

cGENIE Quick-start Guide: 'muffin' version [Mac]

Andy Ridgwell

May 17, 2015

This is the Quick-start Guide for installing cGENIE-muffin on a Mac.

To install the muffin release of cGENIE on a Mac you will need NetCDF and its associated C++ and Fortran libraries, and the best way to get these is using MacPorts, which allows clean installation (and un-installation) of a wide range of software. In detail:

1. First of all, you will need XCode, which can be downloaded from the app store, or here...
<https://developer.apple.com/xcode/downloads>
After installing XCode, it is necessary to enable command line tools, by entering `xcode-select --install`
2. Get MacPorts by following the instructions here:
<https://www.macports.org/install.php>
Don't forget to synchronize the installation at the end...
`sudo port -v selfupdate`
3. Install Netcdf and related C++ and Fortran libraries at the command line using MacPorts, as follows:
`sudo port install netcdf`
`sudo port install netcdf-cxx`
`sudo port install netcdf-fortran`

Download precompiled fortran and C++ binaries appropriate to your operating system (Mavericks, Yosemite, etc.) from <http://hpc.sourceforge.net> and install as follows ...

```
cd ~/Downloads/  
gunzip gcc-4.9-bin.tar.gz  
sudo tar -xvf gcc-4.9-bin.tar -C /.  
gunzip gfortran-4.9-bin.tar.gz  
sudo tar -xvf gfortran-4.9-bin.tar -C /.
```

This installs everything in `/usr/local`. You can invoke the Fortran 95 compiler by simply typing `gfortran` at the command line.

4. Get hold of a (read-only) copy of the current 'muffin' branch of cGENIE source code via the command:
`svn co https://svn.ggy.bris.ac.uk/subversion/genie/branches/cgenie.muffin`
`--username=genie-user cgenie.muffin`
for the 'head' (current development version). NOTE: All this must be typed continuously on ONE LINE, with a S P A C E before '--username', and before 'cgenie'. Unless you have logged onto the svn server before from your computing account, you be asked for a password – it is `g3n1e-user`.
5. Adjust the cGENIE environment variables for your installation by editing `cgenie.muffin/genie-main/user.mak` and setting:
`MACHINE=OSX`
and
`NETCDF_DIR=/opt/local`
6. Finally, in `cgenie.muffin/genie-main/makefile.arc`, comment out:
`#NETCDF=`
`(LIB_SEARCH_FLAG)(PATH_QUOTE)$(NETCDF_DIR)/lib$(PATH_QUOTE) (LIB_FLAG)(NETCDF_NAME)`
and un-comment
`NETCDF_NAMEF=$(NETCDF_NAME)f`
`NETCDF=(LIB_SEARCH_FLAG)(PATH_QUOTE)$(NETCDF_DIR)/lib$(PATH_QUOTE)`
`(LIB_FLAG)(NETCDF_NAME) (LIB_FLAG)(NETCDF_NAME) (LIB_FLAG)(NETCDF_NAMEF)`
7. To test the code installation – change directory to `cgenie.muffin/genie-main` and type:
`make testbiogem`

This compiles a carbon cycle enabled configuration of *cGENIE* and runs a short test, comparing the results against those of a pre-run experiment (also downloaded alongside the model source code). It serves to check that you have the software environment correctly configured. If you are unsuccessful here ... double-check the software and directory environment settings in `user.mak` (or `user.sh`) and for a netCDF error, check the value of the `NETCDF_DIR` environment variable. (Refer to the User Manual for addition fault-finding tips.) If environment variables are changed: before re-trying the test, you will need to type:

```
make cleanall
```

8. In order to run the model, open `runmuffin.sh` (in `cgenie.muffin/genie-main`), and comment out line 314, by inserting a `#` at the beginning of the line (`#dos2unix $GOIN`). If you want to be very careful, another line can be inserted below to replace it...

```
tr \r \n < $GOIN
```

That is for the basic installation. To run the model it is a simple matter of calling the `'runmuffin.sh'` shell script from `genie-main` and supplying a couple of parameter values, e.g.:

```
./runmuffin.sh cgenie.eb_go_gs_ac_bg.worjh2.ANTH / EXAMPLE.worjh2.Caoetal2009.SPIN 10000
```

Refer to the *cGENIE User manual* for more information regarding installing, running, and analyzing model output, and *cGENIE Examples* for more information on this specific example.¹ Read the *cGENIE READ-ME*.

¹latex source for all the documents can be found in the `genie-docs` directory, with recent PDF versions at www.seao2.info/mycgenie.html.