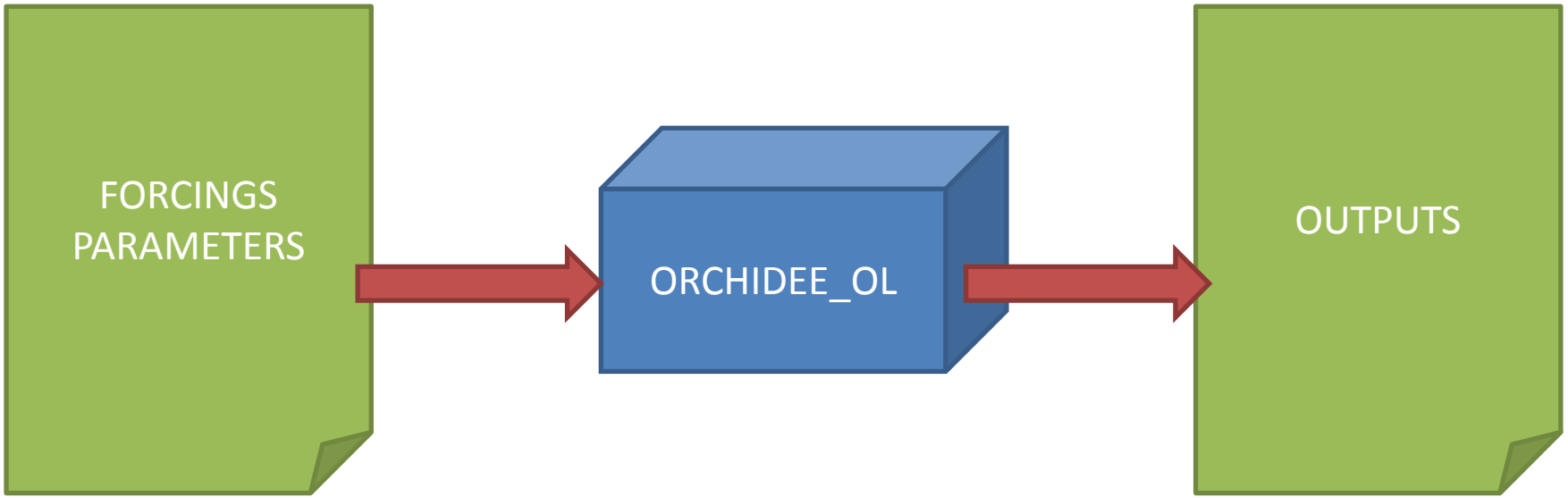
ORCHIDEE SIMULATIONS for dummies

Running Orchidee off line at lsce:

from compiling to launching the simulation

Amélie Rajaud, July 2013

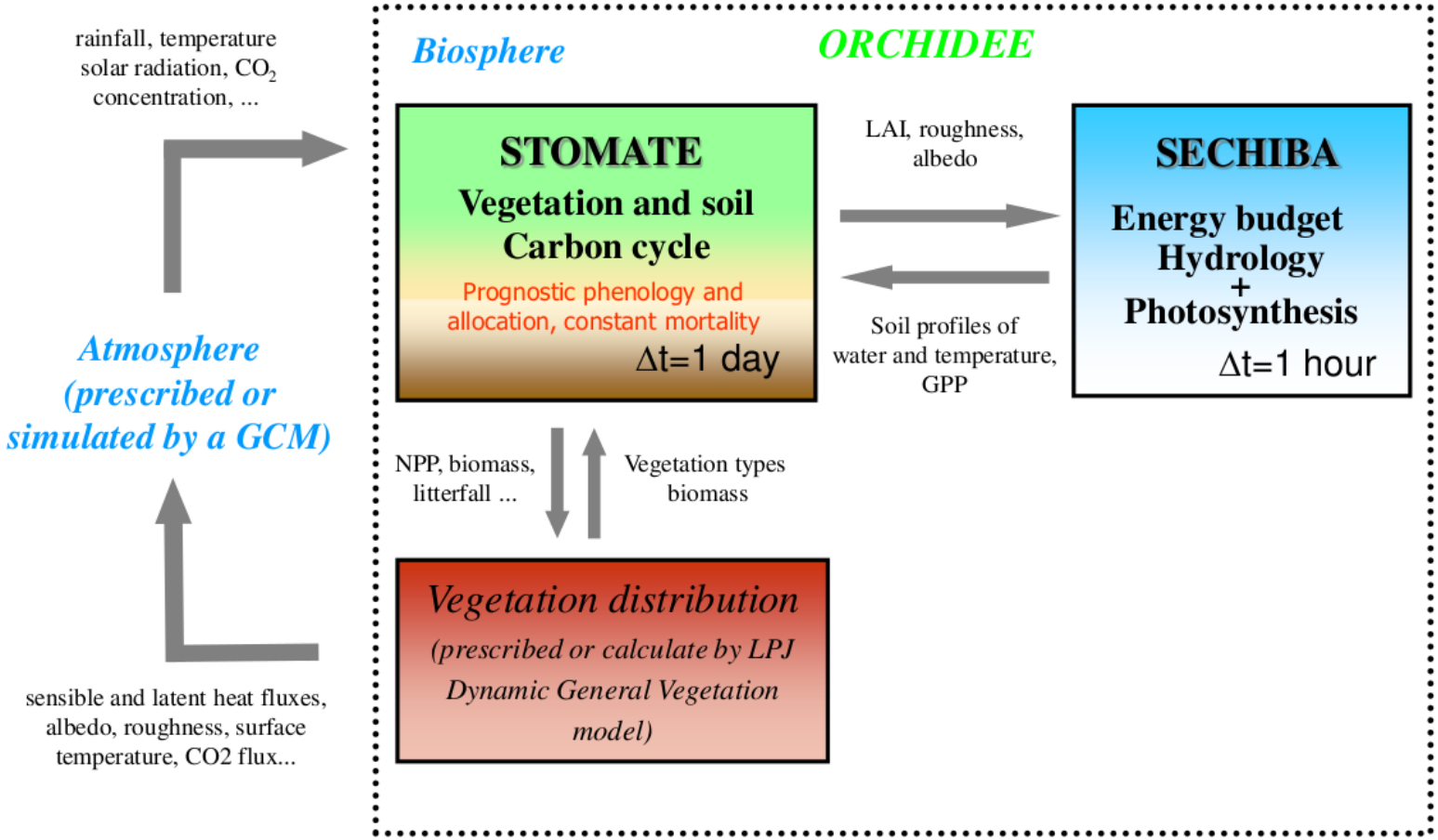
Easy: you just want to run the model for a given scenario and get the results



So you have the scenario (hopefully)…

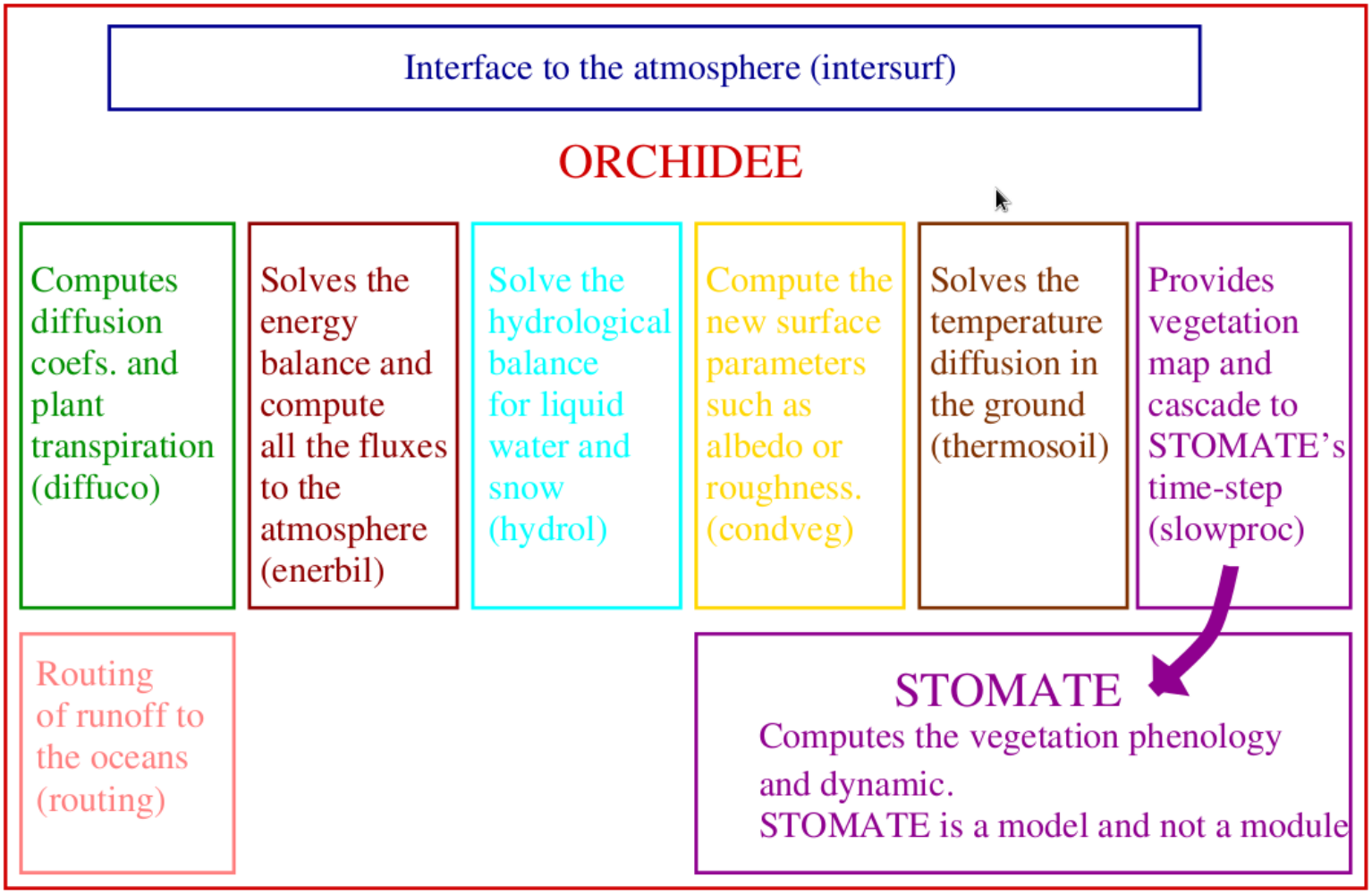
➔ Where will you find the model?!

What you know about ORCHIDEE: it's a physical model!



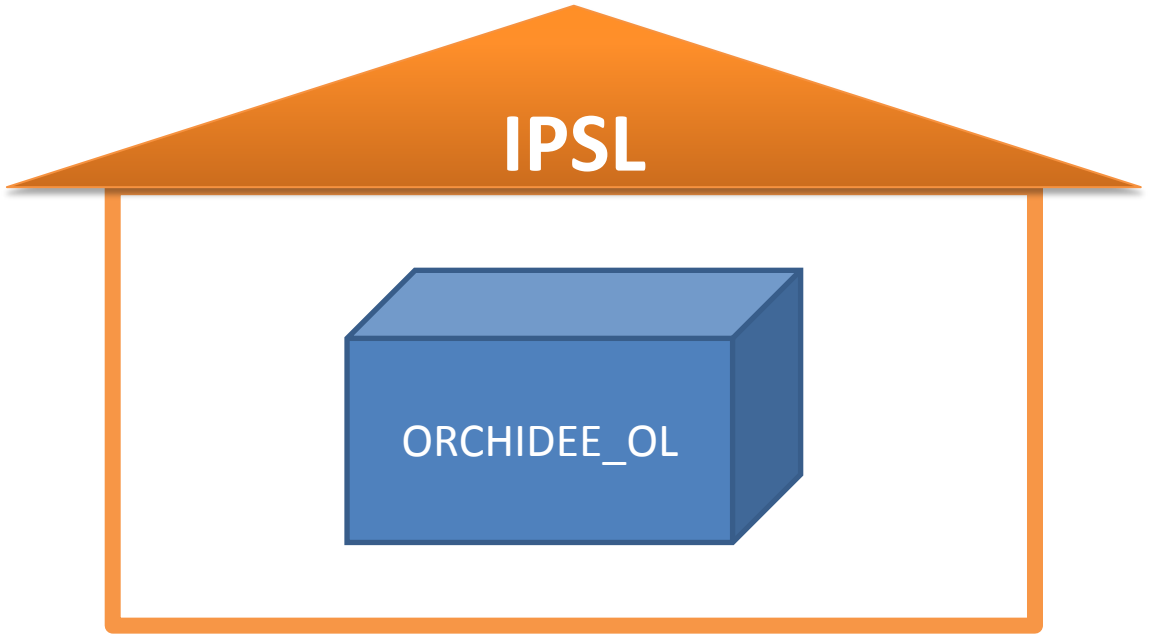
cf. the pdf found here: http://forge.ipsl.jussieu.fr/orchidee/wiki/Documentation

You may also know the structure in which the model was coded



cf. the pdf found here: http://forge.ipsl.jussieu.fr/orchidee/wiki/Documentation

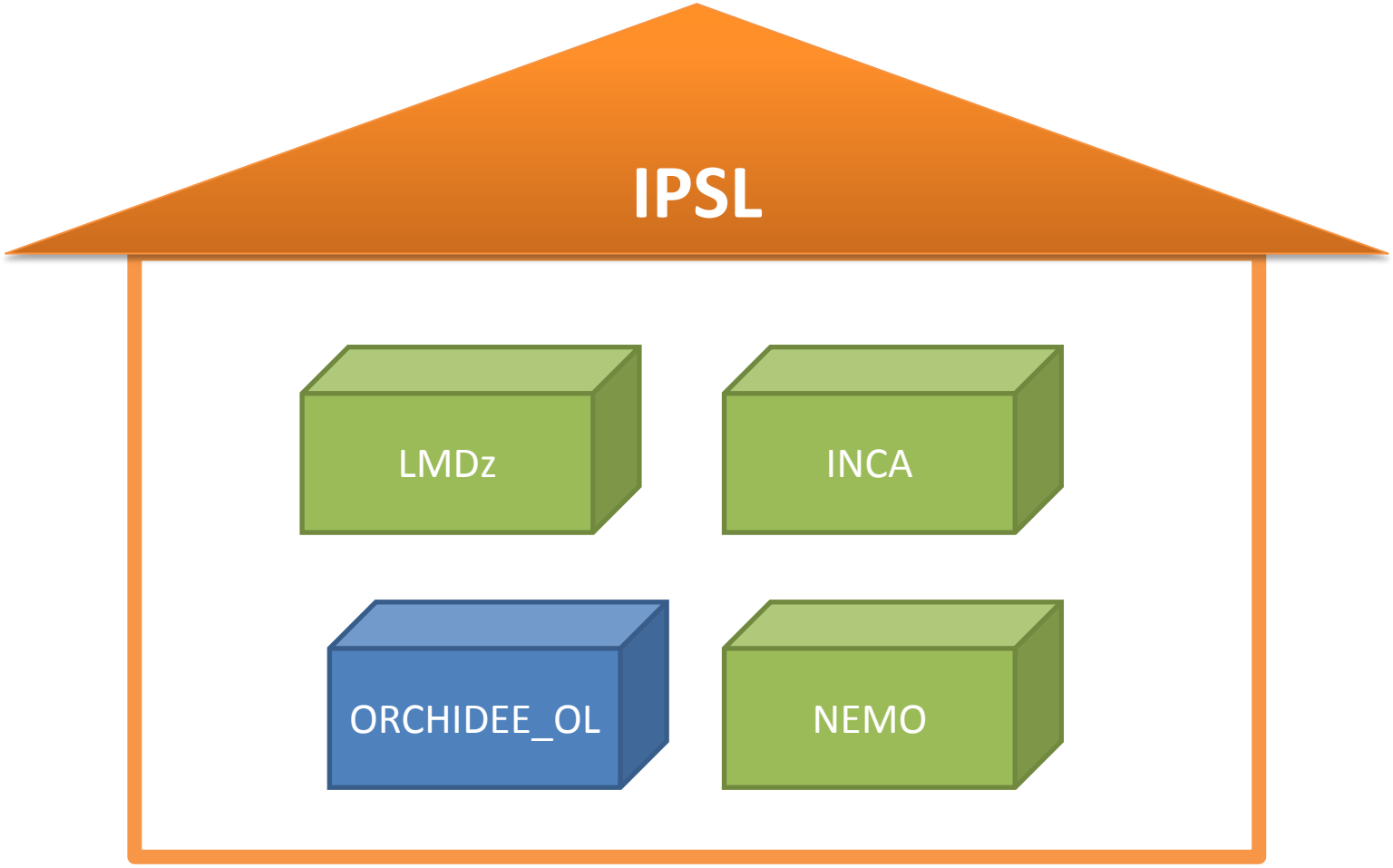
OK, but where do you actually get this model?



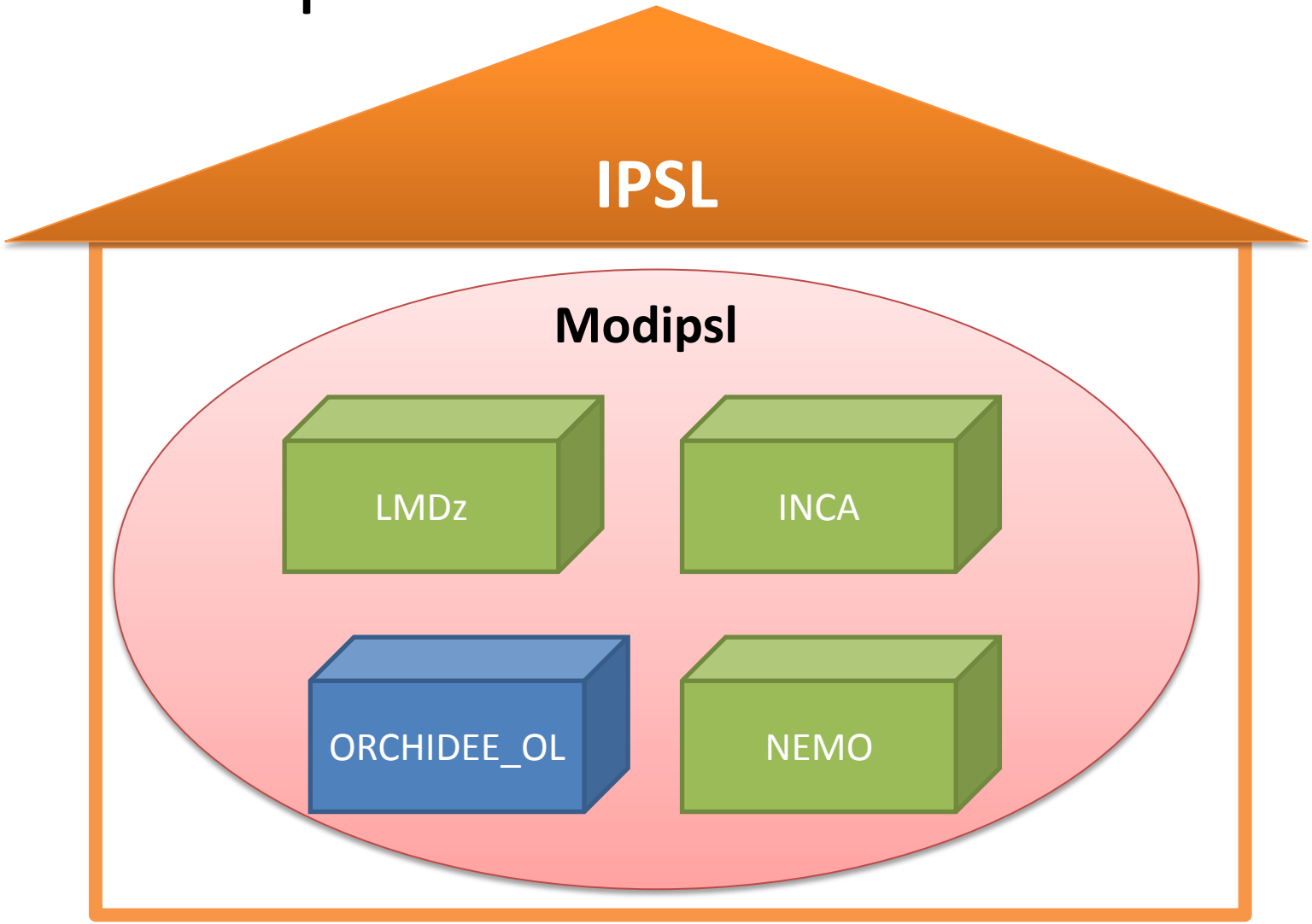
Here, at IPSL!

Easy?...

ORCHIDEE is not alone in the IPSL house



The tenant of the IPSL house is Modipsl: you need it to download, compile and run the model



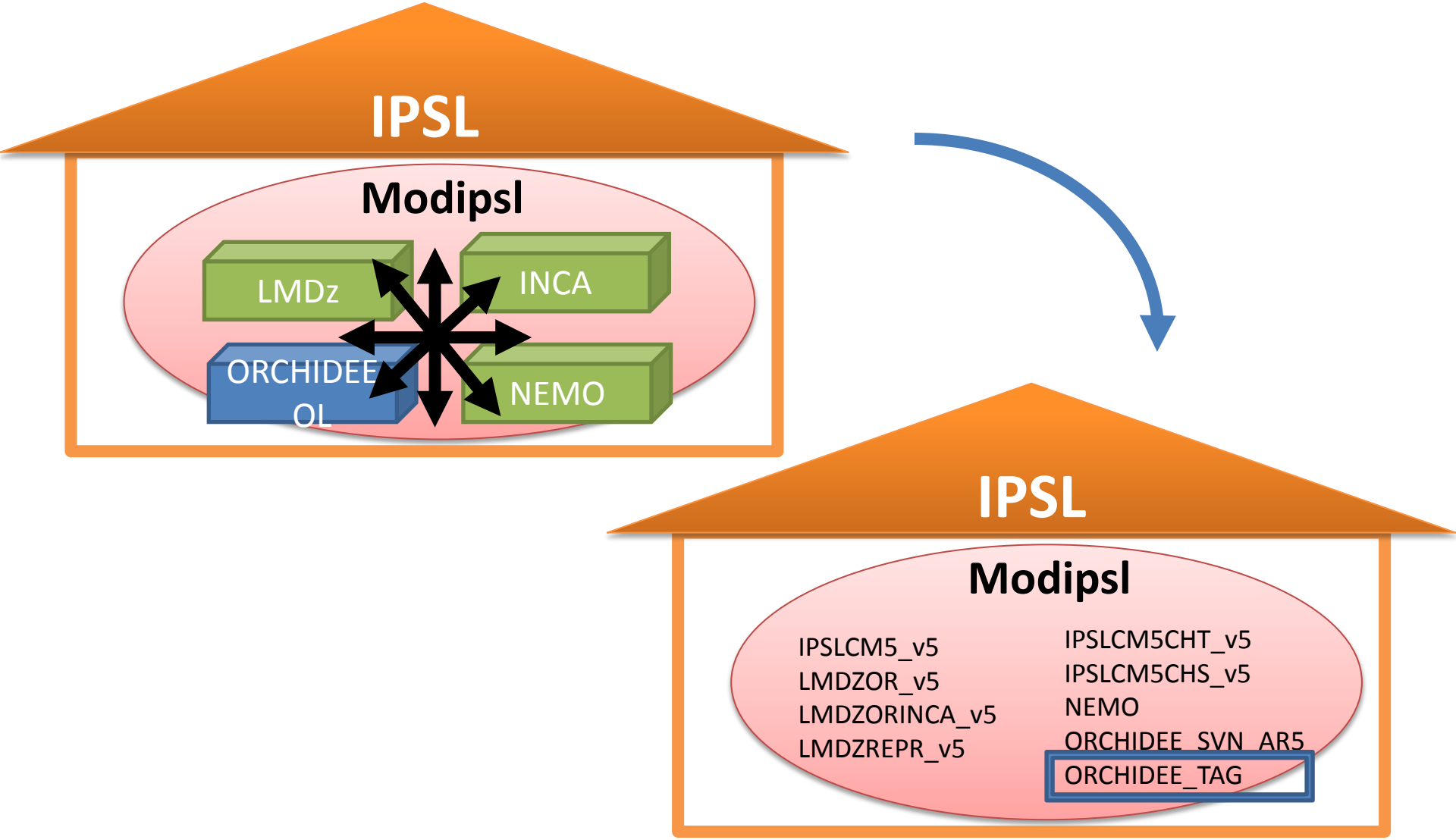
First, you need to use the Modipsl tool to download the proper configuration

- The documentation from the IPSL website will be extremely usefull:

http://forge.ipsl.jussieu.fr/igcmg/wiki/platform/documentation

➔ At IPSL, several « configurations » are stored and managed. Each configuration consists either in the coupling of two or more IPSL models, or simply in one isolated model.

Choose your configuration



Proceed with downloading your chosen configuration

1. Download the modipsl tool
2. Select the right configuration
3. Compile with options adapted to your project

➔We want to use ORCHIDEE_OL (off line), without any model coupling: follow the path clearly indicated here

http://forge.ipsl.jussieu.fr/orchidee/wiki/HowTo/InstallingORCHIDEEBasic

A note about the documentation you'll need and find

- The documentation related to our ORCHIDEE model is to be found here:

http://forge.ipsl.jussieu.fr/orchidee/wiki

Emphasizing the HowTo section:

http://forge.ipsl.jussieu.fr/orchidee/wiki/HowTo

- The documentation related to IPSL tools is here:

http://forge.ipsl.jussieu.fr/igcmg/wiki/platform/en/documentation

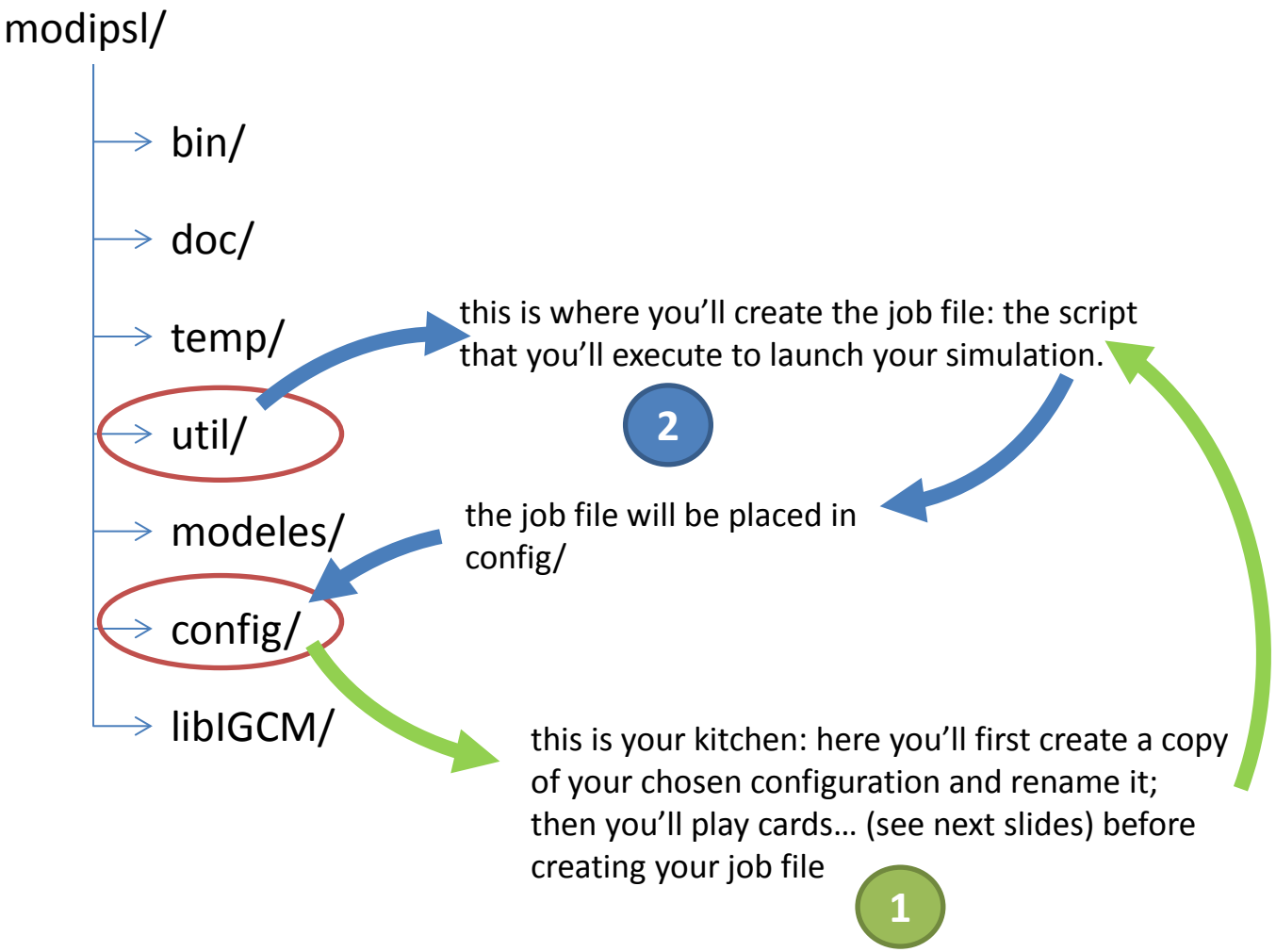
You'll need it for managing your experiment

Before you type the first command in your shell

- Make sure you have enough space available on the disk you're setting up your experiment in!

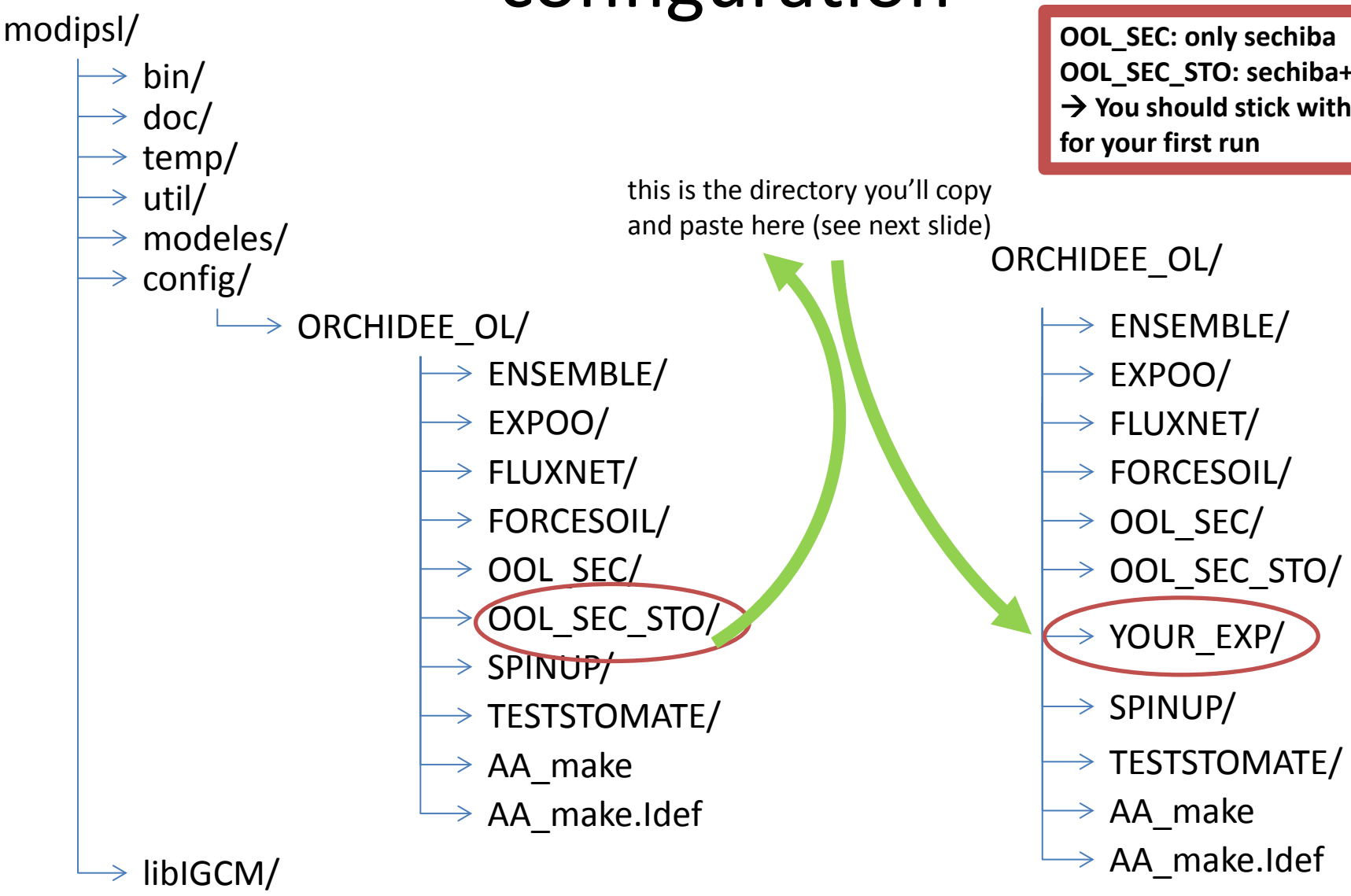
➔ At LSCE (obelix), you may want to consider running on the orchidee disks (eg. orchidee02…)

What you'll get after compiling



util/ and config/ are the only repertories you're allowed to play with (for now) !

Example: if you chose the full model configuration



OOL_SEC: only sechiba
OOL_SEC_STO: sechiba+stomate
→ You should stick with these for your first run

Setting up your experiment

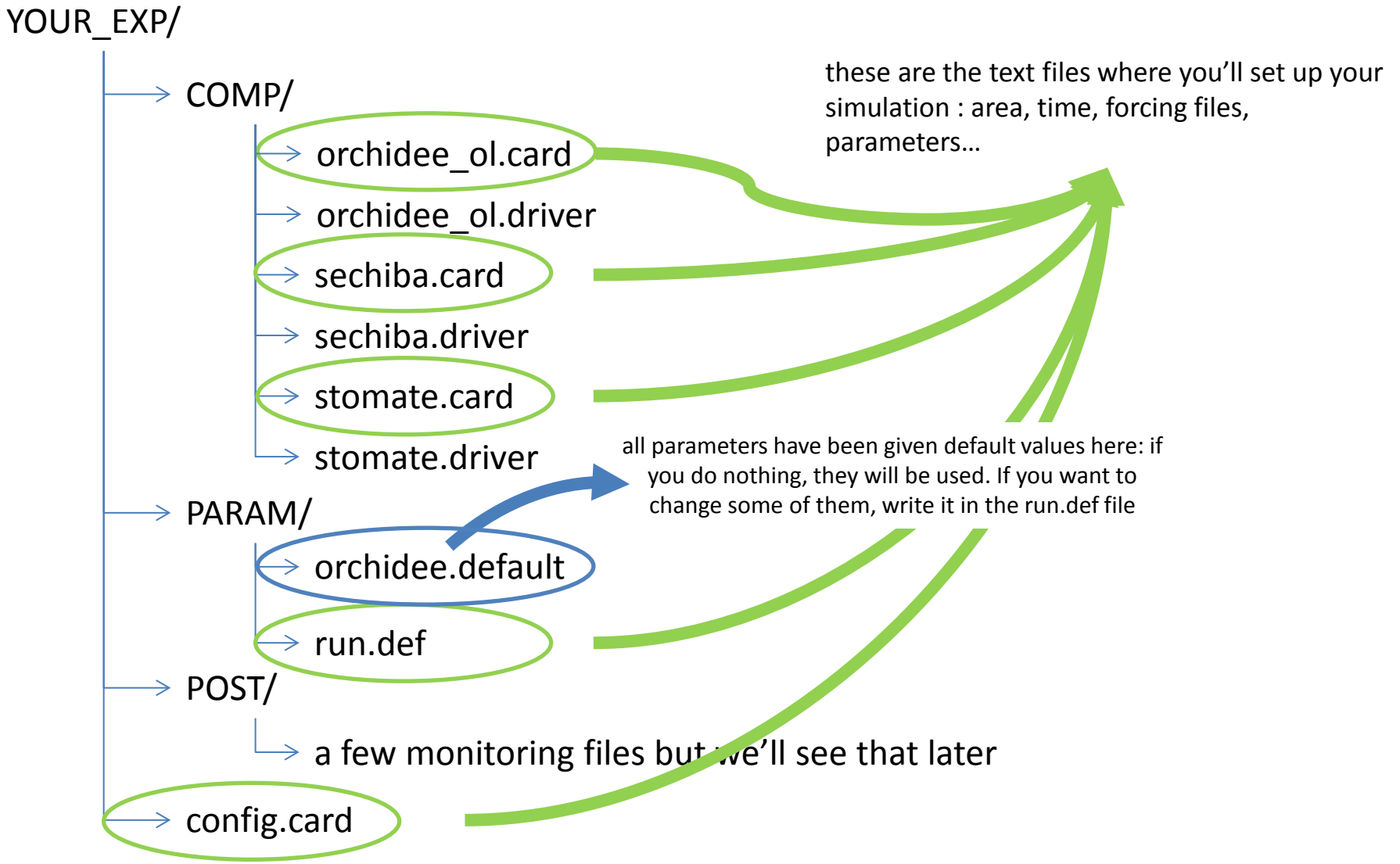
- For a « simple test case », this is all explained here:

https://forge.ipsl.jussieu.fr/orchidee/wiki/HowTo/TestCase1

- For a more meaningfull test experiment, you may care to enter into a few more details:
  1. Plan it on paper: area (not too big), time-length (not too long), options you want to include (not too many)
  2. Make sure you have all necessary forcing files available: climate forcing and PFT map at the very least
  3. Create a directory for your experiment: as seen in the previous slide, copy OOL_SEC_STO/ as YOUR_EXP/, for instance (you may choose another configuration, but don't be smart and erase the other ones: for some reason, it doesn't work that way)
  4. Play cards…

Playing cards (1)

Tree structure of your experiment



Playing cards (2)

You prepare your experiment by setting up your simulation cards

config.card

Change at least:
- **the job name (only letters)**
- **the dates and the period length (see next slide)**

sechiba.card

stomate.card

orchidee_ol.card

depending on how confortable you feel, you may or may not change these cards (for now!)

run.def

At least: here you enter the geographical delimitation of your area

Time-length of your simulation (1)

- In the config.card, YOU NEED TO CHANGE:
  - CalendarType=leap/noleap/360d, according to your climate forcing files
  - DateBegin=real date of the first day of your experiment
  - DateEnd=real date of the last day included in your experiment
  - PeriodLength=1Y/1M/5D/1D, the time length before asking whether a new job should be launched to continue the experiment

Time-length of your simulation (2)

- In the Job file (see next slide), YOU NEED TO CHANGE:
  - PeriodNb: this is the number of periods that will be treated in each successive job before submitting a new one

Say your PeriodLength is 1Y and PeriodNb is 5:

1. when you first submit your job, 5 years will be treated
2. then a new job will be automatically submitted (you do nothing), and when this new job is run the following 5 years will be treated
3. and so on untill you reach DateEnd

→ Each time a new job is submitted, it might remain queued for a while before it is treated. On the other hand, a single job's length might not be enough to treat all the years you want, so you have to split them

➔ To optimize the computing time, adjust the number of periods by job:

http://forge.ipsl.jussieu.fr/igcmg/wiki/platform/en/documentation/E_miseenplace#Mainjobofthesimulation

Create the Job file and complete your experiment setting up

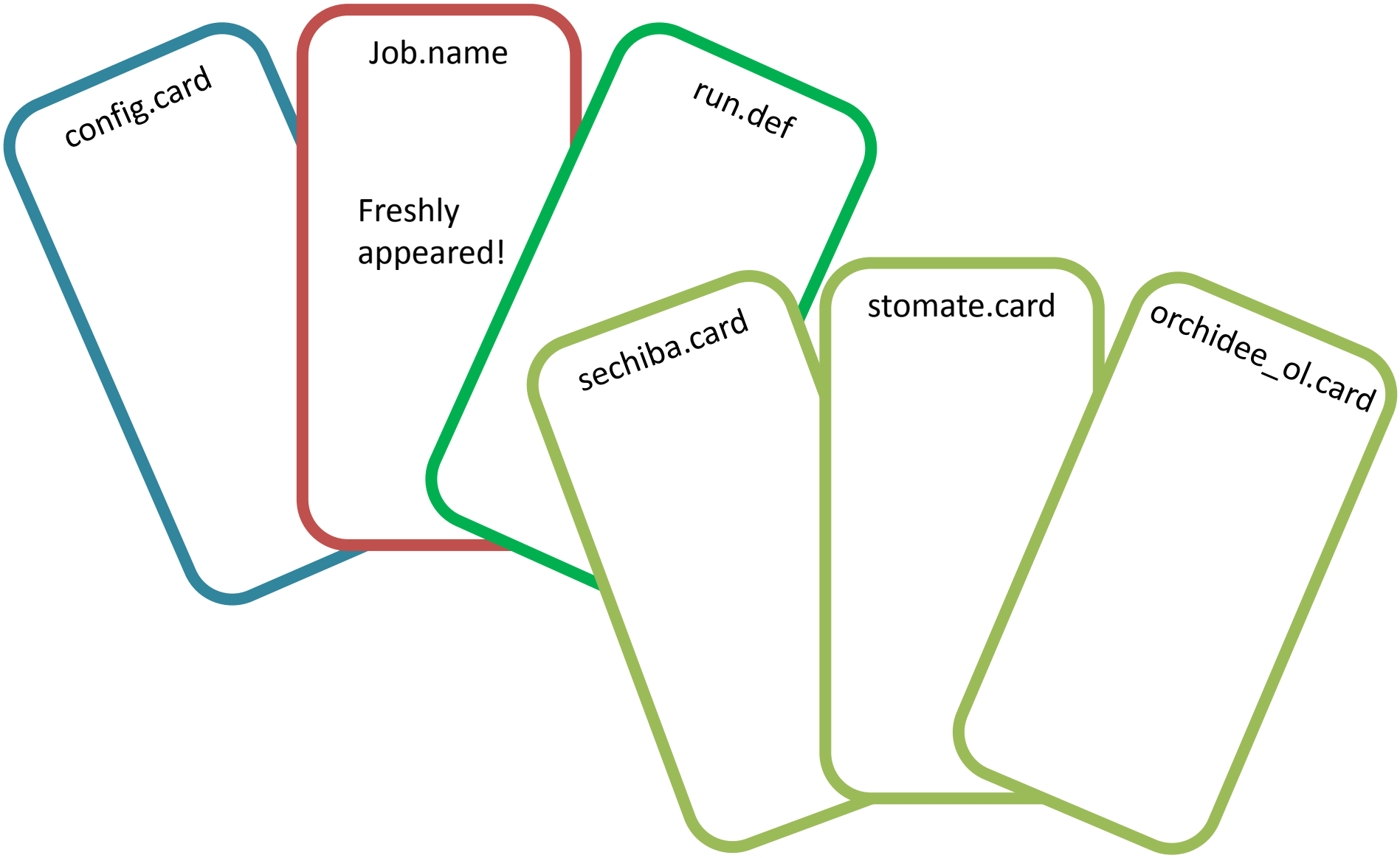
- go to modipsl/util/
- type: ./ins_job

➔ this creates job files in each directory of the config/ directory: of course you are only interested in the job file of YOUR_EXP/

- go to YOUR_EXP/
- edit the job file

➔change PeriodNb (see previous slide)

At this point you have 6 playing cards



Launch your experiment run

- ready? Type: qsub ./Job_nameofyourjob

➔ this just **launched your simulation** and gave you a **job number** that'll allow you to monitor its execution

- Use qstat to **check the status of your job**:

> qstat –u yourlogin

➔R for running, Q for queued…

- Use qcat to **check the progress of your job**, once it's running:

> qcat yourjobnumber |more

Following your running experiment, collecting the results, debugging…

- All outputs are gathered in a directory named:

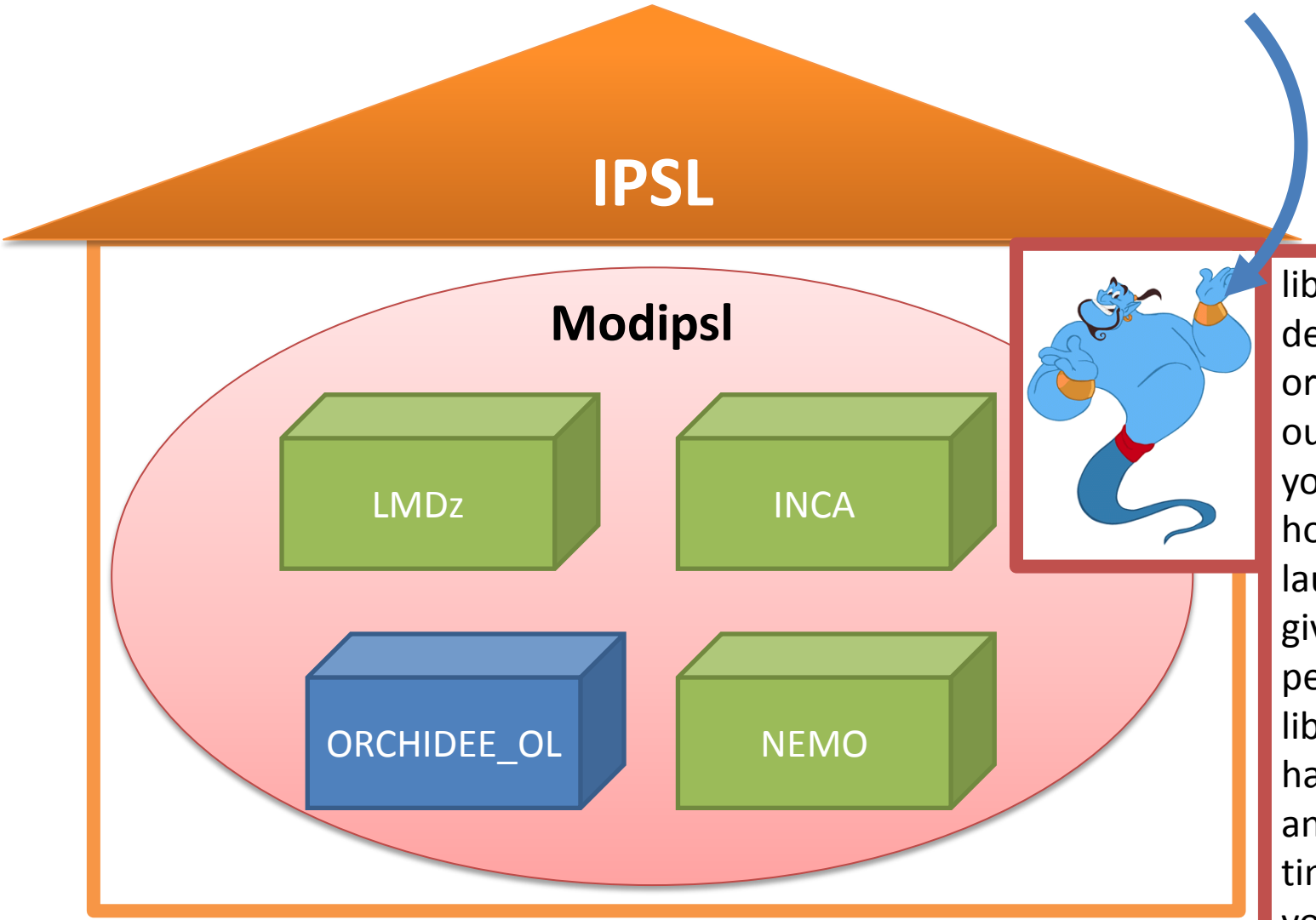
  IGCM_OUT/OL2/PROD/secsto/JOBNAME/

or something similar

- the IGCM_OUT directory is stored in the archive file « you » specified (or the default one):
  - the default archive directory at lsce is /home/scratch01/username
  - to change it add the following line in the Job file (before launching the simulation, of course):

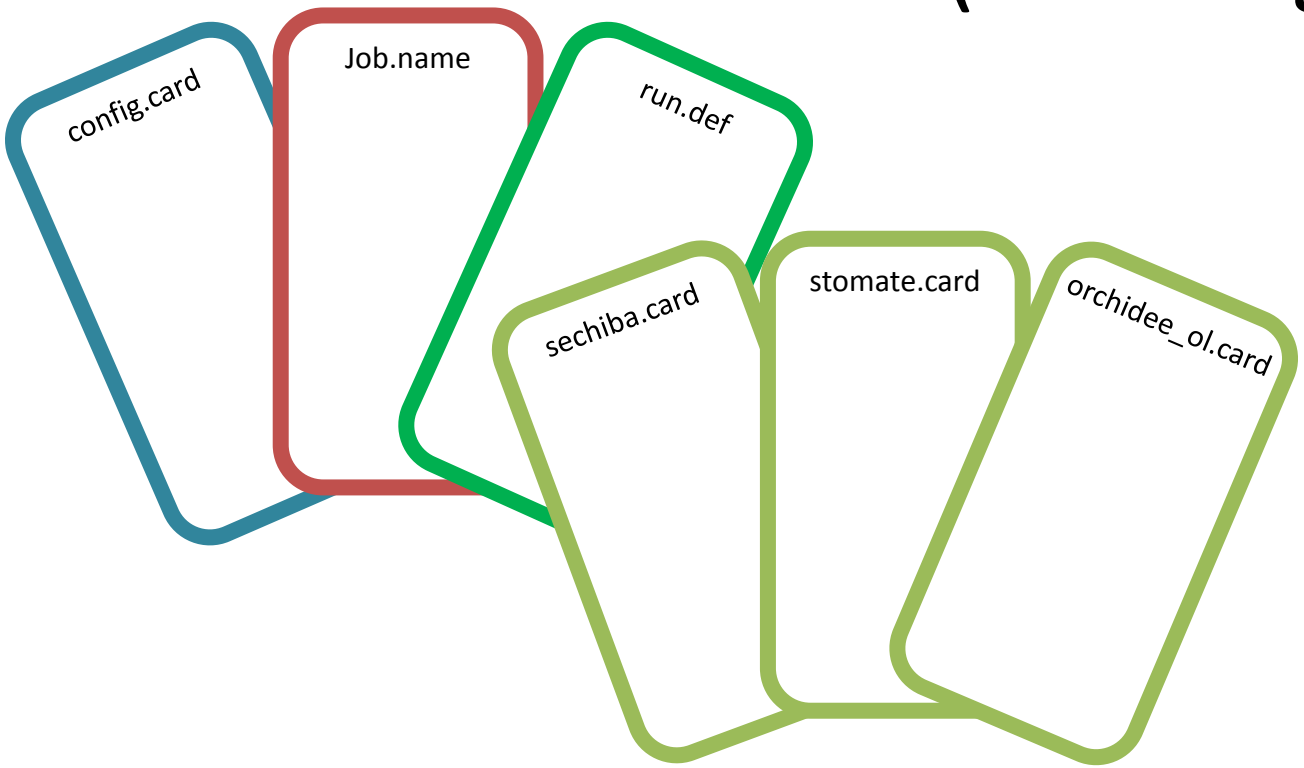
  ARCHIVE = /path_of_the_directory_you_chose/

A word about IGCM, libIGCM



libIGCM is the deamon that re-organizes your output files for you: remember how a new job is launched at each given time period? Without libIGCM you'd have to rebuild and create the time series yourself.

Last card before endind your simulation (in config/)



run.card

here you may follow your simulation progress: if it reads « running », you sould be all right…

Last trick: in order to receive debug emails during your simulation, create a file named .forward in your personal directory at lsce, containing only your email address.

HAVE FUN!