Wikiprint Book

Title: 1. FAQ : Setting up and performing a simulation

Subject: lgcmg_doc - Doc/FAQ

Version: 99

Date: 05/22/24 16:23:26

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Frequently Asked Questions

Frequently (and not so frequently) Asked Questions

1. FAQ : Setting up and performing a simulation

1.1. How do I overwrite an existing simulation?

1. Delete the `run.card` file in your experiment directory.
1. Delete the following directories:

- at TGCC
  - `$CCCSTOREDIR/IGCM_OUT/TagName/(...)/JobName`
  - `$CCCWORKDIR/IGCM_OUT/TagName/(...)/JobName`
- at IDRIS
  - adapp : `$ARCHIVE/IGCM_OUT/TagName/(...)/JobName` or ergon: `$HOME/IGCM_OUT/TagName/(...)/JobName`
  - `$WORKDIR/IGCM_OUT/TagName/(...)/JobName`

1. Delete the `REBUILD/TagName/JobName` directory (if it exists) in `$SCRATCHDIR` or in `$WORKDIR`.
1. Delete the following directory:

- at TGCC : `$SCRATCHDIR/IGCM_OUT/TagName/(...)/JobName`
- at IDRIS, if you have changed the `RUN_DIR_PATH` variable, you must also delete the `$WORKDIR/IGCM_OUT/TagName/(...)/JobName` directory.

1. Restart the job.

1.2. How do I continue or restart a simulation?

See here.

1.3. How do I setup a new experiment?

See here.

1.4. How can I start from another simulation?

See here.

1.5. How do I create the LMDZ histins.nc file?

You have several options. The easiest one is to change the output frequency of one of the existing files. For instance, you can change the output frequency of the histhf.nc file to instantaneous without changing the file name. To do so, keep HF in WriteFrequency in config.card:

```
[ATM]
#
WriteFrequency="1M 1D HF"
```

Change the 3rd column of the phys_out_filetimesteps parameter in PARAM/output.def_OutLevel. OutLevel is chosen in lmdz.card and by default OutLevel=low. Specify 1800.s in PARAM/output.def_low if you want the output to be saved every 30 minutes:

```
phys_out_filetimesteps = 1.mth,  1.day,  1800.s,  0.125day, 0.125day, 1800.s
```

You can also change phys_out_filelevels in the 3rd column.

2. FAQ : Running the model

2.1. How do I read the Script_Output file?

At the end of each job execution, a corresponding `Script_Output` file is created.
Important : If your simulation stops you can look for the keyword "IGCM_debug_CallStack" in this file. This word will be preceded by a line giving more details on the problem that occurred.

See can be found here for more details.

2.2. The LMDZ parallelism and the Bands files

See here.

2.3. How do I define the number of MPI jobs and the number of OpenMP threads?

If you run your model in MPI mode only (without OpenMP) the number of MPI processes is defined in config.card by the JobNumProcTot parameter:

```
#-- Total Number of Processors
JobNumProcTot=32
```

If you run your model in hybrid mode (MPI-OpenMP), the number of MPI processes and the number of OpenMP threads are set in config.card in the section "Executable". For instance, for LMDZ : 16 MPI processes and 2 OpenMP threads.

```
ATM= (gcm.e, lmdz.x, 16MPI, 2OMP)
```

Notice that the job header differs from the one for openMP.

2.4. Why does the `run.card` file contain the keyword `Fatal`?

The keyword `Fatal` indicates that something went wrong in your simulation. Below is a list of the most common reasons:

- a problem was encountered while copying the input files
- the frequency settings in config.card are erroneous
- run.card has not been deleted before resubmitting a simulation, or "OnQueue" has not been specified in run.card when continuing a simulation
- a problem was encountered during the run
- the disk quotas have been reached
- a problem was encountered while copying the output files
- a post processing job encountered a problem

  `pack_xxx` has failed and caused the simulation to abort. In this case, you must find `STOP HERE INCLUDING THE COMPUTING JOB` located in the appropriate output pack file.
  - `rebuild` was not completed successfully

See the corresponding chapter about monitoring and debug for further information.

2.5. How do I use a different version of libIGCM?

libIGCM is constantly being updated. We recommend to choose the latest tag of libIGCM. Here is what to do:

- save the old libIGCM version (just in case)
- get libIGCM
- reinstall the post processing jobs
- make sure that there has been no major change in AA_job, otherwise reinstall the main job

```
cd modipsl
mv libIGCM libIGCM_old
svn checkout http://forge.ipsl.jussieu.fr/libigcm/svn/tags/libIGCM_v2.3 libIGCM
diff libIGCM/AA_job libIGCM_old/AA_job
util/ins_job
```

In case you need version X of the trunk of libIGCM, change the "svn checkout" line into:

```
svn checkout -r X http://forge.ipsl.jussieu.fr/libigcm/svn/trunk/libIGCM libIGCM
```

If AA_job has been modified, you must :

- move to the experiment directory,
- delete or move old jobs

  rerun the new jobs using `ins_job`. MYCONFIG could be IPSLCM5_v5 or ORCHIDEE_OL, for example:

```
cd ...../config/MYCONFIG/MYEXP
mv Job_MYEXP OLDJOB                                          # save the old job
../../../util/ins_job
# modifier Job_MYEXP : NbPeriod, memory,... as it was done in OLDJOB
```

2.6. How do I restart a simulation to recover missing output files?

TO BE VALIDATED (2/21/2013)

This method shows how to rerun a complete simulation period in a different directory (REDO instead of DEVT/PROD).

Example : To rerun v3.historicalAnt1 to recompute a whole year (e.g. 1964) you must :

- On the file server (CCCSTOREDIR), create the necessary RESTART file and the Bands file.
- On the scratch disk ($SCRATCHDIR/IGCM_OUT), create the mesh_mask file

```
## Directory
mkdir $CCCSTOREDIR/....IGCM_OUT/IPSLCM5A/REDO/historicalAnt/v3.historicalAnt1REDO
cd $CCCSTOREDIR/....IGCM_OUT/IPSLCM5A/REDO/historicalAnt/v3.historicalAnt1REDO
# RESTART
mkdir -p RESTART ; cd RESTART
ln -s ../../../PROD/historicalAnt/v3.historicalAnt1/RESTART/v3.historicalAnt1_19640831_restart.nc v3.historicalAnt1REDO_
# Bands
mkdir -p ATM/Debug
cd ATM/Debug
ln -s ../../../../../PROD/historicalAnt/v3.historicalAnt1/ATM/Debug/v3.historicalAnt1_Bands_96x95x39_3prc.dat_3 v3.histo
```

```
mkdir $SCRATCHDIR/....IGCM_OUT/IPSLCM5A/REDO/historicalAnt/v3.historicalAnt1REDO
cd $SCRATCHDIR/....IGCM_OUT/IPSLCM5A/REDO/historicalAnt/v3.historicalAnt1REDO
# mesh_mask
mkdir -p OCE/Output
cd OCE/Output
ln -s ../../../../../PROD/historicalAnt/v3.historicalAnt1/OCE/Output/v3.historicalAnt1_mesh_mask.nc v3.historicalAnt1RED
cd ../..
```

- On the computing machine:
  - create a new directory

```
cp -pr  v3.historicalAnt1 v3.historicalAnt1REDO
```

  - in this new directory, change the run.card file and set the following parameters to:

```
OldPrefix= v3.historicalAnt1_19631231
PeriodDateBegin= 1964-01-01
PeriodDateEnd= 1964-01-31
CumulPeriod= xxx # Specify the proper "cad" value, i.e. the same month in the run.card cookie (ARGENT)
PeriodState= OnQueue
```

  - change the config.card file to one pack period (1 year), do not do any post processing, start rebuild month by month and specify PackFrequency.

```
JobName=v3.historicalAnt1
...
SpaceName=REDO
...
DateEnd= 1964-12-31
...
RebuildFrequency=1M
PackFrequency=1Y
...
TimeSeriesFrequency=NONE
...
SeasonalFrequency=NONE
```

- restart the simulation :

```
vi run.card # check one more time
vi Job_v3.historicalAnt1 # check the time parameters and names of the output scripts
qsub Job_v3.historicalAnt1
```

- once the job is finished, check that the solver.stat files are identical. The solver.stat files are stored in DEBUG :

```
sdiff  OCE/Debug/v3.historicalAnt1REDO_19640901_19640930_solver.stat /dmnfs11/cont003/p86maf/IGCM_OUT/IPSLCM5A/PROD/hist
```

3. FAQ : Special configurations

3.1. How do I create the initial conditions for LMDZOR?

For a few configurations such as LMDZOR and LMDZREPR, you must create initial and boundary conditions in advance. This is not necessary for coupled configurations such as IPSLCM5_v5.

For more information, see this chapter.

3.2. How do I deactivate STOMATE in IPSLCM5 or in LMDZOR?

The IPSLCM5 model has not been evaluated for these cases.

Here is how to do it.

3.3. How do I perform a nudged run?

This paragraph describes how to perform a nudged run for configurations that include LMDZ. To do so, you have to:

- activate option `ok_guide` in the `lmdz.card` file (this option enables you to activate the corresponding flag_ in `PARAM/guide.def`)
- check that the wind fields specified are contained in `BoundaryFiles`. (Several forcing are available on curie)

For example:

```
[BoundaryFiles]
List= ....\
     (/ccc/work/cont003/subipsl/subipsl/ECMWF96x95/AN${year}/u_ecmwf_${year}${month}.nc, u.nc)\
     (/ccc/work/cont003/subipsl/subipsl/EMWF96x95/AN${year}/v_ecmwf_${year}${month}.nc, v.nc)\
```

- choose the proper dates in `config.card` (pay attention to leap years)

4. FAQ : Post processing

4.1. Where are post processing jobs run?

libIGCM allows you to perform post processing jobs on the same machine as the main job. You can also start post processing jobs on other machines dedicated particularly to post processing. It is not done anymore.

Currently used machines:

Center	Computing machine	Post processing
CCRT	Titane	Titane, queue mono
TGCC	Curie	Curie, large node, -q xlarge
IDRIS	Ada	Ada (ongoing)

4.2. How do I check that the post processing jobs were successful?

See here.

4.3. How do I read/retrieve/use files on dods?

- At IDRIS, visit the following website:
  - ■http://dodsp.idris.fr and select your login, your configuration, your simulation and the ATM component (then the `Analyse` subdirectory) as well as `ATLAS` or `MONITORING`.

    or with the new one based on the ESGF and thredds : ■http://prodn.idris.fr/thredds and select
    - IDRISPUBFS, your login, your configuration, your simulation, etc.
- At TGCC, visit the following website:
  - ■http://dods.extra.cea.fr/work (dods `CCCWORK`) and select your login, your configuration, your simulation, etc.

    or with the new one called thredds : ■http://esgf.extra.cea.fr/thredds and select
    - DODSWORK, your login, your configuration, your simulation, etc. for ATLAS and MONITORING
    - DODSSTORE, your login, your configuration, your simulation, etc. and ATM or other component to access Analyse files (TS or SE)

  Once you found a netcdf file (suffix `.nc`), you can download it by clicking on it or you can analyze it with the DODS functions. To do so in the case of dods servers, add `cgi-bin/nph-dods` to the address right after the server adress. For example:

```
 ciclad : ferret ...
> use "http://dods.extra.cea.fr/cgi-bin/nph-dods/store/mon_login/..."
> use "http://dodsp.idris.fr/cgi-bin/nph-dods/mon_login/..."
> use "http://esgf.extra.cea.fr/thredds/dodsC/DODSSTORE/monlogin/..."
```

More information on Monitoring can be found here: DocFsimu

4.4. How do I add a variable to the Time Series?

See this section.

4.5. How do I superimpose monitoring plots?

■Audio
Memo :

To select simulations from two centers or for two different logins, you must go back to step 1 and click on **append directories** to add new simulations.

4.6. What is the Monitoring?

See chapter **Simulation and post-processing**, section *Postprocessing with libIGCM* here

4.7. How do I add a plot to the monitoring?

The answer to this question is here.

4.8. How do I calculate seasonal means over 100 years?

This feature is available with `libIGCM_v1_10` since 12/13/2010.

In order to compute a seasonal mean over 100 years, check that all decades are on the file server (`SE_checker`). Then run the job `create_multi_se` on the post processing machine.

Note that an atlas for these 100 years will also be created. See the example for the 100-year atlas for piControl2 here : ■SE 2000 2099

1. If not done yet, create a specific post processing directory. See the chapter on how to run or restart post processing jobs for details.
2. Copy `create_se.job`, `SE_checker.job` and `create_multi_se.job`
   Check/change the following variables in `create_se.job`:

```
libIGCM=${libIGCM:=.../POST_CMIP5/libIGCM_v1_10/modipsl/libIGCM}
```

4. Check that all decades exist.
5. Check/change the variables in SE_checker.job:

```
libIGCM=${libIGCM:=.../POST_CMIP5/libIGCM_v1_10/modipsl/libIGCM}
SpaceName=${SpaceName:=PROD}
ExperimentName=${ExperimentName:=piControl}
JobName=${JobName:=piControlMR1}
CARD_DIR=${CARD_DIR:=${CURRENT_DIR}}
```

Start the `./SE_checker.job` in interactive mode. All needed jobs `create_se.job` will be started. For example:

```
 ./SE_Checker.job

=====================================================
Where do we run ? cesium21
Linux cesium21 2.6.18-194.11.4.el5 #1 SMP Tue Sep 21 05:04:09 EDT 2010 x86_64
=====================================================

sys source cesium Intel X-64 lib.

--Debug1--> DefineVariableFromOption : config_UserChoices
--------------Debug3--> config_UserChoices_JobName=piControlMR1
--------------Debug3--> config_UserChoices_CalendarType=noleap
--------------Debug3--> config_UserChoices_DateBegin=1800-01-01
--------------Debug3--> config_UserChoices_DateEnd=2099-12-31

--Debug1--> DateBegin/End for SE : 1800_1809
--Debug1--> ATM
--Debug1--> SRF
--Debug1--> SBG
--Debug1--> OCE
--Debug1--> ICE
--Debug1--> MBG
--Debug1--> CPL
...
--Debug1--> DateBegin/End for SE : 2030_2039
--Debug1--> ATM
--Debug1--> 2 file(s) missing for ATM :
--Debug1--> piControlMR1_SE_2030_2039_1M_histmth.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_histmthNMC.nc
--Debug1--> SRF
--Debug1--> 1 file(s) missing for SRF :
--Debug1--> piControlMR1_SE_2030_2039_1M_sechiba_history.nc
--Debug1--> SBG
--Debug1--> 2 file(s) missing for SBG :
```

```
--Debug1--> piControlMR1_SE_2030_2039_1M_stomate_history.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_stomate_ipcc_history.nc
--Debug1--> OCE
--Debug1--> 4 file(s) missing for OCE :
--Debug1--> piControlMR1_SE_2030_2039_1M_grid_T.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_grid_U.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_grid_V.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_grid_W.nc
--Debug1--> ICE
--Debug1--> 1 file(s) missing for ICE :
--Debug1--> piControlMR1_SE_2030_2039_1M_icemod.nc
--Debug1--> MBG
--Debug1--> 3 file(s) missing for MBG :
--Debug1--> piControlMR1_SE_2030_2039_1M_ptrc_T.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_diad_T.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_dbio_T.nc
--Debug1--> CPL
--Debug1--> 2 file(s) missing for CPL :
--Debug1--> piControlMR1_SE_2030_2039_1M_cpl_atm.nc
--Debug1--> piControlMR1_SE_2030_2039_1M_cpl_oce.nc
--------Debug2--> Submit create_se  for period 2030-2039
IGCM_sys_MkdirWork : .../POST_CMIP5/piControl/piControlMR1/OutScript
IGCM_sys_QsubPost : create_se
Submitted Batch Session 179472
...
```

7. Wait for the `create_se` jobs to be completed
8. Copy `create_multi_se.job`
9. Check/change the variables :

```
libIGCM=${libIGCM:=.../POST_CMIP5/libIGCM_v1_10/modipsl/libIGCM}
```

If needed, adjust the number of decades in `config.card`: default=`50Y` (i.e. 50 years). Add the following line to the `POST` section, i.e. at the end after the keyword `[POST]`

```
MultiSeasonalFrequency=100Y
```

11. Run the `create_multi_se.job` job:`ccc_msub create_multi_se.job`
12. The years used for the calculations are those between `DateEnd` (set in `config.card` in the local directory) and `DateEnd - MultiSeasonalFrequency`.

The mean values are stored in the "Analyse" directories of each model component in the subdirectory `SE_100Y` (e.g. `ATM/Analyse/SE_100Y`).

5. FAQ : Unix tricks

5.1. How to delete a group of files using the find command?

We recommend to also read the find manual.

Examples :

- command recursively deleting all files in a directory containing DEMO in their name:

```
find . -name '*DEMO*' -exec rm -f {} \;
```

- command recursively deleting all files in a directory containing DEMO, TEST or ENCORE in their name:

```
find . \( -name "*DEMO*" -o -name "*TEST*"  -o -name "*ENCORE*" \) -print -exec rm -f {} \;
```

- command recursively computing the number of files in the current directory:

```
find . -type f | wc -l
```

5.2. Allowing read-access to everybody

The `chmod -R ugo+rX *` command gives access to everybody to all files and subdirectories in the current directory.

6. FAQ : Miscellaneous

6.1. How do I use `TimeSeries_Checker.job` to create files on `$STORE` when the output files are on `DMNFS`?

- You need libIGCM v1_12 to use DMNFS as input
- Change !TimeSeries_Checker.job to use STORE
- Change create_ts.job to use STORE

6.1.1. Example for the rcp45 simulation

```
cd modipsl
mv libIGCM libIGCM.old
svn checkout http://forge.ipsl.jussieu.fr/libigcm/svn/tags/libIGCM_v1_12 libIGCM
modipsl/ins_job
```

```
TimeSeries_Checker.job révision 658

line 169
#R_SAVE=${R_OUT}/${config_UserChoices_TagName}/${config_UserChoices_SpaceName}/${config_UserChoices_ExperimentName}/${conf

R_SAVE=${CCCSTOREDIR}/IGCM_OUT/${config_UserChoices_TagName}/${config_UserChoices_SpaceName}/${config_UserChoices_Experime
```

```
create_ts.job révision 316

line 300
#DIRECTORY=${R_SAVE}/${comp}/Analyse/${TS_Dir}
DIRECTORY=${CCCSTOREDIR}/IGCM_OUT/IPSLCM5A/PROD/rcp45/v3.rcp45.strat/${comp}/Analyse/${TS_Dir}

line 768
#eval IGCM_sys_Put_Out ${file_out} \${R_OUT_${comp}}/Analyse/${TS_Dir}/${file_out}
IGCM_sys_Put_Out ${file_out} ${CCCSTOREDIR}/IGCM_OUT/IPSLCM5A/PROD/rcp45/v3.rcp45.strat/${comp}/Analyse/${TS_Dir}/${file_o

line 780
#eval IGCM_sys_Put_Out ${file_out_YE} \${R_OUT_${comp}}/Analyse/TS_MO_YE/${file_out_YE}
IGCM_sys_Put_Out ${file_out_YE} ${CCCSTOREDIR}/IGCM_OUT/IPSLCM5A/PROD/rcp45/v3.rcp45.strat/${comp}/Analyse/TS_MO_YE/${file
```

6.2. How do I restart one simulation month which ran on `$DMFDIR` when the outputs are stored on `$STORE`?

Example: the `past1000` simulation

```
login on titane: ssh titane.ccc.cea.fr

1455-12 to be reran on STORE, original on dmnfs
1477-12 to be reran on STORE, original on dmnfs
1517-11 to be reran on  STORE, original on dmnfs

cd $DMFDIR/IGCM_OUT/IPSLCM5A/TEST/PD_TEST
```

```
dmget LMCMP5/???/Restart/*14551130* LMCMP5/???/Restart/*14771130* LMCMP5/???/Restart/*15171030* LMCMP5/OCE/Output/LMCMP5_m

tar cvf $SCRATCHDIR/IGCM_OUT/IPSLCM5A/TEST/PD_TEST/RESTART.REDO.past1000.tar LMCMP5/???/Restart/*14551130* LMCMP5/???/Rest

cd $SCRATCHDIR/IGCM_OUT/IPSLCM5A/TEST/PD_TEST

tar xvf RESTART.REDO.past1000.tar

cd /work/cont003/p25khod/IPSLCM5A/modipsl/config/IPSLCM5A/LMCMP5_newlibIGCM.REDO

==> edit run.card

==> PackFrequency=NONE in config.card

==> qsub

#======================================================================
#D-- Post -
[Post]
#D- Do we rebuild parallel output, this flag determines
#D- frequency of rebuild submission (use NONE for DRYRUN=3)
RebuildFrequency=1Y
#D- Do we rebuild parallel output from archive (use NONE to use SCRATCHDIR as buffer)
RebuildFromArchive=NONE
# Pas de PACK
PackFrequency=NONE
#D- If you want to produce time series, this flag determines
#D- frequency of post-processing submission (NONE if you don't want)
TimeSeriesFrequency=NONE
#D- If you want to produce seasonal average, this flag determines
#D- the period of this average (NONE if you don't want)
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
```