

Hands on tutorial : installing, compiling and executing the model

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This first tutorial focuses on installing and making a simple bench run. It ensures that you will be ready for the hands-on tutorials of the training session starting on the 8th of December

This document can be downloaded as a pdf file:

```
wget http://lmdz.lmd.jussieu.fr/pub/Training/Tutorials/Tutorial_simple.pdf
```

which should ease any copy/paste of command lines to issue.

1 Prerequisites

To run LMDZ, you will need a significant amount of memory, so first ensure this is true. You can use the following command line

```
ulimit -Ss unlimited
```

but be advised we have encountered cases where this did not work and you had to specify a numeric amount.

2 Running the `install_lmdz.sh` script

The first step consists in downloading it from the LMD website and *blindly* running it (after having first set the access permissions to make it executable):

```
wget http://lmdz.lmd.jussieu.fr/pub/install_lmdz.sh
chmod +x install_lmdz.sh
./install_lmdz.sh
```

Launching the script with no options, as indicated above, will download the latest version of the source code, compile it and run a simple bench test case at resolution 32×32 -L39. Compilation should take around five minutes. The test bench is then downloaded and the 1 day long test simulation on a regular 32×32 -L39 grid is run ; messages about various downloads (via `wget`) and/or compiler informations are displayed.

The script should then run smoothly (if it isn't the case, immediately ask for some assistance) and end with messages such as:

```
#####
Simulation finished in ...
You have compiled with:
./make_lmdz...
You may re-run it with : cd ...
or ./bench.sh
#####
```

You can take advantage of the installation time to open a second terminal window and explore the downloaded directories and files.

`install_lmdz.sh` will check if some archives (LMDZ, NetCDF library, etc.) are on the disk (in the `~/LMDZ` directory and subdirectories) and if not, will try to retrieve them through the network using `wget` command. It will create the **LMDZtrunk** directory ; inside, you will find subdirectories **modipsl**, which contains the model, and **netcdf-4.0.1**, which contains the NetCDF library.

In **modipsl**, you will find directory **modeles**, containing the **LMDZ** directory.

Once the test bench simulation has been launched (the final step of the `install_lmdz.sh` script), you will also find a **LMDZ/BENCH32x32x39/** directory from where you will be able to list the outputs of the run (even if the simulation is still running: it indeed takes a few minutes to complete the 1 day-long run on a single processor). Check out the contents of this directory and use your favorite software (Grads, Ferret,...) to browse the contents of the **histday.nc** file.