERIMENTS/LMD/CREATE\_amip** are two experiments set up that launches the program **create\_etat0\_limit.e**, a program based on LMDZ. This program is used to create initial state files (start.nc and startphy.nc) and boundary condition files (limit.nc, climoz\_LMDZ.nc) needed by LMDZ. The normal use of the LMDZOR\_v6 configuration is to first run the experiment CREATE\_clim\_360d or CREATE\_amip and then the experiment clim or amip. The CREATE\_clim\_360d/\_amip experiment needs to be done only one time per resolution.

For use of the default resolution it is also possible to do as in exercise 2.2 and change to copy files from IGCM shared repository.

You will now launch the CREATE\_clim\_360d experiment. Note that for a standard use of CREATE\_clim\_360d you don't need to change anything. CREATE\_clim\_360d is set up for a 360 days/year calendar and CREATE\_amip is set up for a noleap calendar (always 365 days/year). The same is case for the experiment clim\_360d (360 days/year) and amip (365days/year).

Now install the submit directory for CREATE\_clim:

```
cd modips1/config/LMDZOR_v6
cp EXPERIMENTS/LMDZ/CREATE_clim_3660d/config.card .

../../libIGCM/ins_job

cd ELC-144x142x79
```

The directory ELC-144x142x79 was created and the config.card was moved inside. The resolution in the JobName was taken from the *.resol* file created during compilation.

This experiment will launch the executable *create\_etat0\_limit.e*. It is possible to use a test class because the run will not take more than some minutes. You can set the test class in the beginning of the Job\_ELC-144x142x79.

Special for the training session : set ARCHIVE=\$WORKDIR/ERGON in [UserChoices] in config.card.

Submit the job as before:

```
llsubmit Job_ELC-144x142x79 / ccc_msub Job_ELC-144x142x79 / qsub
Job_ELC-144x142x79
```

Output files are found in the directory *IGCM\_OUT/LMDZ/ELC-144x142x79* on the archive machine Ergon at IDRIS, in \$CCCSTOREDIR at TGCC or at /home/scratch01/login at obelix.

Note that today the archive is found in \$WORKDIR/ERGON.

Explore the script output text file in the submit directory and the files in the output directory ELC-144x142x79.

**Question 2e** Where can you find the output? Which files are produced and where are they stored?

**Question 2f** What type of calendar is used? How many days contains a year? Check also the number of time step in the output file limit.nc. Do you know how you can change the calendar that has been used?

---

### 3 Debug

We will now work on three small exercises for debugging. For these exercises we will use files prepared and stored :

- At irene, TGCC:  
/ccc/work/cont003/igcmg/igcmg/TRAINING/MODIPSL\_HandsOn\_20181127/LMDZOR\_v6
- At ada, IDRIS :  
/workgpf/rech/psl/rpsl035/TRAINING/MODIPSL\_HandsOn\_20181127/LMDZOR\_v6
- At obelix:  
/home/orchideeshare/igcmg/TP\_modipsl/LMDZOR\_v6

### **3.0 How can you analyze the Job Output : Script Output ?**

Reminder → This file contains three parts:

- copying the input files
- running the model
- post processing

These three parts are defined as follows:

```
#####  
#   ANOTHER GREAT SIMULATION   #  
#####  
1st part (copying the input files)  
#####  
#   DIR BEFORE RUN EXECUTION   #  
#####  
2nd part (running the model)  
#####  
#   DIR AFTER RUN EXECUTION    #  
#####  
3rd part (post processing)
```

A few common bugs are listed below:

- if the file ends before the second part, possible reasons can be:
  - you didn't delete the existing run.card file in case you wanted to overwrite the simulation;
  - you didn't specify OnQueue in the run.card file in case you wanted to continue the simulation;
  - one of the input files was missing (e.g. it doesn't exist, the machine has a problem,...);
  - the frequencies (PackFrequency ...) do not match PeriodLength.
- if the file ends in the middle of the second part, it's most likely because you didn't request enough memory or CPU time.
- if the file ends in the third part, it could be caused by:
  - an error during the execution;
  - a problem while copying the output;
  - a problem when starting the post processing jobs.

If the following message is displayed in the second part of the file, it's because there was a problem during the execution:

```
=====  
EXECUTION of : mpirun -f ./run_file > out_run_file 2>&1  
Return code of executable : 1  
IGCM_debug_Exit : EXECUTABLE
```

```
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!! IGCM_debug_CallStack !!
!-----!
```

```
!-----!
IGCM_sys_Cp : out_run_file xxxxxxxxxxxx_out_run_file_error
=====
```

If the following message is displayed :

```
=====
EXECUTION of : mpirun -f ./run_file > out_run_file 2>&1
=====
```

If there is a message indicating that the "restartphy.nc" file doesn't exist it means that the model simulation was completed but before the end date of your simulation. If this happens and if your model creates an output log other than the simulation output log, you must refer to this log. If your simulation has been performed on \$SCRATCHDIR (TGCC) you can retrieve it there. Otherwise, you must restart your simulation using \$WORKDIR (IDRIS) as the working directory keeping all needed files. You must also change the RUN\_DIR\_PATH variable.

In general, if your simulation stops you can look for the keyword "IGCM\_debug\_CallStack" in this file. This keyword will come after a line explaining the error you are experiencing.  
Example :

```
--Debug1--> IGCM_comp_Update

IGCM_debug_Exit : IGCM_comp_Update missing executable
create_etat0_limit.e

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!! IGCM_debug_CallStack !!
!-----!
```

### **3.1 Debug : compiling error (for the training day go to 3.2)**

First copy the file sechiba.f90 from the directory above into your directory modipsl/modeles/ORCHIDEE/src sechiba/

Recompile and read the error message from the compilation. It often looks difficult but contains useful information. Search for the error in the source code, modify and recompile.

**Question 3a** What was the error? How did you recompile?

### **3.2 Debug : setup error**

Copy the file lmdz.card\_1 from the directory above into the lmdz.card file in the COMP/ in your submit directory. You can choose one of the submit directory from the previous exercises or create a new one.

Now launch the simulation and debug it. Don't forget to clean up as done in exercise 2 before re-launching the simulation. Use clean\_PeriodLength.job to do this.

**Question 3b** What was the error?

Copy the lmdz.card\_2 and debug again. **Question 3c** What was the error?

Copy the lmdz.card\_3 and debug again. **Question 3d** What was the error?

---

## **4 Create time series**

### **4.1 Launch 10 years with default time series**

This exercise is done to understand how to control the creation of time series. It is also an opportunity to test the supervisor.. We will use here an ORCHIDEE offline configuration with a small horizontal domaine just to have a model that runs quickly. The principle is the same for all configurations.

Install a new modipsl, download the configuration ORCHIDEE trunk and compile.

```
mkdir MYPOSTTEST; cd MYPOSTTEST
svn co http://forge.ipsl.jussieu.fr/igcmg/svn/modipsl/trunk modipsl
cd modipsl/util
./model ORCHIDEE_trunk
cd ../config/ORCHIDEE_OL
gmake
```

In this configuration it is not needed to create the experiment directory. Instead different experiment directories already exist : OOL\_SEC\_STO\_FG\*\*, OOL\_SEC, FORCESOIL and TESTSTOMATE are experiences that follow the standard rules described in this tutorial.

The DRIVER directory do not exist but "drivers" are found in the COMP directory.

SPINUP and ENSEMBLE are experiments that are more complicated and are not taught in the course. We will here work with the OOL\_SEC\_STO\_FG2 experiment which is a full ORCHIDEE offline setup with sechiba and stomate components.

Copy the OOL\_SEC\_STO\_FG2 directory into a new one, modify config.card and create the job.

For Orchidee offline configurations it is best to run with PeriodLength=1Y. Use a regional domain by setting LIMIT parameters in run.def.

```
cp -r OOL_SEC_STO_FG2 MyPostExp
cd MyPostExp

vi config.card # => Change JobName, SpaceName=DEVT
                #      Add ARCHIVE=$WORKDIR/ERGON
PeriodLength=1Y, DateEnd=1910-12-31,
PackFrequency=5Y, TimeSeriesFrequency=5Y, SeasonalFrequency=5Y

vi PARAM/run.def
# Add these lines
LIMIT_WEST = -10.
LIMIT_EAST = 20.
LIMIT_NORTH = 30.
LIMIT_SOUTH = 0.

../../../../libIGCM/ins_job
```

Set PeriodNb=10 in the main job and submit using lsubmit, ccc\_msub or qsub depending on the platform.

## **4.2 Use supervisor during run time**

After about 40 min the simulation and the post treatment are expected to be finished. (if it's not still done, go back to the question of part 2.5 during this simulation).

Check the supervision web interface to follow the rebuild, pack and time series status.

Go to the following web interface to see how the simulation is going. Try to understand what kind information are gathered at that page : <https://hermes.ipsl.upmc.fr>

Find the summary of a simulation of interest.

## DEVCMIP6 -> DEVT -> CM606.GUST [2]



2016-11-22T10:29:40 :: POST PROCESSING POST PROCESSING JOB COMPLETED :: CM606.GUST is RUNNING

OVERVIEW	CONFIG CARD	COMPUTE JOBS 1 3 0	POST PROCESSING JOBS 7 252 60
Acc. Project	devcmip6	Output Start Date	01-01-1950
Name	CM606.GUST	Output End Date	31-12-1999
Machine	TGCC-CURIE	Output Progress	36 %
Login	p529tra	Compute Start Date	19-11-2016 22:22:43
Experiment	pdControl	Compute End Date	22-11-2016 01:01:51
Model	IPSLCM6	Compute Status	RUNNING
Space	DEVT	Try [Previous Tries]	2 [ 1 ]
Submission Path	/ccc/work/cont003/gencmip6/p529tra/COUPLE/IPSLCM6.0.6/config/IPSLCM6/CM606.GUST		
Archive Path	/ccc/store/cont003/gencmip6/p529tra/IGCM_OUT/IPSLCM6/DEVT/pdControl/CM606.GUST		
Storage Path	/ccc/scratch/cont003/gencmip6/p529tra/IGCM_OUT/IPSLCM6/DEVT/pdControl/CM606.GUST		
Storage Path (Small)	/ccc/work/cont003/gencmip6/p529tra/IGCM_OUT/IPSLCM6/DEVT/pdControl/CM606.GUST		

Try the different search options.

Explore links and displays that are available on the page. What information are they trying to communicate?



2016-11-22T10:27:31 :: POST PROCESSING JOB ERROR :: CM606.GUST is RUNNING Simulations: Total = 241; Filtered = 241.

Start Date: < 1 week | Acc. Project: \* | Machine: \* | Login: \*  
 Tag / Model: \* | Experiment: \* | Space: \* | State: \*

Filter by name:  << < Page 1 of 10 > >> 25 / page [Permalink](#)

Acc. Project	Name	Try	Jobs (C)	Jobs (PP)	Machine	Login	Tag / Model	Experiment	Space	Output Date Range	%	M	IM
gen2201	RUNSTan	1	1 0 0	0 0 0	TGCC-CURIE	linx	lmdzorinca	--	--	01-01-2000 - 31-12-2000	--	--	--
devcmip6	MYEXP2	1	0 0 1	0 0 0	TGCC-CURIE	p8scaub	ol2	secslo	DEVT	01-01-1901 - 31-12-1910	--	--	--
gen2201	RUNST	3	0 1 1	0 0 0	TGCC-CURIE	linx	lmdzorinca	--	--	01-01-2000 - 31-12-2000	--	--	--
gen6328	ESA-URB-WAT	1	1 0 0	0 0 0	TGCC-CURIE	p529baet	ol2	ref3789	PROD	01-01-1971 - 31-12-2010	--	--	--
ces	LMDZOR11	18	1 0 0	0 0 0	IDRIS-ADA	rces988	LMDZOR-v3	amip	PROD	01-01-1980 - 31-12-1989	--	--	--
devcmip6	CM606-LR-pdCtrl-C03	2	1 0 0	0 0 0	TGCC-CURIE	lum	IPSLCM6	pdControl	PROD	01-01-1980 - 31-12-1989	--	--	--
devcmip6	CPlast	2	0 0 1	0 0 0	TGCC-CURIE	oboucher	IPSLCM6	pdControl	DEVT	01-01-1950 - 31-12-1950	--	--	--
devcmip6	ELI-144x142x79	1	0 0 1	0 0 0	TGCC-CURIE	oboucher	lmdz	--	--	01-01-1979 - 31-12-2005	--	--	--
gen6328	SLTpikelabedoY	3	0 1 0	0 0 0	TGCC-CURIE	p529luy	ol2	secslo	TEST	01-01-1751 - 31-01-2000	100	--	--
devcmip6	NPv5.8GUST	1	1 0 0	0 0 0	TGCC-CURIE	p529ra	LMDZOR-v3	clim	TEST	01-01-1980 - 31-12-1989	40	--	--
devcmip6	NPv5.8Z0	1	1 0 0	0 0 0	TGCC-CURIE	p529ra	LMDZOR-v3	clim	TEST	01-01-1980 - 31-12-1989	40	--	--
gen6328	ESACC12	1	0 0 1	0 0 0	TGCC-CURIE	p529baet	ol2	ref3789	PROD	01-01-2001 - 31-12-2010	--	--	--
gen2201	planespresent	6	0 12 1	0 0 0	TGCC-CURIE	p24ierre	lmdzorinca	NMHC_AER	PROD	01-01-2000 - 31-12-2000	--	--	--
devcmip6	testinglydebug	3	0 2 0	0 0 0	TGCC-CURIE	oboucher	LMDZOR-v3	clim	TEST	01-01-1995 - 31-12-1995	100	--	--
devcmip6	testingly	5	1 0 0	0 0 0	TGCC-CURIE	oboucher	LMDZOR-v3	clim	TEST	01-01-1995 - 31-12-1995	--	--	--
gen6328	ctlamp	1	0 0 1	0 0 0	TGCC-CURIE	devaraju	LMDZOR-v3	amip	TEST	01-01-1980 - 31-12-1980	--	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his128	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his126	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his130	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his127	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his129	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his11	14	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his119	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his123	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--
gen2212	SSTPlepsNoFv5b.IniNH45.his124	3	0 1 0	0 5 0	TGCC-CURIE	p25khod	LMDZOR-v3	amip	DEVT	01-01-1991 - 30-12-1992	100	--	--

QUEUED RUNNING COMPLETE ERROR
 M = Monitoring IM = Inter-Monitoring

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What is the status of your compute job? Find the link to the graphical monitoring.

DEVCMIP6 -> DEVT -> CM606.GUST [2]

2016-11-22T10:31:00 :: POST PROCESSING POST PROCESSING JOB COMPLETED :: CM606.GUST is RUNNING

OVERVIEW | CONFIG CARD | COMPUTE JOBS 1 3 0 | POST PROCESSING JOBS 6 253 61

Total Compute Jobs = 4. << < Page 1 of 1 > >> 25 / page

Info.	Start Date	End Date	Duration	Delay Warning	Lateness
	22-11-2016 01:01:51	--	--	24:00:00	--
	21-11-2016 07:37:57	22-11-2016 01:01:38	17:23:40	24:00:00	--
	20-11-2016 15:04:08	21-11-2016 07:37:55	16:33:47	24:00:00	--
	19-11-2016 22:22:43	20-11-2016 15:04:05	16:41:22	24:00:00	--

4 Compute Jobs: 1 3 0 ERROR

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What is the status of your post-processing job? In case of error find the root cause of it.

Find the list of messages that has been sent by libIGCM.

DEVCMIP6 -> DEVT -> CM606.GUST [2]

2016-11-22T10:31:00 :: POST PROCESSING POST PROCESSING JOB COMPLETED :: CM606.GUST is RUNNING

OVERVIEW
CONFIG CARD
COMPUTE JOBS 1 3 0
POST PROCESSING JOBS 6 253 61

Total Post Processing Jobs = 320.
 
 << < Page 1 of 13 > >> 25 / page

Info.	Start Date	End Date	Duration	Delay Warning	Lateness
monitoring.1967-12-31	22-11-2016 11:29:30	--	--	04:00:00	--
create_ts.1967-12-31.MBG.Post_1M_diad_T	22-11-2016 11:26:40	22-11-2016 11:28:52	00:02:11	22:13:20	--
create_ts.1967-12-31.MBG.Post_1M_ptrc_T	22-11-2016 11:26:37	--	--	22:13:20	--
create_ts.1967-12-31.MBG.Post_1Y_diad_T	22-11-2016 11:26:33	22-11-2016 11:26:47	00:00:13	22:13:20	--
create_ts.1967-12-31.OCE.Post_1M_grid_V	22-11-2016 11:26:29	22-11-2016 11:30:36	00:04:06	22:13:20	--
create_ts.1967-12-31.OCE.Post_1M_grid_U	22-11-2016 11:26:25	--	--	22:13:20	--
create_ts.1967-12-31.OCE.Post_1M_grid_T	22-11-2016 11:26:22	--	--	22:13:20	--
create_ts.1967-12-31.ATM.Post_1D_histday	22-11-2016 11:26:16	22-11-2016 11:27:14	00:00:57	22:13:20	--
create_ts.1967-12-31.ATM.Post_1M_histmth	22-11-2016 11:26:13	--	--	22:13:20	--
create_ts.1967-12-31.3D	22-11-2016 11:26:09	22-11-2016 11:29:21	00:03:12	22:13:20	--
create_ts.1967-12-31.MBG.Post_1M_diad_T	22-11-2016 11:26:05	22-11-2016 11:26:20	00:00:15	22:13:20	--
create_ts.1967-12-31.MBG.Post_1Y_diad_T	22-11-2016 11:26:01	22-11-2016 11:26:11	00:00:10	22:13:20	--
create_ts.1967-12-31.ATM.Post_1D_histday	22-11-2016 11:25:58	22-11-2016 11:29:39	00:03:41	22:13:20	--
create_ts.1967-12-31.2D	22-11-2016 11:25:58	--	--	22:13:20	--
pack_output.1967-12-31	22-11-2016 11:08:47	22-11-2016 11:26:37	00:17:50	10:00:00	--
pack_restart.1967-12-31	22-11-2016 11:08:43	22-11-2016 11:10:31	00:01:47	02:00:00	--
pack_debug.1967-12-31	22-11-2016 11:08:39	22-11-2016 11:08:49	00:00:10	01:00:00	--
monitoring.1966-12-31	22-11-2016 08:17:20	22-11-2016 08:22:31	00:05:11	04:00:00	--
monitoring.1966-12-31	22-11-2016 08:06:15	22-11-2016 08:10:24	00:04:09	04:00:00	--
create_ts.1966-12-31.MBG.Post_1M_diad_T	22-11-2016 08:04:07	22-11-2016 08:05:53	00:01:46	22:13:20	--
create_ts.1966-12-31.MBG.Post_1M_ptrc_T	22-11-2016 08:04:03	22-11-2016 08:21:41	00:17:37	22:13:20	--
create_ts.1966-12-31.MBG.Post_1Y_diad_T	22-11-2016 08:04:00	22-11-2016 08:04:11	00:00:11	22:13:20	--
create_ts.1966-12-31.OCE.Post_1M_grid_V	22-11-2016 08:03:57	22-11-2016 08:08:24	00:04:27	22:13:20	--
create_ts.1966-12-31.OCE.Post_1M_grid_U	22-11-2016 08:03:53	22-11-2016 08:07:53	00:04:00	22:13:20	--
create_ts.1966-12-31.OCE.Post_1M_grid_T	22-11-2016 08:03:51	22-11-2016 08:10:08	00:06:17	22:13:20	--

320 Post Processing Jobs: 6 RUNNING 253 COMPLETE 61 ERROR
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### 4.3 Add variables to time series and relaunch with the TimeSeriesChecker.job

All variables in the Output files can be used to create time series. A selection of variables are done by default. Now add the creation of time series for the variables “z0h” and “z0m”. First be sure that they are produced and exist in sechiba\_history.nc file (in directory IGCM\_OUT/.../JobName/SRF/Output/MO/). Then add in sechiba.card:

[Post\_1M\_sechiba\_history]

```
Patches = ()
GatherWithInternal= (lon, lat, veget, time_counter, time_counter_bnds, Areas, Contfrac)
TimeSeriesVars2D = (riverflow, coastalflow, nobiofrac, ....
```

Find the documentation on the script TimeSeries\_Checker.job and launch it to create missing and new time series.

For remind the web documentation is available here : [https://forge.ipsl.jussieu.fr/igcmg\\_doc](https://forge.ipsl.jussieu.fr/igcmg_doc)

**Question** : why when you launch the TimeSeries\_Checker.job do you have a message like this one

```
-----Debug3--> Missing time series from 1M_stomate_history in
/****/IGCM_OUT/OL2/DEVT/secsto/MyPostExp/SBG/Analyse/TS_MO :

-----Debug3--> MyPostExp_19010101_19101231_1M_AGE.nc
-----Debug3--> MyPostExp_19010101_19101231_1M_HEIGHT.nc
-----Debug3--> MyPostExp_19010101_19101231_1M_ADAPTATION.nc
-----Debug3--> MyPostExp_19010101_19101231_1M_REGENERATION.nc
-----Debug3--> MyPostExp_19010101_19101231_1M_CARBON_ACTIVE.nc
-----Debug3--> MyPostExp_19010101_19101231_1M_CARBON_SLOW.nc
(...)

-----Debug2--> 47% files OK. for period 19010101-19101231
```

**Question** : verify that Time Series for z0h and z0m was create

---

## 5 Monitoring and Inter-monitoring

### 5.1 Monitoring

Visualize at the monitoring on the web for the previous 2 simulations (100 years) :

<https://vesg.ipsl.upmc.fr/thredds/fileServer/work/p86caub/IPSLCM5A2/DEVT/piControl/COURSNIV2/MONITORING/index.html>

[http://prodn.idris.fr/thredds/fileServer/ipsl\\_public/rgzi016/IPSLCM5A2/DEVT//piControl/COURSNIV2/MONITORING/index.html](http://prodn.idris.fr/thredds/fileServer/ipsl_public/rgzi016/IPSLCM5A2/DEVT//piControl/COURSNIV2/MONITORING/index.html)

## **5.2 Inter-monitoring**

### 5.2.1 from supervisor interface

It is possible to use supervisor interface to superpose simulations referenced in supervisor database.

Step 1 : <https://hermes.ipsl.upmc.fr>

Step 2 : Find 2 simulations "COURSNIV2" by using "Filter by name" and chosen " \* " for StartDate

Step 3: Tick "IM" for both simulations and right click on IM (top of the column) select "Open Inter-Monitoring"

### 5.2.2 from web interface tool "webservices"

Now you will use the web interface tool "inter-monitoring" to superpose several simulations. The default inter-monitoring is found at address :

<http://webservices2017.ipsl.fr/interMonitoring/>.

For this exercise choose the 2 simulations above at IDRIS and TGCC. To do so, set the corresponding paths :

- [http://prodn.idris.fr/thredds/catalog/ipsl\\_public/rgzi016/IPSLCM5A2/DEVT/piControl](http://prodn.idris.fr/thredds/catalog/ipsl_public/rgzi016/IPSLCM5A2/DEVT/piControl)
- [http://vesg.ipsl.upmc.fr/thredds/catalog/work\\_thredds/p86caub/IPSLCM5A2/DEVT/piControl](http://vesg.ipsl.upmc.fr/thredds/catalog/work_thredds/p86caub/IPSLCM5A2/DEVT/piControl)

#### Mini how to use the inter-monitoring

Go to <http://webservices2017.ipsl.fr/interMonitoring/>

- **Step 1:** Enter the first path and click on the button List Directories.
  - **Step 2:** You'll see a list of all simulations at this path. Go back to step 1.
  - **Step 1 bis:** Go back to step 1, enter the second path **and click on Append Directories.**
  - **Step 2 bis:** You'll now see all simulations on the 2 paths. Choose the two simulations with the same name COURSNIV2 (use the mouse and type ctrl to select only 2 simulations). Click on Search files.
  - **Step 3:** Select one variable and click on Validate.
  - **Step 4:** Choose default setting for "plot01:Time series" and click on Validate. Then click on the button below called "Prepare and run the ferret script".
  - Now a ferret script will appear on the screen and one image. Click on the button "Run this script on the server" below on the page. The inter-monitoring for all variables will now appear on the screen.
-

## 6 Write out new output file containing a selection of variables at specific output frequency

The aim of this part is to modify XIOS configuration files to change output variables specifications. The configuration file you have to modify is:

***modeles/ORCHIDEE/src\_xml/file\_def\_orchidee.xml***

Edit it and have a look on it.

You want to create a new file called "mynewfile.nc" (file id="mynewfile" name="mynewfile") which contains "rain" and "snowf" fields (use of field\_ref attribute precip\_rain and precip\_snow) with following specifications:

- The name of the variables is "rain\_1Y" and "snowf\_1Y"
- File output frequency is 1Y (1year). You have to modify the file attribute ***output\_freq="1y"***
- File attribute ***enabled=TRUE***.
- You need to define a grid for these two variables with

```
<field_group freq_op="lts" grid_ref="grid_landpoints_out" group_ref="remap_expr">
```

- 1) Modify file\_def\_orchidee.xml to activate changes which are listed above.
- 2) Create a new experiment called "MyPostExp2". As you want a simulation like MyPostExp (with the limit parameters in run.def) with only a new name, you can do like this :

```
cp -r MyPostExp MyPostExp2
cd MyPostExp2

vi config.card # => Change JobName

rm -rf Job_MyPostExp run.card Script_Output_MyPostExp.000001 OutScript/
# -->it will remove all things link with the experiment MyPostExp

../../../../libIGCM/ins_job #--> create New Job for this new experiment
```

Set PeriodNb=10 in the main job

Note : you don't need to recompile because you didn't make modification in the code. Xml are use by the executable and are not used to create it.

- 3) Add the new file to be stored in ***COMP/sechiba.card*** (see example of 1M\_sechiba\_history.nc)

In [OutputFiles] section :

```
mynewfile.nc, ${R_OUT_SRF_O_Y}/${PREFIX}_1Y_mynewfile.nc,Post_1Y_mynewfile
```

Do not forget to define a new Post section "Post\_1Y\_mynewfile" and to add the 2 new variables to be produced as TimeSeries.

Beware your new output file is a yearly output. Since the 2 variables are 2D variables (no vertical axis) , you have to put

```
GatherWithInternal = (lon, lat, time_counter, time_centered, time_centered_bounds)
```

Submit using lsubmit, ccc\_msub or qsub depending on the platform.

**Question** : verify that this new file is create and has all post-treatment.

---

## 7 Check your quota

Do the exercises below on the computing center where you have a login.

### **For login at IDRIS**

Use the command `quota_u` to check the quota on ada HOME and `quota u -w` for WORKDIR.

#### **Question 7a**

Is the quota individual?

- What happens to the other users if you exceed the quota?
- Which type of files do you store in your HOME?

At Ergon there is no limit on the quota but the files have a time limit and by default expire after 12 months. Before they expire you receive an email listing all files which are concerned. You then have the possibility to extend the files for up to 12month again using the command "mfret". Connect to Ergon, list and extend the time limit.

```
mfret -lr my_rep
mfret -mr 12 my_rep
```

### **For login at TGCC**

At TGCC space and number of inodes (files and directories) are limited. Use the command `ccc_quota` to show your current quota and the limits on all file systems. Analyse what you see on the screen.

### Question 7b

- Is the quota individual?
  - What happens to the other users if you exceed the quota?
- What is your global score?
- What means by "non\_files"?
- Which file systems have a limit on the number of inodes?
- What is the size of the files that you are supposed to store at the STOREDIR?

To facilitate the clean you can use the command "find" to list all small files at STOREDIR.

```
cd $STOREDIR
find . -type f -size -32M
```

### For login at LSCE/obelix

At the LSCE cluster there is an individual quota only at your home, at /home/users/login. Use the "quota" command to check the quota at your home. At the other disks there are no quota control but they can saturate. Use "df -h" to see the occupation of the disks.

### Question 7c

- To which disk do you have write permission?
- What happens to the other users if you saturate a disk?

Note that the default base directory for the archive of output files is defined in libGCM to /home/scratch01/yourlogin for obelix. This scratch directory might be purged and therefore you have to change to save your important simulations on another disk. You can change archive by setting the variable "ARCHIVE" directly in the config.card or change it in modipsl/libGCM/libGCM\_sys\_obelix.ksh.

---

## 8 Install and run NEMO-PISCES

In this exercise, we will perform a 1 month simulation of the coupled ocean-biogeochemical model NEMO-PISCES, using 32 MPI processes for NEMO and 4 MPI processes for XIOS. Note that for this configuration some specific commands need to be done. If it is your first time to download NEMO, you first need to register and choose a login/passwd : [www.nemo-ocean.eu](http://www.nemo-ocean.eu). (This exercises can not be done on obelix.)

Download modipsl as before and then install the NEMO\_v6 configuration :

```
mkdir $WORKDIR/NEMO_STD ; cd $WORKDIR/NEMO_STD
svn co http://forge.ipsl.jussieu.fr/igcmg/svn/modipsl/trunk modipsl

cd modipsl/util
./model NEMO_v6_OMIP
```

Compile the ORCA2\_LIM3\_PISCES configuration:

```
cd ../config/NEMO_v6 ; gmake ORCA2LIM3PISCES
```

Create your first job for NEMO:

```
cp EXPERIMENTS/ORCA2_LIM3_PISCES/core/clim/config.card .
```

Now set up the config.card to do the simulation. You can see that for the configuration ORCA2\_LIM3\_PISCES. There are 3 components : OCE for ocean, ICE for Sea-Ice and MBG for PISCES.

Modify in config.card the following:

```
vi config.card
JobName=OR2L3P1 ; SpaceName=TEST ; DateEnd=1850-01-31 ; PeriodLength=1M
```

Create the job as usual :

```
../../libIGCM/ins_job
```

**Question8a** : Explore the COMP/opa9.card (COMP/pisces.card) to see the inputs files needed for OPA and PISCES



**question8b** Explore in PARAM the namelists (namelist\_ORCA2clim\_cfg) to see some parameters for the run

**question8c** Explore in PARAM/file\_def\_nemo\* files where the output fields are managed for OPA/LIM/PISCES resp.

Submit the job as usual:

```
cd OR2L3P1
llsubmit Job_OR2L3P1 / ccc_msub Job_OR2L3P1
```

**Question8d** Explore the Script\_Output file and run.card in the submit directory

**question8e** Explore the output directories where the output files are stored : OCE/Output ; ICE/Output; MBG/Output

Continue the simulation for one more month.

---