COMPUTER METHODS AND MODELING IN GEOLOGY
MODELING EARTH'S TEMPERATURE IN FORTRAN

What I'd like you to do in this exercise is to take your STELLA model of an Earth with a 2-layer atmosphere and code it into fortran. Please run your completed model to steady state and create a graph showing the temperatures of the surface, 1st atmospheric layer, and 2nd atmospheric layer as a function of time. Hand in a printed version of your model and of your graph.

1) To start your modeling, in Windows go to Start > Programs > Compaq Visual Fortran 6 > Developer Studio.

2) In Compaq Visual Fortran, go to File > New and when the dialog box pops up, hit the Files tab. Select Fortran Free Format Source File. The screen on the right will turn white and you'll get a cursor to begin typing. Type in a couple of lines of your program.

3) Go to File > Save As and save your fortran program to a new folder that you create on your zip disk. If you're not familiar with how to do this in Windows, when the Save As dialog box pops up, hit the little folder icon with what looks like an asterisk on the upper right corner and create a new folder for yourself. Then save your fortran file as filename.f90 in this folder.

4) Go to Build and compile your filename.f90. You'll get a little warning that a workspace needs to be created in order to do this. Go ahead and answer yes that you would like to use the default workspace.

5) When you compile, you'll notice that text appears in the bottom window of the screen - this is the compiler reporting back any errors that it finds in your program and letting you know whether the program compiled successfully or not.

6) After you've written your program and compiled it, go to Build > build filename.exe. This will create an executable file that you can run to execute your program.

7) After the file has been built, go to Build > Execute filename.exe and a black DOS prompt window will appear in your field of view indicating that the program is executing. When it's done, it will tell you to press any key and you'll go back to the programming window. At this point, if you've told the program to create any output files, they'll be found in the folder that you originally created to save your fortran file. You can use kaleidagraph or excel to open them up and plot your results.