

## External tools

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## 1. Important tools used in the IPSL climate modeling framework

The following tools are used for all steps from setup to post processing. They must be available on the [computing machine](#) (except [forge](#)).

The [common](#) account configuration files allow you to access the proper version of the tools (e.g. `module load`).

### 1.1. Forge

The `forge.ipsl.jussieu.fr` machine is a forge [■trac](#)

- Welcome page of the [User guide](#) as [TracWiki](#) and its attached documents
- Source code archives with the [■svn](#) server
- Problem tracker (tickets)

### 1.2. Remote and secure connections

- `ssh` and associated commands (`scp`, `rsync`, protocol `svn+ssh`)

### 1.3. Shell

- `bash` : recommended for interactive mode --- You can read IPSL documentation on Bash [here](#)
- `ksh` : used in batch scripts
- `awk gnu` (`[g]awk`)
- `make gnu` (`[g]make`)

### 1.4. Version control

- Official website: [■subversion](#)
- Basic command: [svn](#)
- Online subversion manual: [■http://svnbook.red-bean.com/index.en.html](#)

You can read some IPSL slides on `svn` [here](#)

### 1.5. C++ compilers

### 1.6. Fortran compilers

To learn how to use Fortran, see e.g.

- Michel Olagnon's Fortran 90 List: [■http://www.ifremer.fr/ditigo/molagnon/fortran90/engfaq.html](#)
- IDRIS training (the latest is available in English only): [■http://www.idris.fr/data/cours/lang/fortran/choix\\_doc.html](#)

Some Fortran compilers :

- [■Intel](#)
- [■GNU fortran](#)
- [■g95](#)
- [■NAG](#)
- [■Portland](#)

### 1.7. FORTRAN libraries

- [■NetCDF4 parallel](#)
- [■HDF5 parallel](#)
- MPI/OpenMP

### 1.8. Generating executables

Default for [compiling](#) the models: [FCM](#).

## 1.9. Batch manager

- slurm and slurm `ccc_*`
- torque-maui
- LoadLeveler

## 1.10. Mail program

- mail[x]

## 1.11. NetCDF tools

- [nco](#)
- [cdo](#)

You can read IPSL documentation on nco / cdo / netcdf [here](#)

## 2. Tools for analyze and visualization of NetCDF files

- [Ferret](#)
- [NCL](#)
- [ncview](#)
- [IDL](#)
- [SAXO](#)

You can read IPSL documentation on ferre [here](#)

## 3. A few tips for further reading

### 3.1. Unix

Google "Unix Tutorial" is a good starting point.

- Unix introduction -- You can read an IPSL documentation on Unix [here](#)  
Linux Documentation: <http://www.tldp.org/guides.html>
  - Advanced Bash-Scripting guide. Mendel Cooper : <http://tldp.org/LDP/abs/html/>
  - Bash guide for beginners.Machtelt Garrels <http://tille.garrels.be/training/bash/>
- Portable shell programming : <http://www.gnu.org/software/autoconf/manual/autoconf.html#Portable-Shell>

### 3.2. Text editors

#### 3.2.1. Emacs

- Official website: <http://www.gnu.org/software/emacs/> -- You can find a list of emacs commands [here](#)

#### 3.2.2. vi and vim

- vim documentation : <http://www.vim.org/docs.php> -- You can read an IPSL documentation on vi / vim [here](#)

### 3.3. Programming and scripting languages

#### 3.3.1. Python

- Python and CDAT tips: [http://www.johnny-lin.com/cdat\\_tips/](http://www.johnny-lin.com/cdat_tips/)
- Python and memory management:

- problem <http://www.evanjones.ca/python-memory.html>
- mailing list archive: <http://mail.python.org/pipermail/python-list/>
- model validation tool: <http://motherlode.ucar.edu:8080/thredds/cdmValidate.html>

You can read an IPSL documentation on Python [here](#)

#### 4. BootCamp IPSL presentations - documentations - hands on sessions

{24 of march 2016}

- Unix [20160324\\_unix.pdf](#)
- vi [20160324\\_vi.pdf](#)
- emacs [20160324\\_emacs\\_commands.pdf](#)
- shell bash [20160324\\_bash.pdf](#) TP [test.bash](#)
- netcdf [20160324\\_netcdf.pdf](#)
- cdo - nco [20160324\\_cdo\\_nco.pdf](#)
- Ferret [20160324\\_ferret.pdf](#)
- python [20160324\\_python.pdf](#) TP [fibonacci.py](#) [plotting\\_topo.py](#) [reading\\_nc.py](#)
- svn [20160324\\_svn.pdf](#)

All the HandsOn (TP and netcdf files) are available on IDRIS (Ergon) and TGCC (Curie) : `$(ccc_home --cccwork -u igcmg)/TRAINING/MODIPSL_HandsOn_20181127/`