

1. Working on ESPRI mesocenter: Spirit and SpiritX

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For several years, all the IPSL infrastructure is federated as the [■ESPRI mesocenter](#).

In this infrastructure there are:

- **Spirit**: a computing cluster located on the Jussieu campus (Paris, France), which hosts mostly modeling data (such as CORDEX, CMIP...)
- **SpiritX**: a computing cluster located at Polytechnique (Palaiseau, France), which hosts mostly observation data

The both clusters have the same software and some file systems are cross-mounted, thus [libIGCM](#) is used in the same way on both clusters. The shared account, located at spirit, is used also at spiritx.

There are also the old computing clusters **Ciclad**(now replaced by Spirit) and **ClimServ**(now replaced by SpiritX). Read the previous documentation for the clusters [Ciclad and ClimServ](#).

1.1. General information

1.1.1. Documentation

The full documentation for ESPRI mesocenter can be found here: [■https://documentations.ipsl.fr/spirit/](https://documentations.ipsl.fr/spirit/) and [■https://mesocentre.ipsl.fr](https://mesocentre.ipsl.fr).

For questions related to the installation and usage of the cluster, but not related to libIGCM, you can send an email to : [■meso-support \(at\) ipsl.fr](mailto:meso-support@ipsl.fr)

1.1.2. The machines and file systems

The front-end machine can be accessed via `spirit1.ipsl.fr` or `spiritx1.ipsl.fr`. A login at the mesocenter always gives access to both clusters.

Output files written by [libIGCM](#) are stored by default in `/data/yourlogin/IGCM_OUT` at spirit and in `/homedata/yourlogin/IGCM_OUT` at spiritx.

1.1.3. Shared account

The repository for shared files are found in `/projstu/igcmg/IGCM`.

Read more: [Repository for shared files and shared tools](#)

1.1.4. Individual account

To access input files, you must belong to the igcmg users' group. Use following command to check to which groups you belong:

```
id -a
```

1.1.5. How to define your environment

You do not need anything special to compile using the recent configurations (from v6.2 and more recent). This is due to the compilation script which loads the modules that are needed and libIGCM which loads the same modules. Older configurations have not been tested at spirit and spiritx.

At spirit and spiritx, it can be useful to add `ulimit -s unlimited` if you run the models without libIGCM.

To receive the end-of-job messages returned by the job itself (e.g. end of simulation, error,...) you must specify your email address in the file `${HOME}/.forward`.

Even if it is not necessary, if you want you can copy the starting files we propose for your personal environment at spirit and spiritx.

Do the following at spirit, only first time you connect:

```
cp /ciclad-home/igcmg/MachineEnvironment/mesoipsl/bashrc ~/.bashrc
cp /ciclad-home/igcmg/MachineEnvironment/mesoipsl/bashrc_spirit ~/.bashrc_spirit
```

Do the following at spiritx, only first time you connect:

```
cp /ciclad-home/igcmg/MachineEnvironment/mesoipsl/bashrc ~/.bashrc
cp /ciclad-home/igcmg/MachineEnvironment/mesoipsl/bashrc_spiritx ~/.bashrc_spiritx
```

You can add what you want in the file `.bashrc_spirit` or `.bashrc_spiritx`. Note that the files `.bashrc_spirit` and `.bashrc_spiritx` are currently the same. But you might want to have a different environment depending on the cluster, therefore the files are duplicated.

1.1.6. Adapt your environment if you previously worked at ciclad or climserv

If you worked previously at ciclad or climserv, you already have your environmental file `.bashrc` working for corresponding cluster. This `.bashrc` will not be suitable for the new clusters mainly for the versions of the modules which are not the same. We advise you to move this file into `~/bashrc_ciclad` or `~/bashrc_climserv` and to set a switch in `.bashrc` to source corresponding file depending on the cluster you connect to. You can find this switch based on the hostname in a `.bashrc` file we propose

Do the following at spirit (or ciclad), only first time you connect:

```
mv .bashrc .bashrc_ciclad
cp /ciclad-home/igcmg/MachineEnvironment/mesoips1/bashrc ~/.bashrc
cp /ciclad-home/igcmg/MachineEnvironment/mesoips1/bashrc_spirit ~/.bashrc_spirit
```

Do the following at spiritx (or ClimServ), only first time you connect:

```
mv .bashrc .bashrc_climserv
cp /ciclad-home/igcmg/MachineEnvironment/mesoips1/bashrc ~/.bashrc
cp /ciclad-home/igcmg/MachineEnvironment/mesoips1/bashrc_spiritx ~/.bashrc_spiritx
```

You'll keep your old environment at ciclad and climserv and at spirit and spiritx, you can add what you want in the new file `.bashrc_spirit(x)`.

1.2. Tested configurations

Currently the following forced configurations have been tested at spirit and spiritx with the ifort compiler:

- NEMO forced mode
- ORCHIDEE offline: ORCHIDEE_trunk, ORCHIDEE_4_1, ORCHIDEE_3_head and ORCHIDEE_2_2

LMDZOR_v6.2 and LMDZOR_v6.4 will be adapted soon.

1.3. Running using libGCM at spirit and spiritx

libGCM can be used at spirit and spiritx. The simulation progress, TS and SE are implemented. The options MONITORING, PACK and ATLAS are not implemented for Spirit and Spiritx.

1.4. Mixte MPI-OMP

This has not been tested.