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 :

- Portland
- Intel
- NAG
- gfortran
- g95

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/
- 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) :
${PATH_IPSL_account}/TRAINING/BOOTCAMP_HandsOn_20160324