Creating Watershed Maps

The program called **`r.watershed`** is extensive and can be used as input to rainfall-runoff modeling. Simply, the program looks at the way water flows across the land surfcae and accumulates the water from upslope cells into lower cells and determines, based on input, where the channels should start.

- The program contains many options, most of which I won't use now. Look at the GRASS manual or type
  `g.manual r.watershed`
  to read about what it does.
  Read specifically about the following options.
  elevation - we'll use the dem
- **flow** - we'll use the default value of 1
- **threshold** - we'll use a value of 2000, which means our smallest basin will be 1000 30m x 30m cells or 0.9 km squared.
- (we won't use em, but read about accumulation and drainage, they may come in handy for your project)
- **basin** - the output of the watersheds
- **stream** - the output map of where the streams would be. They'll be coded the same number as the basins.
- **visual** - a way to 'see' the accumulation of water on the surface

Make sure that you're in the bv location. If not exit and reenter and then "select" your monitor. And instead of going through all the menu options, I'll simply give you a command line (which you can copy out and repaste in the GRASS command window).

r.watershed el=dem th=2000 ba=basins st=streams vi=visual.map

This may take a little time to run (1.5 minutes for me).

Displaying the products

1. Display the maps streams
   `d.rast streams`
   the different colors indicate the streams flowing in different watersheds.
2. Display the basins map. Each one is in a different color
   `d.rast basins`
   It may help to overlay some contours
   `d.vect 50_m_contours co=black`
3. Display the visual of the accumulation map
   `d.rast visual.map`
   this shows yellow areas high on each watershed, green as they get near the streams and then red/purple when you get down to the start of the streams. You may want to zoom it to see it then zoom out again. It also helps to overlay the contours as in #2.

Keep these maps for future use.

When you're done, go back the theTutorial Page

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