

# LMDZ Training December 2024



## Preparatory session 4<sup>th</sup> December 2024

Goal : have LMDZ compiled and running on your personal workstation in sequential and parallel modes and have a look at how to examine results using ferret (with a ferret tutorial)

BigBlueButton link :

<https://orsay.bbb.cnrs.fr/b/fai-mgc-knw-3zz>

[https://lmdz.lmd.jussieu.fr/utilisateurs/formation/winter\\_2024](https://lmdz.lmd.jussieu.fr/utilisateurs/formation/winter_2024)

# LMDZ Training December 2024



## Pre-requisites :

Personal computer (or account) with Linux OS - native or virtual machine - (other OS will be challenging) and following utilities :

- wget, tar, gzip, make, cmake
- fortran compiler (preferably gfortran), gcc
- some netcdf file visualisation program (ferret, grads, ncview, ...)

## Highly recommended :

- parallel libraries : MPI and OMP (necessary for some of the tutorials)
- netcdf libraries (to speed up the compilation)
- tmate helpful as well for help

# LMDZ Training December 2024



Pre-requisites met ?

The sequential installation :

Install the model using the script that lives here :

[https://lmdz.lmd.jussieu.fr/pub/install\\_lmdz.sh](https://lmdz.lmd.jussieu.fr/pub/install_lmdz.sh)

On your computer :

```
bash$ wget https://lmdz.lmd.jussieu.fr/pub/install_lmdz.sh
bash$ chmod +x install_lmdz.sh
bash$ ./install_lmdz.sh -name LMDZTraining -rad oldrad
```

Warning !!! fortran compiler (see next page)

# LMDZ Training December 2024



If your fortran compiler is an older version of gfortran (less than 10) you'll need to follow the following steps

```
bash$ # test compiler
bash$ gfortran -v
...
gcc version 9.4.0 (Ubuntu 9.4.0-1ubuntu1~20.04.2)
bash$ # if 9 or less
bash$ wget https://lmdz.lmd.jussieu.fr/pub/src_archives/misc/arch/LMDZ/arch-local-gfortran9.tar
bash$ tar xf arch-local-gfortran9.tar
bash$ wget https://lmdz.lmd.jussieu.fr/pub/install_lmdz.sh
bash$ chmod +x install_lmdz.sh
bash$ ./install_lmdz.sh -name LMDZTraining -rad oldrad \
    -arch local-gfortran9 -arch_dir `pwd`/arch
```

If your fortran compiler is not a version of gfortran, SHOUT !

# LMDZ Training December 2024



If all goes well, you should see the following text on your terminal (after a few minutes) :

```
in abort_gcm
Stopping in leapfrog
Reason = Simulation finished
```

```
Everything is cool
```

```
.....
```

For any other result, please ask for help during the session.

# LMDZ Training December 2024



## The parallel installation with netcdf:

In the directory where you have copied the `install_lmdz.sh` script, launch it again with the following options : (*sechiba/ipsl2000* is the identity/password for ORCHIDEE)

```
bash$ ./install_lmdz.sh -name LMDZORpar -rad oldrad \  
-parallel mpi_omp -veget CMIP6 -netcdf 0
```

If all goes well, you should again see the `Everything is cool` message. If not, please inform us. If there is a problem with the netcdf library installed on your machine, you could try the following command :

```
bash$ ./install_lmdz.sh -name LMDZORpar -rad oldrad \  
-parallel mpi_omp -veget CMIP6 -netcdf `pwd`/LMDZTraining
```

For older gfortran : use `-arch local-gfortran9-parallel -arch_dir `pwd`/arch`

# LMDZ Training December 2024



## Failure ? :

We are here to help, don't hesitate to ask for help

- during the session, the BBB chat
- mattermost channel « #sos-lmdz » on LMDZ mattermost:  
link : <https://mattermost.lmd.ipsl.fr/lmdz/channels/sos-lmdz>  
(clicking on the link will ask you to open an account on the server if you do not already have one)
- lmdz-users mailing list :  
<https://listes.ipsl.fr/sympa/info/lmdz-users>
- LMDZ sites :  
<https://lmdz.lmd.jussieu.fr/>      <https://lmdz-forge.lmd.jussieu.fr/mediawiki/LMDZPedia>