Learning about the Watersheds

Now let's find out about some the characteristics of the watersheds by running the progran
r.volume

This will look at the watersheds as "clumps" (a sophisticated word use in GRASS) and determine the number of cells in each one and the average characteristics of other raster map layers within each "clump." For example, you could determine the average slope within each watershed, or aspect...... etc.

Run the program and you'll be greeted by the following options:

- OPTION: Raster map representing data that will be summed within clumps
  Enter "slope"
- OPTION: Raster map - preferably the output of r.clump
  Enter "basins" or the name of the map you created using r.watershed
- OPTION: The site list
  Enter "basins" to have a new "site" (point) map made named basins. We'll work with this later.
- Generate unformatted report?(y/n) [n]
  Hit return for this one and the next option

Ok, now GRASS spits out a bid data table. Note that you can click with the left arrow key in the up-and-down box along the left part of the MacX terminal screen to make it scroll back and forth.

Here are the columns (from the command page, **`g.manual r.volume`**)

(1) The category value assigned to each clump formed by the clump map layer. This value is stored under the "Cat Number" column (field 1) in the output table.
(2) The average category value of the cells found in a data map that fall within the boundaries of each clump in a clump map. The table stores this value under the "Average in Clump" column (field 2).
(3) The summed total value of the category values assigned to the cells falling within each of these clumps. This value is output under the "Data Total" column (field 3).
(4) The number of cells from the data map that fall within the boundaries of each clump formed by the clump map layer. This cell count is stored under the "# Cells in Clump" column (field 4) in the output table.
(5,6) The centroid (easting and northing) of each clump. These values are output under the "Centroid Easting" and "Centroid Northing" columns (fields 5 and 6) in the output.
(7) The total "volume" of each clump. For each clump, the volume is calculated by multiplying the area of each cell by its category value, and taking the sum of this value for all cells within the clump. Since, in GRASS, each cell in the data map will have the same cell dimensions (i.e., the same area), this is equivalent to multiplying the area of one cell by the "Data Total" column (field 3). (The area of each cell is equal to the product of its east-west resolution by its north-south resolution. See g.region.)

I don't understand #7 yet, but you can get the "area" of the watershed by multiplying the #of cells in column 3 by the size (30 m x30 m). Column 1 shows the average slope of each.

To do you any good, you'll have to copy this information to somewhere else. Print it out or save it and use it with the raster map to find out what basin you're talking about.

When you're done, go back the the[Tutorial Page]

[HELP: send e-mail to harbor]