Build issues for Screamer V4.4.1 on Mac OS X Mojave

If you plan to compile Screamer on your Mac then you MUST: have either Mojave or Catalina installed on your Mac; have the latest version of xCode and the xCode command line tools installed on your MAc; and finally have a version of ccc/gfortran installed.

—> The latest version of Xcode is Xcode V11.2.1 (as of 2019-12-06) . Check with the macOS App Store. The Command Line Tools can be installed several ways. you can get the command-line tools by simply typing xcode-select --install. And on Catalina, you may have to specify an additional include path -I/Library/Developer/CommandLineTools/SDKs/MacOSX.sdk/usr/include for the compiler to find the system headers. You may visit https://developer.apple.com/downloads/ and down load the latest tools and/or xCode files.

—> The latest Screamer approved version of gcc is gfortran (8.3) and gcc (8.3) . These versions of the compilers are actually approved only for Mojave and Catalina. If needed, go to http://hpc.sourceforge.net/index.php and download the binaries for gcc and gFortran. Follow the installation instructions.

NOTE: Modern CPUs are all 64 bit and the compilers assume 64-bt.

After HPC binaries and xcode command-line tools are installed, this is what you see.

As of 2019-12-06 for macOS - Mojave 10.14.5

An example is shown operating from my terminal window (The type bold lines below are the input.)

for gcc gfortran version type
RBS-MacBook-Pro:~ rbspielman$ gfortran -v
Using built-in specs.
COLLECT_GCC=gfortran
COLLECT_LTO_WRAPPER=/usr/local/libexec/gcc/x86_64-apple-darwin18.5.0/8.3.0/ltowrapper
Target: x86_64-apple-darwin18.5.0
Configured with: ../gcc-8.3.0/configure --enable-checking=release
--enable-languages=c,c++,fortran
Thread model: posix
gcc version 8.3.0 (GCC)

for the hpc version of gcc
RBS-MacBook-Pro:~ rbspielman$ gcc -v
Using built-in specs.
COLLECT_GCC=gcc
COLLECT_LTO_WRAPPER=/usr/local/libexec/gcc/x86_64-apple-darwin18.5.0/8.3.0/lto-wrapper
Target: x86_64-apple-darwin18.5.0
Configured with: ../gcc-8.3.0/configure --enable-checking=release
--enable-languages=c,c++,fortran
Thread model: posix
gcc version 8.3.0 (GCC)

for Apple Clang
RBS-MacBook-Pro:~ rbspielman$ clang -v
Apple clang version 11.0.0 (clang-1100.0.33.16)
Target: x86_64-apple-darwin18.7.0
Thread model: posix
InstalledDir:
/Applications/Xcode.app/Contents/Developer/Toolchains/XcodeDefault.xctoolchain/usr/bin

--------------------------------------------------------------------------------------------------
Build #1 Dynamic gFortran compile

gfortran zdem.f90 *.f -O03 -mcmodel=medium -o screamer64dyn

Ricks-MacBook-Pro:src rbspielman$ otool -L screamer64
screamer64:
/usr/local/lib/libgfortran.4.dylib (compatibility version 5.0.0, current version 5.0.0)
/usr/lib/libSystem.B.dylib (compatibility version 1.0.0, current version
Build #2 Partial Static Fortran Compile

gfortran zdem.for *.f -O03 -mcmodel=medium -static-libgfortran -static-libgcc -o screamer64s

screamer64s:
   /usr/local/lib/libquadmath.0.dylib (compatibility version 1.0.0, current version 1.0.0)
   /usr/lib/libSystem.B.dylib (compatibility version 1.0.0, current version 1252.200.5)

Note: Not full static! libquadmath is still dynamic.

Build #3 Fully Static Compile (Use gcc linker)

gfortran -c -O03 -mcmodel=medium zdem.for *.f
ar crv screamer64.a *.o
rm *.o
ranlib screamer64.a
g++ -o screamer64 screamer64.a -static-libgcc /usr/local/lib/libgfortran.a
/usr/local/lib/libquadmath.a
cp screamer64 ../run_decks/screamer64
rm screamer64.a

In this case, we needed to overcome 4, gcc compiler bugs. 1) neither
-static-libquadmath nor -llibquadmath works when called in the gfortran
command, 2) full path to libquadmath.a - /usr/local/lib/libquadmath.a does not
work when used in the gfortran command, 3) -static-gfortran or -lgfortran does
not work in the gcc/g++ command line - use full path - /usr/local/lib/libgfortran.a,
and 4) neither -static-libquadmath nor -llibquadmath work in the gcc command
line - path does work here - /usr/local/lib/libquadmath.a.
RBS-MacBook-Pro:src rbspielman$ otool -L screamer64
screamer64:
   /usr/lib/libSystem.B.dylib (compatibility version 1.0.0, current version 1252.250.1)

otools shows a fully dynamic build with only the default Apple libSystem used.