

TREE TIPS



Technical Notes

AN ALTERNATIVE METHOD OF USING TAUDEM FOR STREAM PREDICTION

Start ArcMap and load the TAUDEM extension. The program and instructions for loading can be found at <http://hydrology.neng.usu.edu/taudem/>

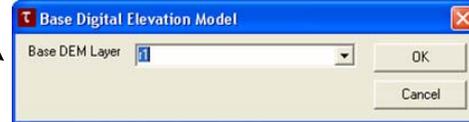
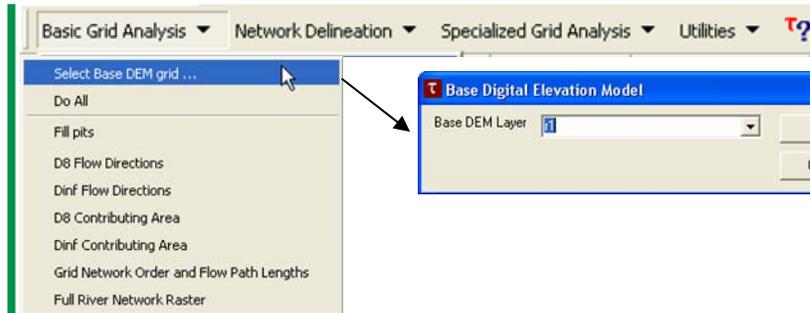
A limitation of TAUDEM is that it can only analyze a raster of 2000x2000 pixels.

1. Click on the *Basic Grid Analysis* menu and Select the Base DEM. This is important as TAUDEM will automatically save all new files to the same location as your DEM and will automatically fill in required fields of the analysis functions.

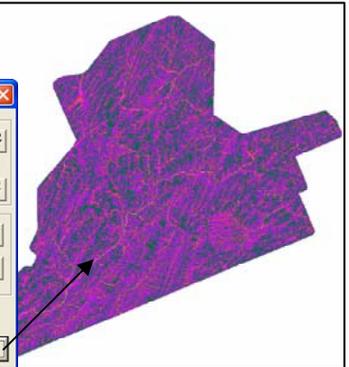
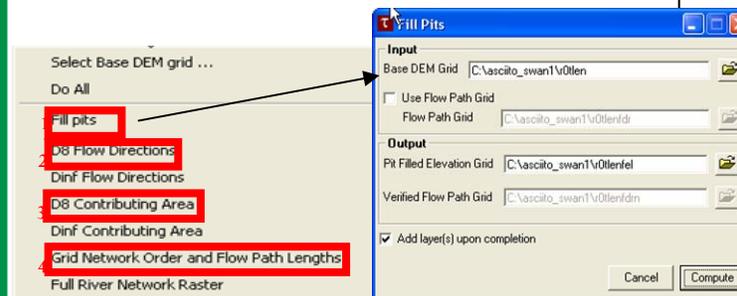
2. Next, click *Fill Pits*. A window will pop up and because you took the time to set the Base DEM, every box will be populated. Click the *compute* button in the lower right hand corner. The *Fill Pits* function will take some time and RAM, depending on the size of the area under analysis.

After that you only need to make the calculations for the D8 components. The next set of calculations will take a relatively shorter amount of time to process.

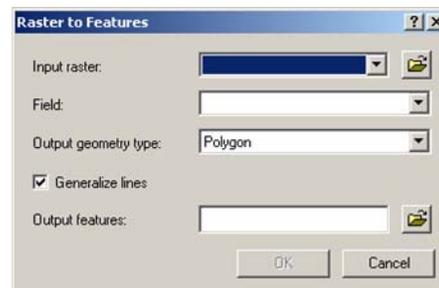
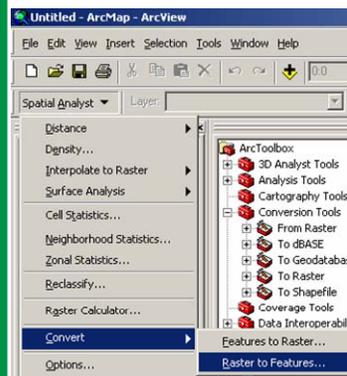
3. There will be a raster called *gord*. This raster is the grid order network raster. Open the *Spatial Analyst* menu and click on *Convert* then *Raster to Features*. Select the *gord* raster and make sure that the *Output Geometry Type* is set to polygon. Set the output location and name then click OK.



Step 1



Step 2



Step 3

TREE TIPS

4. Classify the new *gord* polygon shapefile by GRIDCODE and 10 stream order categories should appear.

Start the *Editor* and run a selection query for the lower orders of streams and delete them. To help with processing time, run a selection query on only one order category at a time. The erase will still take time, as upwards of 500,000 objects may be erased.

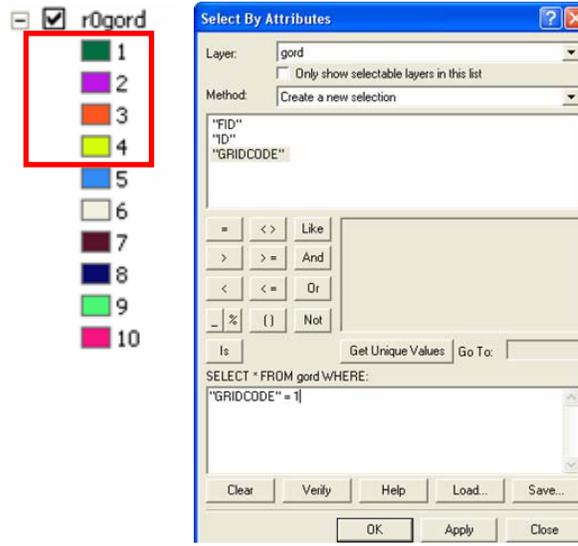
It is up to you to decide what level of precision that you want. Through unpublished field investigations, there is not a high likelihood of the first 4 stream orders appearing in the field. When lower order streams have appeared in the field they are either dry by late spring. Also, they are typically categorized as order 3. Lastly, the lower order streams (4 and down) have a tendency to show very linear patterns, a relic from the square pixelated DEM.

5. After the streams have been erased to a satisfactory level, you will want to remove streams that have been predicted in water bodies. Open *XTools Pro* and click *Layer Operations* and then *Erase Features*. A window will pop up. You will want to make the *Input feature layer* your *gord* shapefile and make your *Overlay layer* the water bodies shapefile. As always, set the output location and name to your preference. If you have an ArcInfo license you can use its erase function

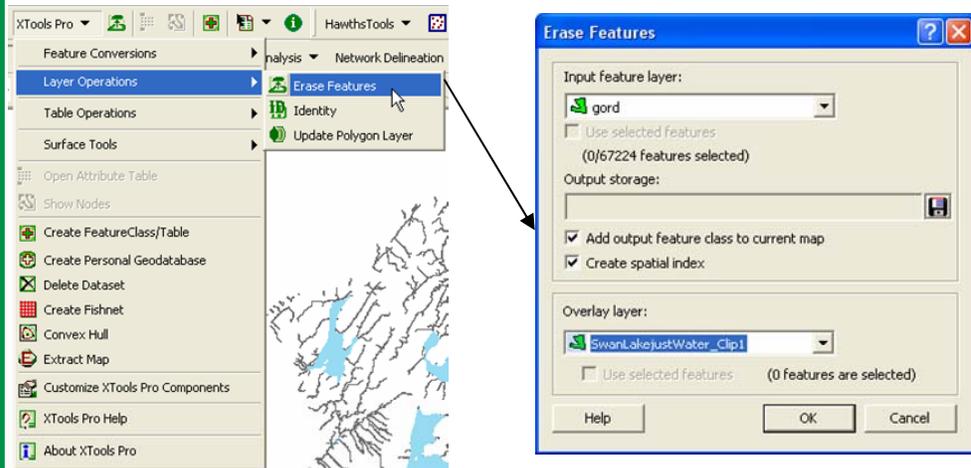
6. Your final product will have gaping holes where the water bodies are located.

For a more detailed description of TAUDEM and its functions, refer to the website:

<http://hydrology.neng.usu.edu/taudem/>



Step 4



Step 5



Step 6