

## Environment and organisms - Task #208

### Evaluate existing E&O AML scripts

04/14/2011 01:56 PM - Jim Regetz

<b>Status:</b>	In Progress	<b>Start date:</b>	04/16/2011
<b>Priority:</b>	Normal	<b>Due date:</b>	05/04/2011
<b>Assignee:</b>	Jim Regetz	<b>% Done:</b>	30%
<b>Category:</b>	Terrain	<b>Estimated time:</b>	12.00 hours
<b>Target version:</b>			
<b>Activity type:</b>	Coding/analysis		
<b>Description</b>			
<p>There are 18 *.aml files in various parts of eos:~organisms/topo, although it looks like these are really 9 identical or nearly identical pairs of scripts. Review these scripts, in consultation with Ming as needed, to determine the following. Also confirm with Ming that other relevant scripts (AML or otherwise) aren't hiding elsewhere.</p> <ol style="list-style-type: none"><li>1. Which are (still) pertinent?</li><li>2. What do they do?</li><li>3. What's the rough cost/benefit tradeoff on continuing to build these out vs switching to something else?</li></ol> <p>If some task or even key subtask is basically fully implemented (or could be easily completed) in AML, can be run successfully on the full data, and would be more than trivial to convert, then we should probably go with it. But we should <b>not</b> stick with AML if it imposes extra development or runtime overhead, noting that all else being equal:</p> <ul style="list-style-type: none"><li>• ArcGIS can't run on our multicore, 64bit, high RAM Linux servers</li><li>• Even when ArcGIS is the best tool for the job, scripting in Python (<a href="#">AML-to-Python cheatsheet</a>) is preferable</li></ul> <p>Estimated time is a wild guess -- I don't know how complicated nor how well documented these are -- but given that each script is only 10s to a couple of hundred lines in what is a rather verbose language, and with Ming's input, I don't think this should take long.</p>			

### History

#### #1 - 04/14/2011 02:16 PM - Jim Regetz

- Priority changed from Normal to High

#### #2 - 04/18/2011 12:32 PM - Rick Reeves

- % Done changed from 0 to 20

Description of ten existing scripts (nine AML, one Python):

Aggregate.aml: Executes the aggregate (resampling) function to generate standard statistics for elevation, slope, and twi layers.  
(Ming's description: (aggregate – 90m to 1km))

Chunkproc.aml: Processes a large(r) Grid by executing a second aml script over sections of the grid. Generates a second, output grid.  
(Ming's description: )

layers.aml: Executes the flowaccumulation() and flowdirection() functions, which produce output grids of flow direction between raster cells and their nearest downslope neighbors.  
(Ming's description: generating topographic measures)

mrvbf6g-a3.aml: More complicated script that has had an evolution of 6 previous versions: From input DEM tiles, gnerates smoothed DEM files, and then calculates slope and statistics.  
(Ming's description: mrvbf (i.e., multi-resolution valley bottom flatness), various AMLs in folder used to generate the layer )

multiscalesmooth9a\_clean.aml:  
(Ming's description: for smoothing SRTM)

pctl.aml: Executes external 'pctl.exe' command on a DEM image file  
(Ming's description: )

pctl-limits.aml: Sets an environment (radius of cells) value.  
(Ming's description: )

tilemerge\_oregon.aml: merge a collection of tiles in Oregon around Portland for testing method.  
(Ming's description: merging Oregon tiles (not working, 'manual' merger))

unpacktiles.aml: locate all (5 degree) .asc files in input directory, then load them and split into 1 degree tiles. Presumably for use on CGIAR export files.  
(Ming's description: AML for unpacking tiles in a file structure that matches John Gallant's (see 'tiles' folder))

unziptiles.py: PYTHON script unzips a collection of .zip (terrain) files in a folder.  
(Ming's description: script for unzipping tiles)

April 18, 2011: I have requested from Ming brief descriptions of the remaining scripts as well as a summary of the processing workflow/sequence (if any) that he had developed to produce the data layers required by this project.

### #3 - 04/20/2011 09:47 AM - Jim Regetz

- Parent task deleted (#207)

### #4 - 04/22/2011 11:45 AM - Rick Reeves

- Due date changed from 04/16/2011 to 04/26/2011
- Status changed from New to In Progress
- % Done changed from 20 to 30
- Activity type changed from Other to Coding/analysis

I reviewed all of the AML scripts a second time and am ready to test them within ArcMap GIS. Next week I will do so regardless of additional feedback from Ming.

### #5 - 04/22/2011 11:51 AM - Rick Reeves

Thank you Ming, more good information.  
I do intend to assemble a workflow document of some type next week.  
I will sketch it out and then send you the draft for comment.

Cheers,  
RR

On 4/22/2011 11:30 AM, Tien Ming Lee wrote:

Hi Rick and Jim,

Happy Earth Day!

Thanks for your questions. My answers are below.

1-2, 4) Turns out the 'mrvbf6g-a3' AML script invokes the 'pctl' and 'chunkproc' AML scripts. The others are not used as far as I can tell from the script.

For eg. a line of script in 'mrvbf6g-a3': &run chunkproc pctl dem pctl\_%l%\_1 pctlradiusgeographic

You would need to run the 'mrvbf6g-a3' from GRID, not ARC, and specify the dem layer ('srtm\_or\_smth' OR SRTM of Oregon smoothed). So its:  
&run mrvbf6g-a3 srtm\_or\_smth

3) The 'aggregate' AML aggregates the 90m data to 1km for measures on elevation, slope and topographic wetness index.

Unfortunately, I didn't develop a workflow for the layer processing although I can see the value in doing so. That is, I would generate the layers (only for Oregon) in separate steps - please excuse my lack-of jargons! But I certainly think this would be an excellent thing to do and I could definitely assist you in assembling it.

Best,  
Ming

On 4/21/2011 7:30 PM, Rick Reeves wrote:

Awesome!  
RR

On 4/21/2011 4:21 PM, Tien Ming Lee wrote:

Hi Rick,

I am checking on the AMLs and will provide a reply tomorrow.

Best,  
Ming

On 4/18/2011 3:01 PM, Rick Reeves wrote:

Hello Ming:

Reviewing the AML scripts, I have a few more questions:

- 1) A summary of the 'pctl' AML and .exe file (that the AML script runs)?
- 2) A summary of the 'pctl-limits' AML script?
- 3) A summary of 'aggregate' script?
- 4) A summary of Chunkproc script?

More importantly, and perhaps this could be the topic of a phone conversation: can you summarize the end-to-end processing workflow into which these scripts fit? In other words, had you developed an ordered set of sequence steps that, when followed, produce the fused terrain layers (other layers later) required by the project?

I am working to assemble the existing workflow, as implemented in ArcMap GIS, determine which 'new' steps need to be added, using ESRI and possibly other software tools.

Thanks,  
Rick

**#6 - 04/28/2011 07:46 AM - Rick Reeves**

- Due date changed from 04/26/2011 to 05/04/2011

- Estimated time changed from 4.00 h to 12.00 h

By May 4, I should have reviewed and tested the AML scripts that produce the terrain-derived data layers. In the absence of further information on the scripts' function from Ming (or other authors), the best way to learn about them is to run them using the 1KM fused terrain data layer as a test data set.

I propose that immediately after completing the merged Aster/SRTM boundary validation task (by Friday 29 May), I use the fused terrain layer of the Western Hemisphere that I have created as a test dataset to execute the AML scripts. When doing this, the highest priority will be to (re-)construct the work flow that will create the derived terrain products (e.g., slope, aspect) using the existing AML scripts, and if necessary, new AML scripts.

My Windows/ArcMap GIS workstation is a good candidate for performing these tests.

I would like to review this plan with the IPLANT team on the conference call this Friday.

**#7 - 04/24/2012 12:53 PM - Jim Regetz**

- Assignee changed from Rick Reeves to Jim Regetz

**#8 - 05/15/2012 09:57 AM - Jim Regetz**

- Priority changed from High to Normal

I recently reorganized all AML scripts into a single directory in the code repo, here: <source:terrain/research/oregon/aml@5af6ef96>

Also, I've forked off discussion of multiscalesmooth9a\_clean.aml and the associated DEM smoothing issue to task [#411](#).