

Documentation for LMDZ, Planets version

Running the GCM in parallel using MPI – Venus

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1 Compilation

To compile the GCM for parallel runs using MPI, you need to find the MPI compiler (`mpif90`) you want to use on your machine. With that knowledge, you can build your own `arch-<your_architecture>.fcm` file in the `LMDZ.COMMON/arch/` directory. You can find inspiration, for example, on the `arch-GNOMEp.fcm` (for the *gnome* computation server of UPMC), which uses `ifort`. For the LMD local computation machines (e.g. *levan*), you can use `arch-linux-64bit-para.fcm`.

You also need to have `netcdf` and `ioipsl` compiled using the same compiler and main options. The paths to these libraries (and includes) must be written in the `arch-<your_architecture>.path` file.

An example of command line to compile the Venus GCM using `makelmdz` is then:

```
makelmdz -arch <your_architecture> -parallel mpi -d <nlon>x<nlat>x<nlev> -p venus gcm
```

2 Run

To run the simulation, you have to use the `mpirun` launcher corresponding to your `mpif90` compiler.

The command line is:

```
mpirun -n <number_of_procs> gcm.e
```

3 Outputs

Each of the processors used during the run will write its own portion of the `hist<mth/day/ins>.nc` files. To gather these portions back into one single file, there is a tool located in the `ioipsl` directory that you built from the SVN instructions.

This tool is called `rebuild` and is found in the `ioipsl/modipsl/bin/` directory.

To use it, the command line is:

```
rebuild -f -o <name_of_final_file>.nc hist<mth/day/ins>_*.nc
```