



# cGENIE (Cupcake) Mac OS X Instructions

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These instructions have been tested on Mac OS X Yosemite (10.10) but should work on Mavericks (10.9) as well. However we recommend that you use the latest version of the OS available as we may not be able to reproduce errors and bugs you may report.

The following instructions will require you to use the Mac OS X Terminal application. This can be opened by using the  +  key combination and searching for 'Terminal', alternatively it can be found in the Macintosh HD ▶ Applications ▶ Utilities directory. We suggest you pin the application to your Dock for easy access if you haven't done so already.

## 1 System Requirements

To install and run cGENIE on Mac OS X you will need the following packages installed:

- Apple Xcode
- Xcode Command line Tools
- the MacPorts environment
- the HomeBrew packaging system
- gfortran compiler
- NetCDF libraries

### 1.1 Apple Xcode

Apple Xcode can be downloaded for free from the Apple App Store. More details can be found at <https://developer.apple.com/xcode/downloads/>. XCode contains the GNU C Compiler (gcc) and most of the other libraries and tools to allow the compilation of the model.

In addition to Xcode, you will need to install the Xcode Command Line Tools. These used to be installed by default on older versions of Xcode but are now distributed separately. Once Xcode is installed, you will need to run the following command in the terminal:

```
$ xcode-select --install
```

You can check if Xcode is properly installed using the command:

```
$ xcode-select -p
```

which should contain the following line in the response:

```
/Applications/Xcode.app/Contents/Developer
```

While we are checking the environment, you can check that gcc is installed properly:

```
$ gcc --version
Configured with: --prefix=/Applications/Xcode.app/Contents/Developer/usr
↳ --with-gxx-include-dir=/usr/include/c++/4.2.1
Apple LLVM version 6.1.0 (clang-602.0.49) (based on LLVM 3.6.0svn)
Target: x86_64-apple-darwin14.3.0
Thread model: posix
```

## 1.2 Homebrew & MacPorts

Homebrew is a package manager for OS X which allows users to download and install packages found in other UNIX style environment such as Linux and keep them up to date in a managed way in the sense that one can update packages and manage dependencies. MacPort has a similar aim but with a slightly different philosophy. We will not compare these two here as it goes beyond the scope of this document but we have used both to install software required to run cGENIE on the Mac.

Homebrew and information about it can be found at <http://brew.sh/>. To install the environment, simply type the following line in the Terminal:

```
$ ruby -e "$(curl -fsSL
↳ https://raw.githubusercontent.com/Homebrew/install/master/install)"
```

MacPort and information about it can be found at <https://www.macports.org/> and instructions on how to install it are found at <https://www.macports.org/install.php>. Following the installation, you should make sure your installation is fully up to date by running:

```
$ sudo port -v selfupdate
```

### 1.3 Fortran Compiler (gfortran)

We will get gfortran from homebrew. This is simply done by using the command:

```
$ brew install gfortran
```

it will download and install all the dependencies as well as the request software itself. At the time of writing, the version of gfortran available on the brew servers is 4.9.2.

You can check that gfortran is properly installed by issuing the command:

```
$ gfortran --version
GNU Fortran (Homebrew gcc 4.9.2_1) 4.9.2
Copyright (C) 2014 Free Software Foundation, Inc.
```

```
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You may redistribute copies of GNU Fortran
under the terms of the GNU General Public License.
For more information about these matters, see the file named COPYING
```

### 1.4 NetCDF Libraries

For NetCDF we will use the version available from MacPorts (we have tried using homebrew for this in order to minimise the requirements and not mix the packaging environment but unfortunately, the NetCDF brew package could not be installed on our test machine. If this changes, we will reevaluate our instructions.

Although previous versions of cGENIE required the C, C++ and fortran versions of the library, this is no longer the case and the C++ layer is not a requirement anymore. The following commands will install the necessary NetCDF libraries:

```
$ sudo port install netcdf
$ sudo port install netcdf-fortran
```

## 2 Installing cGENIE (cupcake)