

Directions for ARC-INFO GIS Analysis of Hydrologic units.
Revised 3/8/01

Inputs Required:

- 1)streams -best scale possible, usually 1:24k
- 2)dem -best scale possible, usually 1:24k
- 3)fifth code huc -best scale possible, usually 1:100k
- 4)fourth code huc -best scale possible, usually 1:100k

Purpose of Program:

To provide stream characteristics to aid in watershed comparison and develop valley bottom characteristics. Analyses hydrography to associate ecological unit and physiographic attributes.

Organization of Data and Outputs:

Input data organized mostly parallel to analysis aml directory.
This is optional as analysis routines have search capabilities.

Output data created is stored under analysis directory by fourth code named, ex. ../h10060006

A first time through would proceed as follows:

Starting in the analysis subdirectory; /gis16/analysis.
Run STREAMCLASS3.AML ex. arc: &r streamclass3

Streamclass3 now asks for a fifthcode watershed number. Then checks for existence of the fourth code directory and analysis cover as well as a dem named by huc. If not found in the proper place /gis16/analysis/h<fourcode> the directory is created and the huc is extracted from /montana/water/hd109. The same happens for the fifthcode.

The program will still analyze by fourth or fifth code, so when the menu pops up press the set defaults button then edit the input fields as described below. The prep work for analysis clip covers and getting the dems from /cdrom.

Below Get4huc, get5huc and getdem4 now run automatically if not found after typing in the huc numbers at the meaeasge prompts. SUPERCEDED by streamclass1.aml these are run automatically if needed.

*1. First program to run is get4huc.aml, this program sets up the analysis *
* window for merging the dems (needed for gradient classification). *
* a) get4huc reselects from the master fifth code cover for the fourth code*
* huc to be used as the DEM setwindow. Created cover is stored in *
* /gis16/analysis as h<fourthcode>. *

* *
* example: /gis16/analysis/h10060006 (HUC for Big Muddy) *

* *
* example: Arc:&r get4huc *
* A window will pop-up. Enter a fourth code huc number. *

**

2. Next run get5huc.aml, this program creates a fifth code analysis cover.
* a) get5huc is similar to get4huc in that the program reselects from*
* the master fifth code huc cover creating a polygon coverage for*
* the analysis area. Created cover is stored in subdirectory named*
* after fourth code HUC as huc<fifth>.*

**

* example: /gis16/analysis/h10060006/huc010 (HUC 010 fifth in Big Muddy)*

```

**
* example: Arc:&r get5huc*
*   A window will pop-up. Enter a fifth code huc number.*
*
*3. Now run getdem4.aml, this program creates a lattice from DEMs.
* a) getdem4 creates a lattice by querying the q100k quad cover for
* the latlong halves that make up the fourth code HUC. Then extracts
* from cd the lattices needed and merges them using the fourth code
* HUC as a setwindow. Created lattice is stored in /gis16/dem24k as
* d<fourthcode>
*
* example: /gis16/dem24k/d17010205 (dem for Bitterroot)
*
* example: Arc:&r getdem4
*   A window will pop-up. Enter a fourth code huc number.
*
*NOTE: Both get4huc and get5huc set up the directory structure for storage*
* of the output coverages created by any of the analysis programs. It*
* does not matter what order get5huc and getdem4 are run in.
**
*****
HERE'S where the REAL work is DONE. and it still works pretty much this way.

3. Streamclass3.aml can now be run to create stream coverage with analysis
characteristics.

a) it is helpful to know what the attributes of the analysis streams
cover are. It is better to reselect for perennial and intermittent
line features and not run the analysis on canals, ditches or polygon
features often stored in the streams cover as lines.
The attributes can be used to reselect only those streams that
you want analyzed for gradient and sinuosity.

example: reselect cffcode1 for 402 (stream, perennial) 405 (stream,
intermittent) etc.

b) all coverages are placed under a subdirectory created under analysis,
named after the fourth code that is being studied the same place
the fourth code and fifth code poly covers went. Three covers and
a parameters file are created; str<fifth>, str<fifth>lta and
cont<fifth>.

example: /gis16/analysis/h17010205/str010 (HUC 010 streams in the
Bitterroot fifth code with gradient and sinuosity classes.)
example: /gis16/analysis/h17010205/str010lta (HUC 010 streams in the
Bitterroot fifth code with lta attribute as well as above attribs.)
example: /gis16/analysis/h17010205/cont010 (HUC 010 contours in the
Bitterroot fifth code from the 30 meter DEM.)

4. Mapper.aml or one of the report creating programs, gradmilescomp.aml or
strmileslta.aml can now be run against the analyzed fifth code.
a)The mapper program creates map compositions in a directory 'cmp' parallel
to the fourth code directory (/gis16/analysis/cmp). Mapper.aml is run
from the arc or arcplot prompt and queries for a fifth code to create a
map of streams overlaying one or two of the following themes...

```

- 1) the contours generated from the DEM.
- 2) either the LTA or Slope grid, but not both as they are each solid shades.

b) the mapper requires a unique composition extension to be more detailed in naming the map.

example: h100600060101.slope for the slope map,
or h10060006010.lta for the lta map.

5. The report amls gradmilescomp.aml and strmileslta.aml create ascii summary reports of stream miles by gradient class and stream miles by lta class under a 'rpt' directory parallel to the fourth code directory for example: /gis16/analysis/rpt. Both amls run off an ascii list of full fifth code numeric ids. The reports are named after the fourth code with extensions as follows; <list>.grad.rpt or <list>.lta.rpt

example: bitterroot.list Would look like the following ascii file;

```
17010205010
17010205020
17010205030
etc
```

a) The gradmilescomp or strmileslta.aml are run from either arc or arcplot. They create ascii reports summarizing the stream miles; by gradient class in miles and percent of total miles for the fifth code, or by lta class in miles and percent of total miles for the fifth code.

example: &r gradmilescomp <list> (where <list> is the full fifth code number).

example: &r strmileslta <list> (where <list> is the full fifth code number).