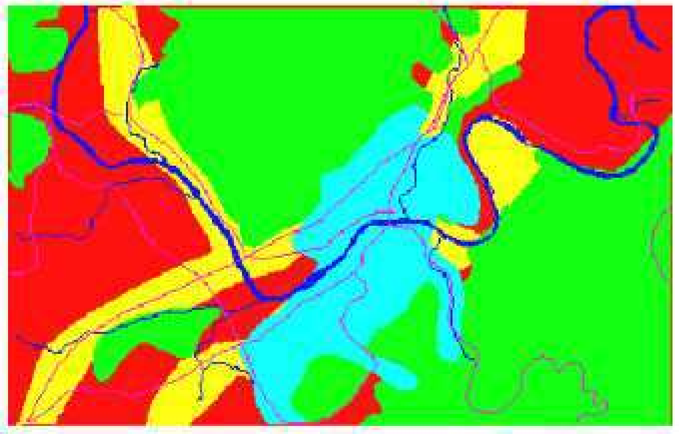
Category coincidence

GRASS has several methods for looking at the categories in a "cover" map depending on the category value in a "base" map. For example, you could look at the average slope in areas of differing land use.

Login to the **demo location**, and display the map covering land use
`d.rast land.use`



look at the legend if you wish
`d.legend land.use`
then view the map of slope (red is higher slope, blue is low)
`d.rast slope`

To determine the average relief in each land use category type
`r.average`
This command calculates the average of the values in the cover map for each category in the base map and makes a new map that has these average values stored as the ***category labels.*** The map categories remain the same as the original base map (This is like r.reclass in that it does not make a new map but simply stores a re-categorization scheme).
use **land.use** for the **base** map
use **slope** for the **cover** map
when it asks
`Are the values to be looked up from the category file for slope? (y/n)`
answer "no". ("Yes" would cause the program to look at the labels for the categories rather than the categories values themselves.)
use **slope_land.use** for the output map

If you view the output map, you'll notice it looks just like the land.use map. However, the category values are different in the new map. Type
`r.cats land.use`
`r.cats slope_land.use`
Indeed, the greatest slope exists in the forest cover area (where it should be).

More than averaging.....

If you want more than just the average, you can make a "coincidence table" that shows all the values. This table records the number of times, or the area, where category values in the cover map match the different categories in the base map. It's a coincidence matrix really. To make one of these for the slope-land.use pair use the command

`r.coin`
You'll want use**land.use** as **map 1**
and **slope** as **map 2**
and **k** as the reporting option (sq km).

The command will tell you how much verbiage is coming at you, 4 pages here.
After the header page it should look like this (use the space bar to move down while in GRASS)

```
Panel #1 of 2
+-------------------------------------------+
| | land.use | Panel Row Total |
| cat# | 1   | 2   |   3   | w cat 0 | w/o cat 0 |
|---------------------------------------------|
|s 0 | 0.10 | 2.11 | 0.05 | 2.26 | 2.26 |
|l 1 | 0.12 | 0.03 | 0.07 | 0.22 | 0.22 |
|o 2 | 0.41 | 0.09 | 0.25 | 0.76 | 0.76 |
|p 3 | 0.69 | 0.22 | 0.54 | 1.46 | 1.46 |
|e 4 | 0.86 | 0.36 | 0.64 | 1.86 | 1.86 |
|  5 | 0.96 | 0.57 | 0.71 | 2.25 | 2.25 |
|  6 | 0.99 | 0.76 | 0.79 | 2.55 | 2.55 |
|  7 | 0.89 | 1.03 | 0.80 | 2.73 | 2.73 |
|  8 | 0.89 | 1.21 | 0.80 | 2.91 | 2.91 |
|  9 | 0.84 | 1.53 | 0.78 | 3.15 | 3.15 |
| 10 | 0.70 | 1.65 | 0.77 | 3.12 | 3.12 |
| 11 | 0.52 | 1.69 | 0.64 | 2.85 | 2.85 |
| 12 | 0.42 | 1.69 | 0.53 | 2.65 | 2.65 |
| 13 | 0.35 | 1.51 | 0.49 | 2.34 | 2.34 |
| 14 | 0.27 | 1.46 | 0.33 | 2.05 | 2.05 |
| 15 | 0.19 | 1.43 | 0.31 | 1.93 | 1.93 |
| 16 | 0.16 | 1.49 | 0.25 | 1.90 | 1.90 |
| 17 | 0.12 | 1.54 | 0.20 | 1.87 | 1.87 |
| 18 | 0.09 | 1.41 | 0.15 | 1.65 | 1.65 |
| 19 | 0.07 | 1.46 | 0.17 | 1.70 | 1.70 |
| 20 | 0.06 | 1.44 | 0.13 | 1.62 | 1.62 |
| 21 | 0.05 | 1.44 | 0.11 | 1.59 | 1.59 |
| 22 | 0.03 | 1.38 | 0.09 | 1.51 | 1.51 |
| 23 | 0.02 | 1.41 | 0.07 | 1.50 | 1.50 |
.
etc
.
.
.
| 57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|-------------------------------------------|
|Total | | | | | |
|with 0 | 9.95 | 35.28 | 9.96 | 55.19 | 55.19 |
|-------------------------------------------|
|w/o 0 | 9.85 | 33.17 | 9.91 | 52.93 | 52.93 |
+-------------------------------------------+
```

The highlighted value above (see 17 degress) tells you 0.12 sq km of the industrial landuse has a slope of 17 degrees, and 1.54 sq km for foorest cover. You are making a histogram for each possible slope/land.use combination. If you needed this info, you would save it to a file where you could then put it in a stats program or something like Excel. If your goal is to compare different land uses, it might be best to have the reporting function in percentage or numbers of cells.

IT IS NOT A GOOD IDEA TO RUN THIS COMMAND ON A MAP THAT HAS MANY CATEGORIES ("dem" for example) Use r.recalss first if you need the info.

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

[HELP: send e-mail to harbor]