

# CSci 350 Visualizing a grid in 3D

Due Thursday Febr 26th

In this assignment you will extend the code from Assignment 4 to visualize a grid in 3D. Essentially you will need to add the third coordinate to your vertices (use `glVertex3f()` instead of `glVertex2f()`) and change the default orthographic projection to a perspective projection (use `glPerspective()` or `glFrustum()`). Choose the initial viewpoint so that it does not show a blank screen. In addition implement keyboard options to rotate (with a predefined step angle) around the axes and translate forward, backward, up and down (with a predefined distance). This will allow you to rotate and translate the terrain in any direction and thus view it from any angle. Figure1 below shows some examples of 3D views.

In order to handle the larger grids provide keyboard options to increase and decrease resolution. The initial rendering should be fast and if necessary at low resolution (set the initial resolution as a function of the number of rows and columns of the grid).

In addition to the keyboard menu your program should include a menu that:

1. toggles between drawing the polygons in the scene filled or contour only
2. allows to select a color map
3. Quit.

Challenge work (leading into the first project): Animate a rotation of the terrain (around z-axis) and a fly-through the terrain. Essentially this means executing a sequence of one-step rotations and translations.

To submit, create a directory with your name that contains your code. Make a tar file of the directory and email it to me by the due date.

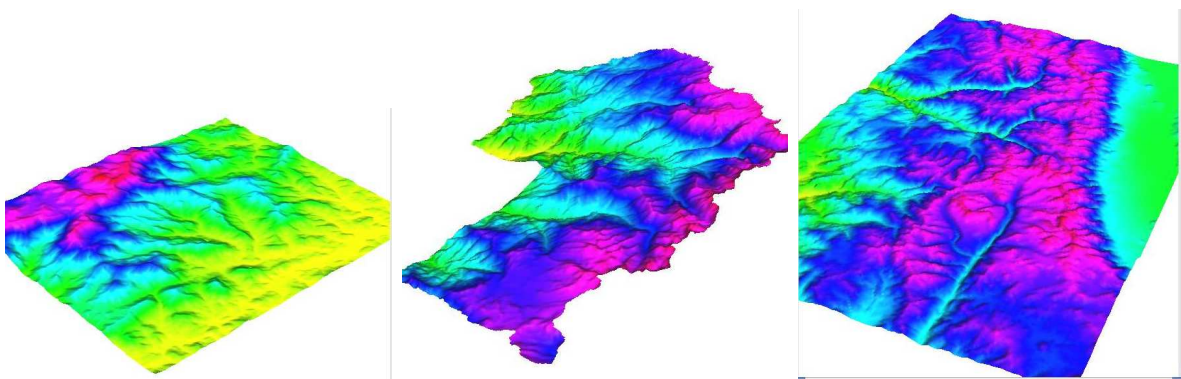


Figure 1: 3D views of *set1*, *kaweah* and *sierra* datasets.