

Things to consider when editing the makefile:

1. First, you will need to download the GNU available programs “make,” “gcc,” and “gfortran.” Be sure to download the correct versions for your machine (MacOS, Linux, Windows)
 - a. NOTE: For MacOS users, you may need to update Xcode and install command line tools.
For more information, follow this link:
<https://mac.install.guide/commandlinetools/index.html>
 - b. <https://www.gnu.org/software/make/>
 - c. <https://gcc.gnu.org/install/download.html>
 - d. <https://gcc.gnu.org/wiki/GFortranBinaries>
2. After downloading the appropriate libraries and files, you will need to identify where your gcc and gfortran compilers are located.
 - a. **MacOS/Linux**
 - i. Open a terminal window and type “which make” to ensure make was properly installed. If nothing comes up, you haven’t installed make.
 - ii. After establishing you have make installed, type “which gcc”, “which g++” and “which gfortran” into your terminal window.
 - iii. Make note of where these two programs are located, e.g. “/usr/bin/gcc” or “usr/local/bin/gfortran”.
 - b. **Windows**
 - i. Open a Windows Powershell
 - ii. The easiest way to do things is to install “wsl” which allows you to use unix commands in powershell; see more here <https://learn.microsoft.com/en-us/windows/wsl/install>
 - iii. Use the “which” command to again find where make, gcc, g++, and gfortran are found
3. Once you have found the paths for gcc, g++, and gfortran, edit the following lines in the “Makefile” with your paths:
CXX = /PATH/TO/YOUR/g++
FC=/PATH/TO/YOUR/gfortran
4. Chang directories to where the Makefile and model codes are available
 - a. This can be done in a terminal/powershell application or in MATLAB if using this as a driver
5. Try to “make” the files
 - a. In terminal/Powershell: type “make”
 - b. In MATLAB: go to the command window and type !make
6. If your output does not show any error codes (warnings are okay), then the code is ready to run.
7. **Please note:** the C++/fortran codes should not need any editing. However, if you do edit them you will have to **recompile these files.**