A&OS C115/C228 – DTDM for Mac OS X

Spring, 2007 – Fovell

Running DTDM on Mac OS X 10.4 "Tiger" requires the DTDM package, a Fortran compiler (g95 is free) and GrADS. It also requires the Terminal and X11 programs in (`Applications/Utilities`), and the gcc compiler.

Before you start, find your 10.4 "Tiger" System CD. Make sure you see a program called `X11.app` in `Applications/Utilities`. If you don't, look on your "Tiger" CD for `Optional Installs.mpkg`. Under "Custom Install", make sure `X11` in the Applications list is selected. Next, you need Xcode installed. To see if it is installed, open a Terminal window and type `which gcc` and make sure you see `/usr/bin/gcc` in response. If you don't, you haven't installed Xcode fully or properly. Open the folder "Xcode Tools" on the "Tiger" CD. Double click on `Xcode Tools.mpkg`.

```
http://www.atmos.ucla.edu/~fovell/DTDM/DTDM_package.tar
http://www.iges.org/grads/downloads.html
http://ftp.g95.org
```

Procedure:

- Install g95. Go to the g95 page listed above. Choose the g95 binary distribution for PPC or Intel, depending on your Mac's architecture. For this example, I will use the PPC version; filenames are different for the other. Move the g95 tar (tgz) file to your `Applications` directory. Double click the tgz file to unpack it. A folder named `g95-install` is created. From a Terminal window, do this
  - `cd /Applications/g95-install/bin`
  - `mkdir ~/bin`
  - `ls` [lists files in directory – note name of file]
  - `ln -s $PWD/powerpc-apple-darwin6.8-g95 ~/bin/g95` [use filename noted, in place of powerpc-apple-darwin6.8-g95, if different]
- From `http://www.iges.org/grads/downloads.html`, download the full version. I will assume it downloads to your Desktop. Double click to unpack it. From a terminal window, do these steps
  - `cd ~/Desktop/grads-1.8sl11` [if this is what the unpacked file was called]
  - `sudo mkdir /usr/local/bin` [if it doesn't already exist]
  - `sudo cp -rf bin /usr/local/.`
  - `sudo mkdir /usr/local/lib` [if it doesn't already exist]
  - `sudo mkdir /usr/local/lib/grads`
  - `sudo cp -rf data/* /usr/local/lib/grads/.`

- Modify your environment. Most OS X users are using the Bash shell, and do not have a `.bashrc` file already created. (If you haven't created it, chances are it does not exist.) Open a text editor, like TextEdit in the Applications folder. Into it copy the line below and save the file as `.bashrc` [with the dot in front] into your home directory. When the system warns you that these "dot files" are reserved for the system, click the "use ." button anyway. if you use the Tcsh shell, the syntax and filename are different, but if you're a Tcsh user, you should already know that!

  ```
  export PATH=$PATH:/usr/local/bin:~/bin:. export DISPLAY=:0.0
  ```

- Download `DTDM_package.tar`. Move it wherever you want. Double click to extract archive. A new folder called `DTDM` is created. Edit the Makefile in the folder. If you're using g95, comment out the lines in the "xlf" section (use # as first character on the line) and uncomment (remove # symbols from) the lines in the g95 section. In a Terminal window, move to DTDM directory and type `make`. A new file, called `dtdm` should appear in the directory. This is the executable.

- Still in the Terminal window, now type `dtdm.exe < input_thermal.txt`. Some output will be written to the screen. For the example simulation, the files `thermal.anelastic.dat` and `thermal.anelastic.ctl` should be created.

- Time to start up GrADS. Launch X11.app from the `Applications/Utilities` folder. From the Terminal window, type `gradsnc -l`. (If the program is not found, type `source ~/.bashrc` and try again.) When the `ga->` prompt appears, type

  ```
  open thermal.anelastic
  ```

  ...and you're off and running.