

How to Subset a Raster/DEM

These instructions enable you to extract a portion/subset of a Digital Elevation Model (DEM) in ArcGIS 9.1. This simple task is performed in ArcMap with the aid of the Spatial Analyst extension's Hydrology tools.

This procedure is useful if you wish to minimize the extent of a raster to use a smaller area for computationally intense analyses, such as hydrology modeling (i.e. for creating watersheds). The following lists the data layers used for this instruction set (simply substitute your file names – you may apply this to ANY RASTER, not only to DEM files):

ORIGINAL DATA

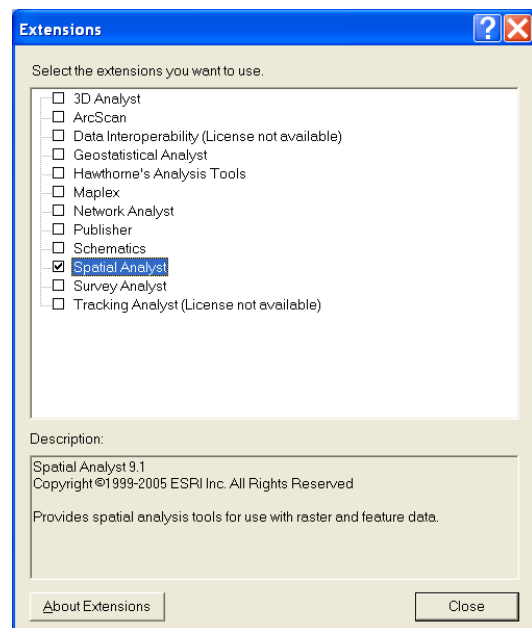
DEM	raster grid coverage of elevation information for the study area – e.g. 90 m cells from 1:250,000 CDED
Ab_hydroskel.shp	vector polyline of the drainage network in Alberta (useful for geographic visualization); original data from NRCan: http://geogratis.cgdi.gc.ca/download/frameworkdata/hydrology also available: \gisserver\Shared_GIS\Data\Alberta\HYDRO

CREATED DATA

Kdem	raster grid of the subset raster DEM; name your output appropriately
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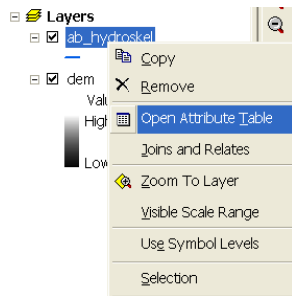
Start ArcMap and set up the map document:

1. Open ARCMAP and start using with a new empty map document
2. Click on the ADD DATA button and add the **DEM** raster and **Ab_hydroskel.shp**
Enable and make visible the Spatial Analyst extension:
3. Choose TOOLS >>> EXTENSIONS and make sure there is a check beside SPATIAL ANALYST
4. Choose VIEW >>> TOOLBARS and make sure there is a check beside SPATIAL ANALYST

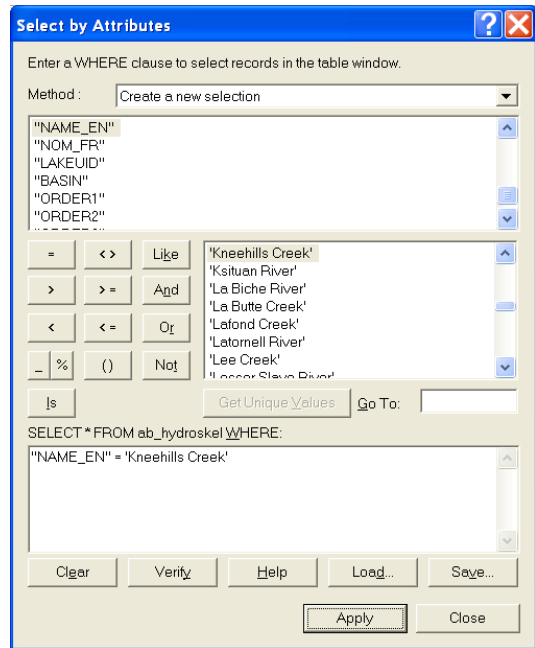


Highlight river/stream of interest and zoom in to the required extent:

5. In the table of contents, right click on **Ab_hydroskel** and OPEN ATTRIBUTE TABLE



6. Choose **OPTIONS >>> SELECT BY ATTRIBUTES**
7. Enter the expression: **"NAME_EN" = 'Kneehills Creek'**
8. Click **APPLY**
9. **CLOSE** the table



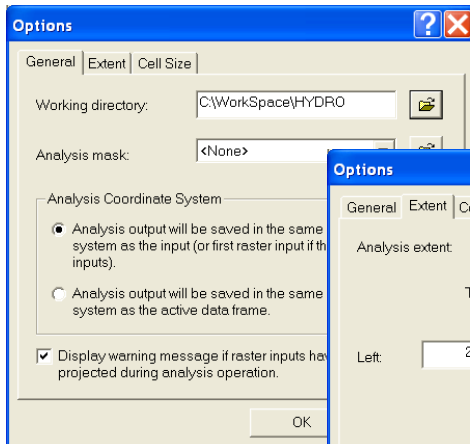
10. In the table of contents, right click on **Ab_hydroshkel.shp** and choose **SELECTION >>> ZOOM TO SELECTED FEATURES** to view the highlighted section(s)



11. In the Tools toolbar, click on the **ZOOM FIXED OUT** button a few times until you can visualize where the *entire catchment of interest* should be (it would be a shame to miss portions of tributaries!!!)

Set the Analysis Options:

12. In the Spatial Analyst toolbar, choose **SPATIAL ANALYST >>> OPTIONS**

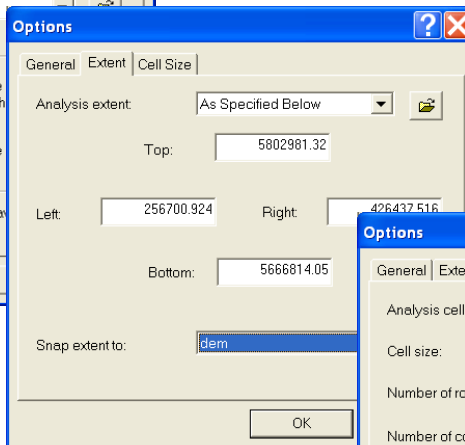


13. In the **GENERAL** tab:

- Set the Working Directory: e.g. C:\WorkSpace\HYDRO (wherever your raster DEM is located)

14. In the **EXTENT** tab:

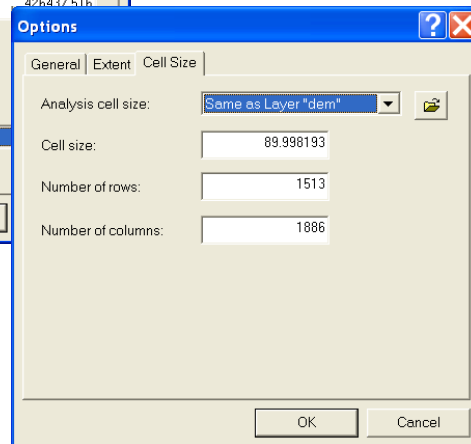
- Set the Extent as **'Same as Display'**
- Set the Snap Extent To **'DEM'**



15. In the **CELL SIZE** tab:

- Set the Cell Size as **'Same as Layer DEM'**

16. Click **OK**



Calculate the new subset/extent:

17. In the Spatial Analyst toolbar, choose SPATIAL ANALYST >>> RASTER CALCULATOR

18. Enter the following expression: **Kdem = [dem]**

Use a more appropriate name than Kdem for your data!

19. Click EVALUATE

A new raster DEM is created based on the extent you set in the Spatial Analyst Options. That's it! This new raster file has been permanently written to your working directory. Use this layer for future analyses and modeling.

