GEON LiDAR Workflow (GLW) output and ArcMap Users Guide

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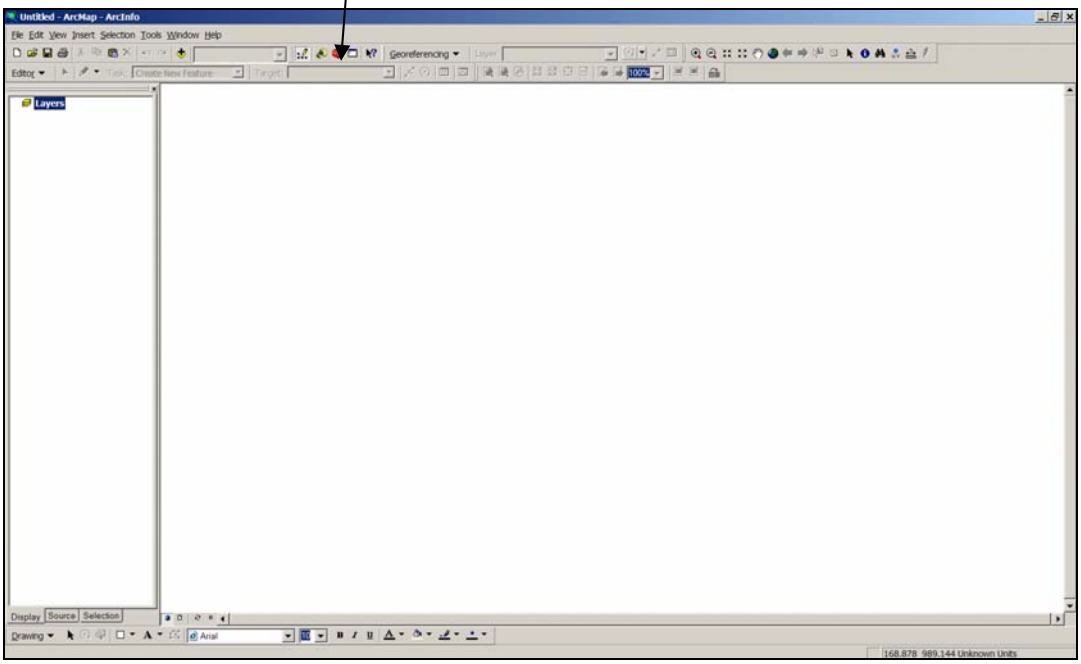
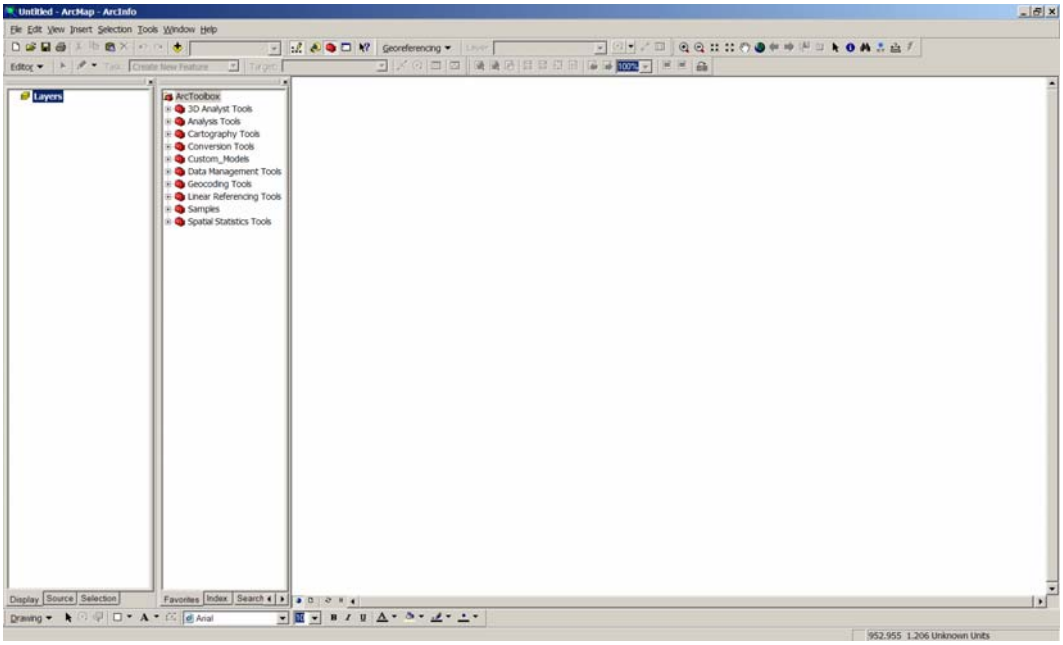
Importing GLW output into ArcMap

Open ArcMap and click on the toolbox button.

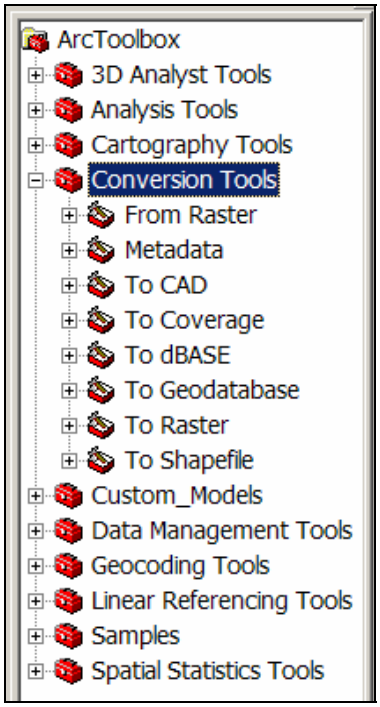
Click on the toolbox button to open the toolbox window.



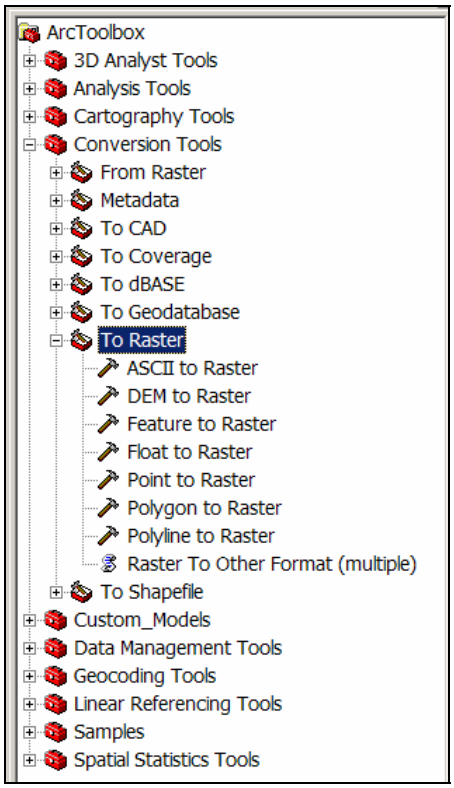
The toolbox window will open as a pane as shown below.



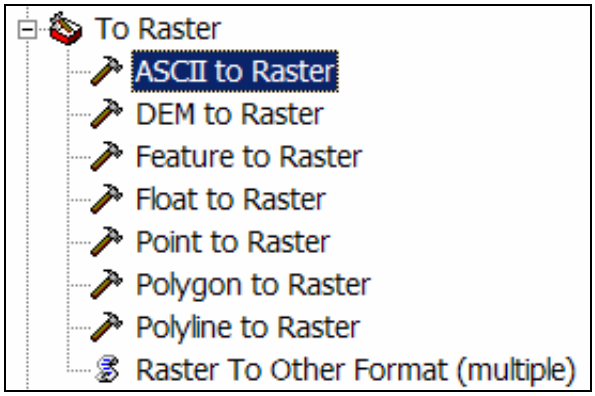
Click on the **Conversion Tools** option. This will expand the menu.



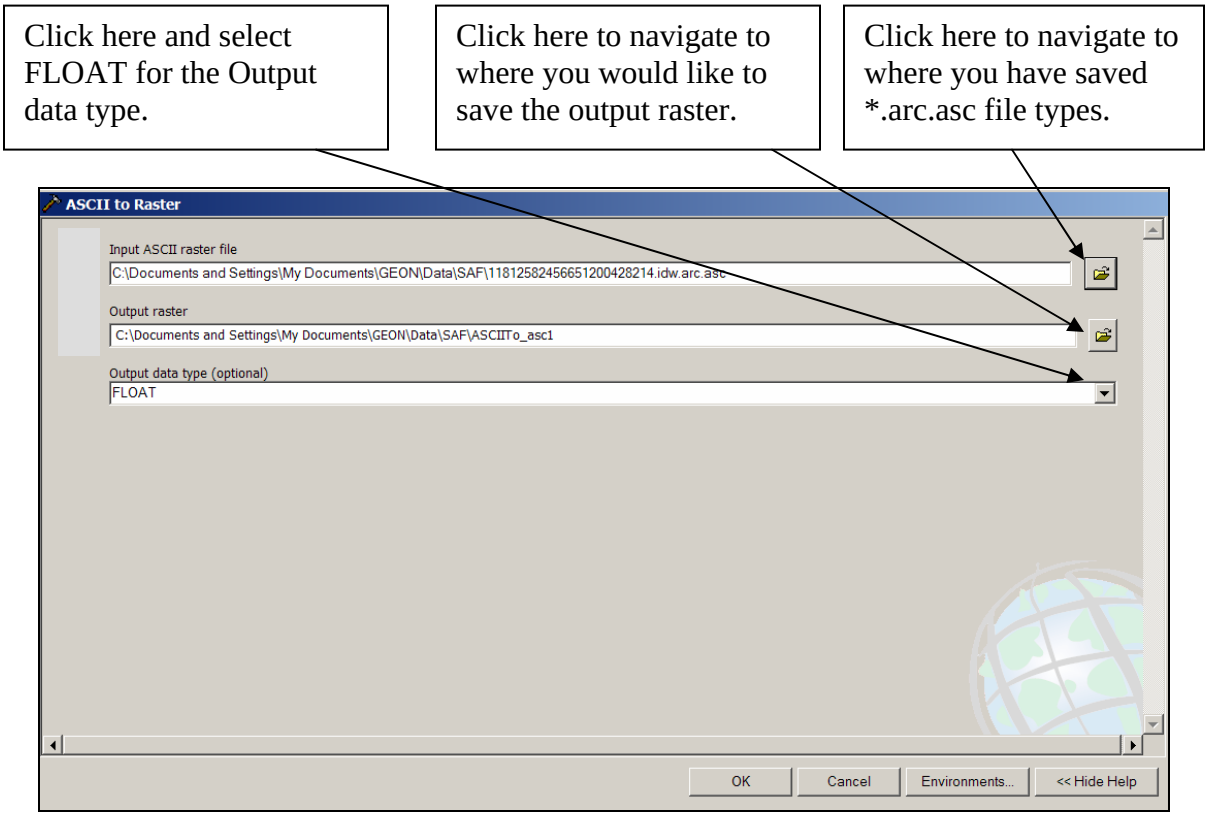
Click on the **To Raster** option. This menu will expand further.



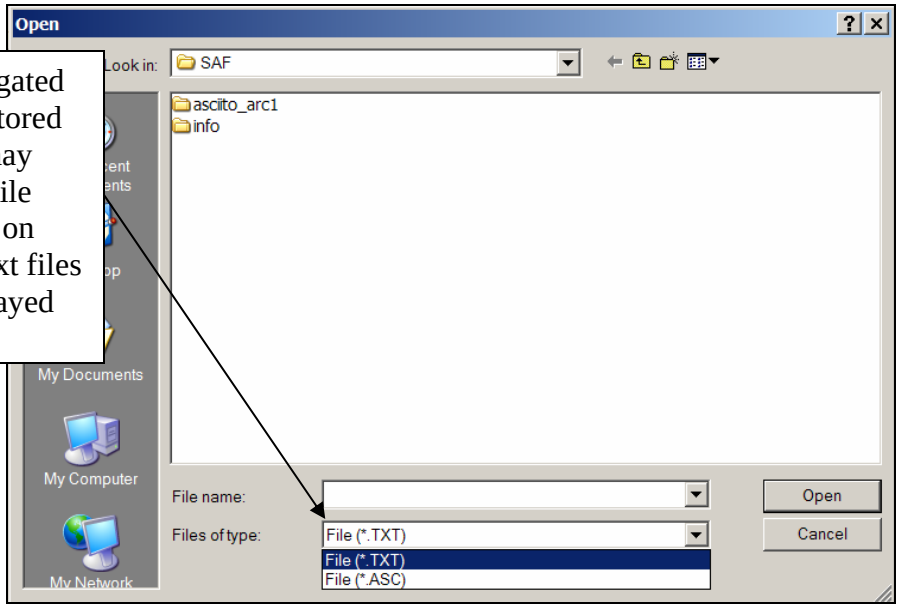
Select the **ASCII to Raster** option.



This opens a new window. Specify the file you would like to import, the name and location for the output and finally under **Output Data Type (optional)** select Float.

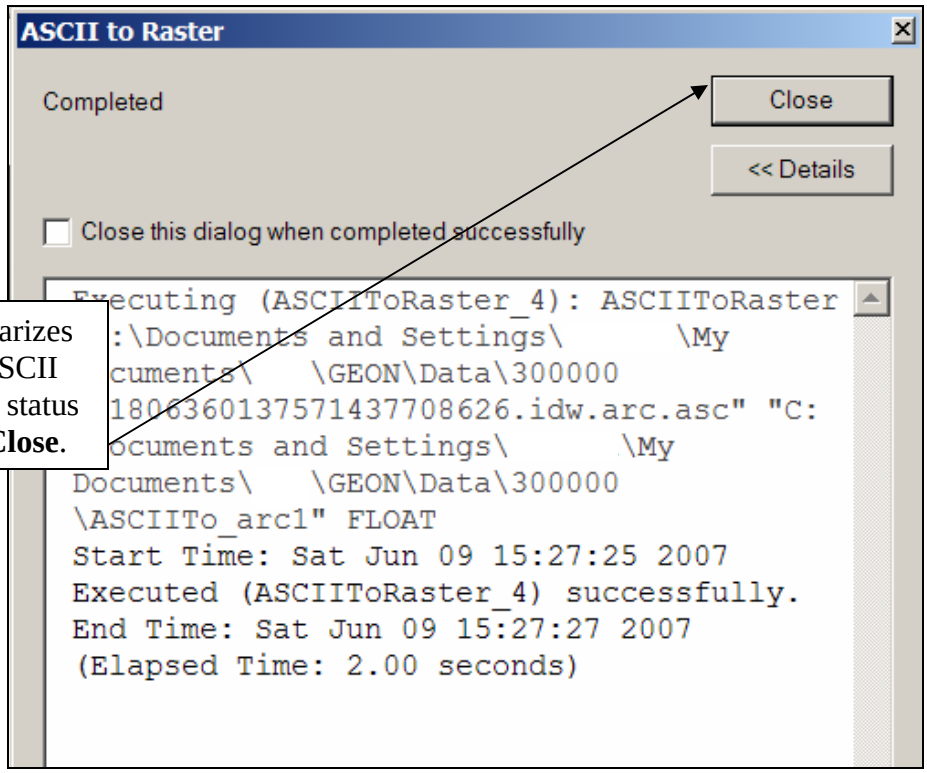


Note: based on your default settings, you may need to specify the file type listed.



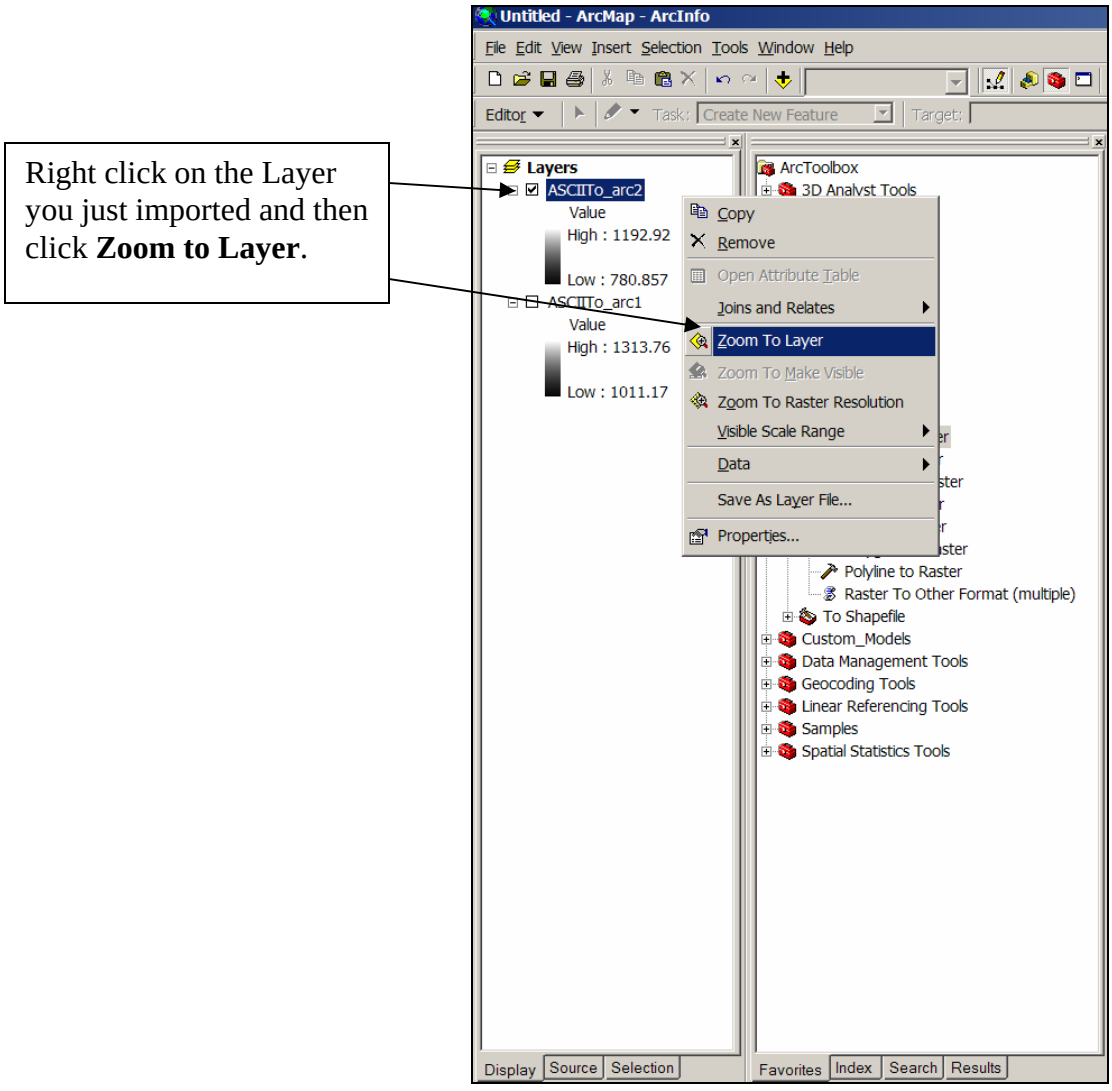
Once you have navigated to where you have stored *.arc.asc data you may need to specify the file types shown. Note: on many computers *.txt files are the default displayed file types.

Based on the size of your data set, it may take a moment for the calculation to complete. Once it has completed, the window will give you a notice that says the job has completed click **Close**.



This window summarizes the calculation of ASCII to Raster. When the status is Complete, click **Close**.

Now on the left windowpane, under the layer you just added, right click on the layer and click **Zoom to layer**.



Defining the projection

You may not need to project the data (change the datum or projection).
But, the DEM products delivered from the GLW are not internally defined in terms of their coordinate systems. You can work with them by themselves without this definition, but if you want to combine them with other data, you will need to define it.

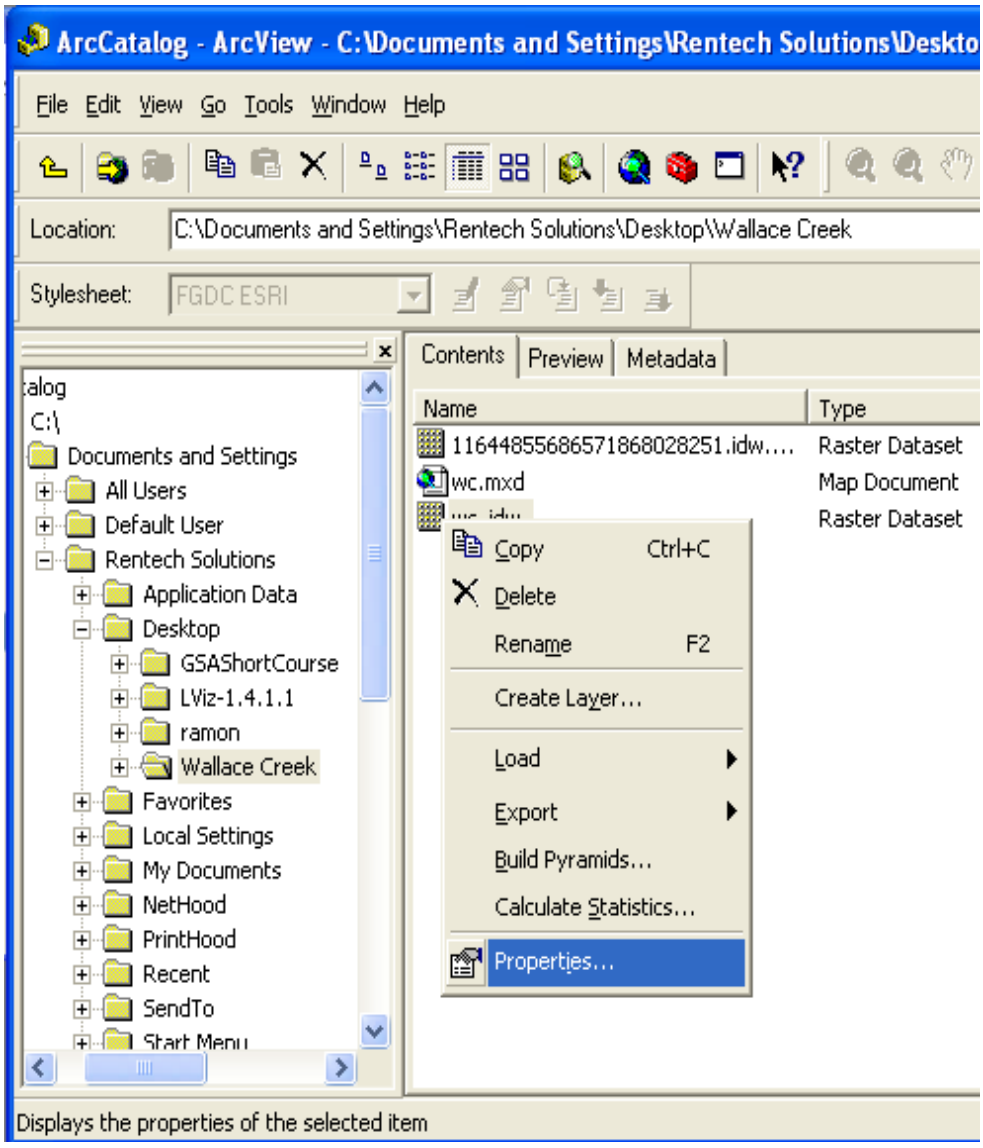
If you have Arc Map open, you should close it so that there will not be a complaint from the other software, ArcCatalogue about the files being busy.

The example we give here is for the B4 LiDAR data which has these coordinate system attributes:

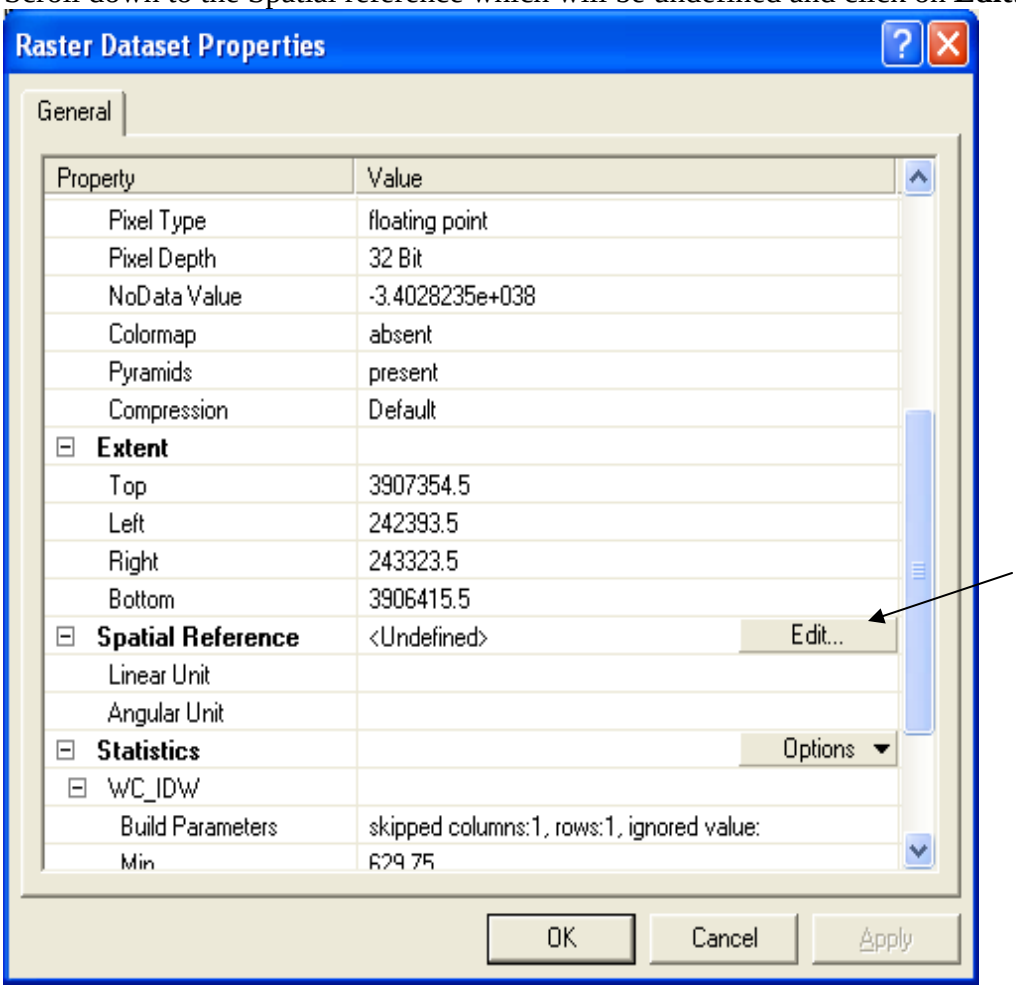
Grid Coordinate System Name: **Universal Transverse Mercator**
UTM Zone Number: **11 N**
Transverse Mercator Projection
Scale Factor at Central Meridian: 0.999600
Longitude of Central Meridian: -117.000000
Latitude of Projection Origin: 0.000000
False Easting: 500000.000000
False Northing: 0.000000
Planar Coordinate Information:
Planar Distance Units: meters
Geodetic Model
Horizontal Datum Name: D_WGS_1984
Ellipsoid Name: WGS_1984

Launch ArcCatalogue: Start->Programs->ArcGIS->ArcCatalogue

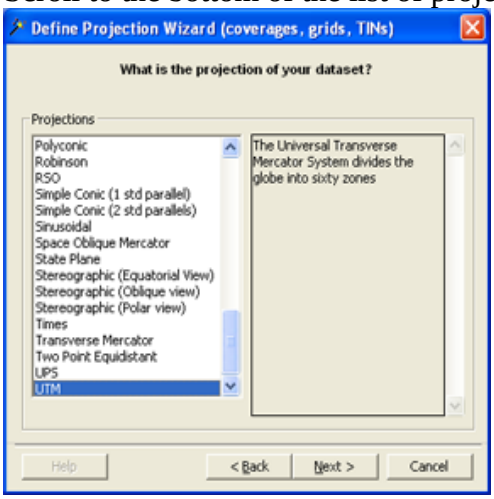
Then Right click on the Raster file you made in the last step and select properties (see next page)


ArcCatalog - ArcView - C:\Documents and Settings\Rentech Solutions\Deskto
File Edit View Go Tools Window Help
Location: C:\Documents and Settings\Rentech Solutions\Desktop\Wallace Creek
Stylesheet: FGDC ESRI
Contents Preview Metadata
Name Type
116448556865718680282 51.idw.... Raster Dataset
wc.mxd Map Document
Raster Dataset
Copy Ctrl+C
Delete
Rename F2
Create Layer...
Load
Export
Build Pyramids...
Calculate Statistics...
Properties...
C:\
Documents and Settings
All Users
Default User
Rentech Solutions
Application Data
Desktop
GSAShortCourse
LViz-1.4.1.1
ramon
Wallace Creek
Favorites
Local Settings
My Documents
NetHood
PrintHood
Recent
SendTo
Displays the properties of the selected item

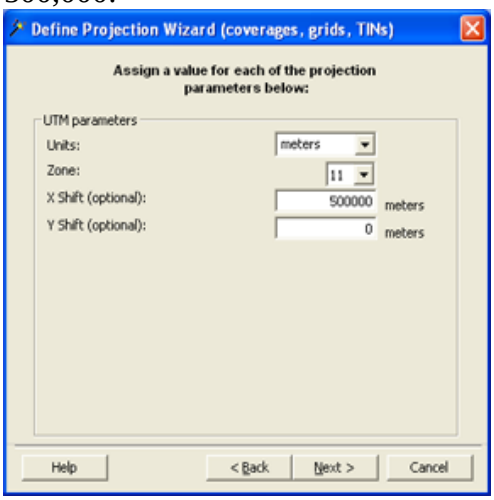
Scroll down to the Spatial reference which will be undefined and click on **Edit**:



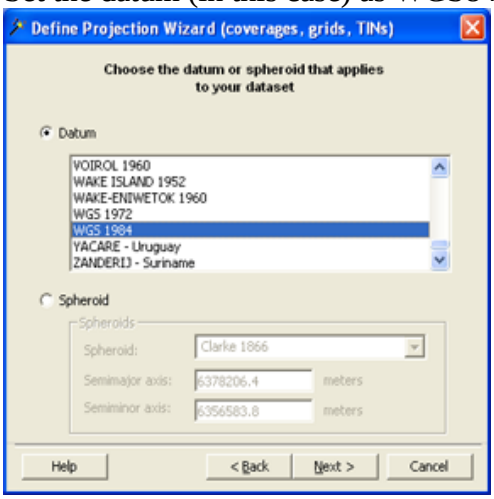
Choose to **Define the coordinate system interactively**.
Scroll to the bottom of the list of projections and choose UTM:



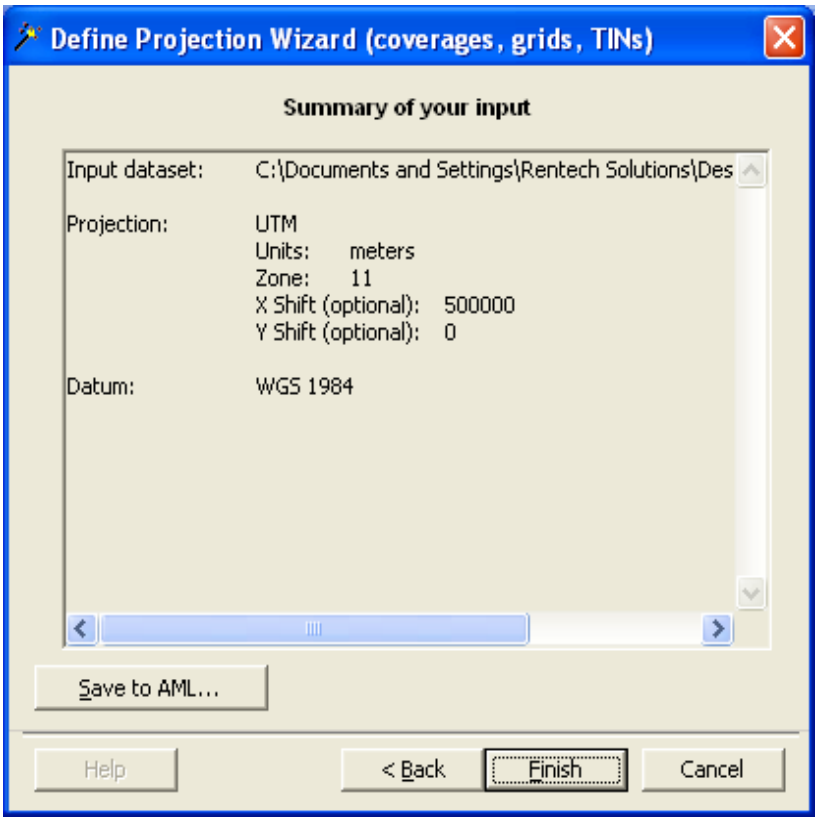
Units should be meters, zone is 11 (in this case), and X shift is the False Easting of 500,000:



Set the datum (in this case) as WGS84:



The final screen should look like this:



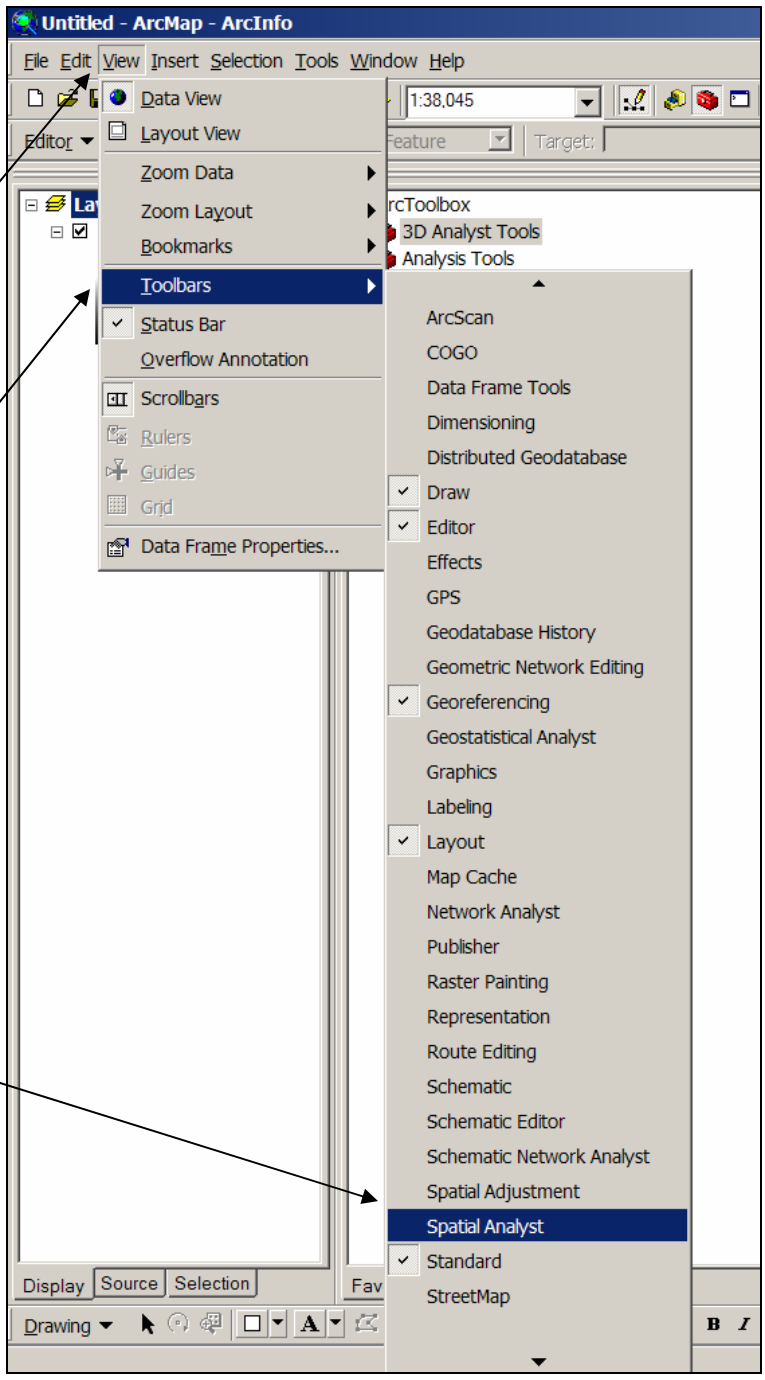
Producing a Hillshade Map

After you have loaded the data and projected it, click on the Spatial Analyst tool. If you do not have the Spatial Analyst tool in your toolbar, select **Toolbars** from the **View** menu. Then click **Spatial Analyst** from the pop up window.

To access the Spatial Analyst tool, click **View**.

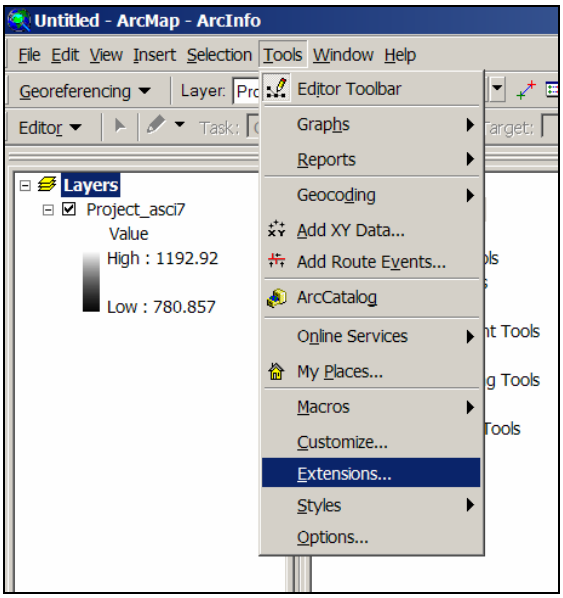
Select the **Toolbars** option from the **View** menu.

Click on **Spatial Analyst**.

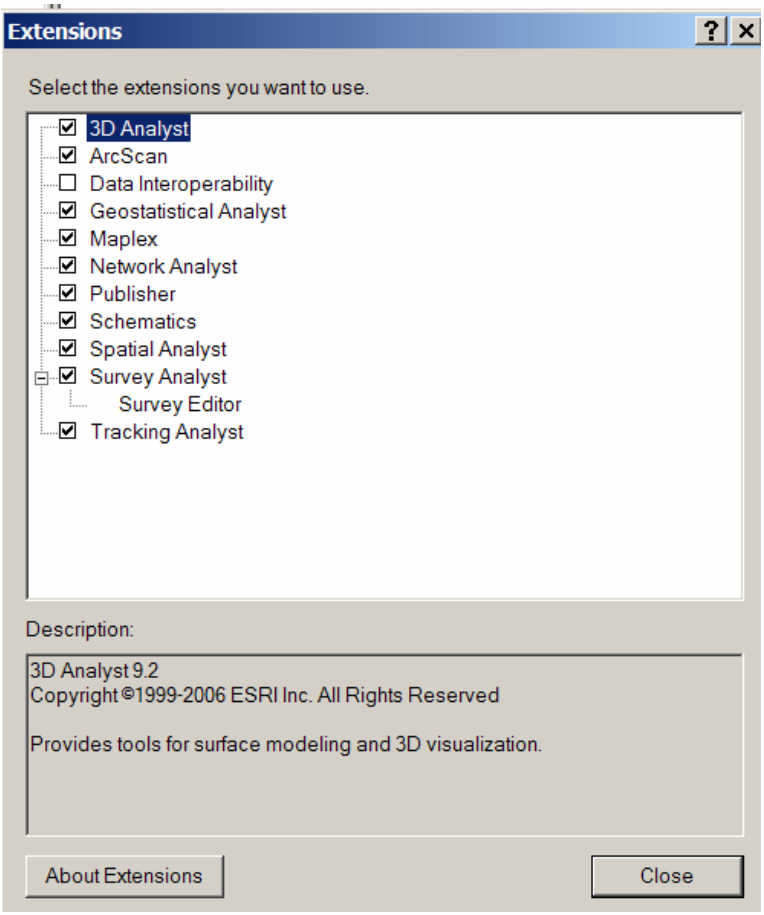


Drag the Spatial Analyst toolbar to your toolbar.

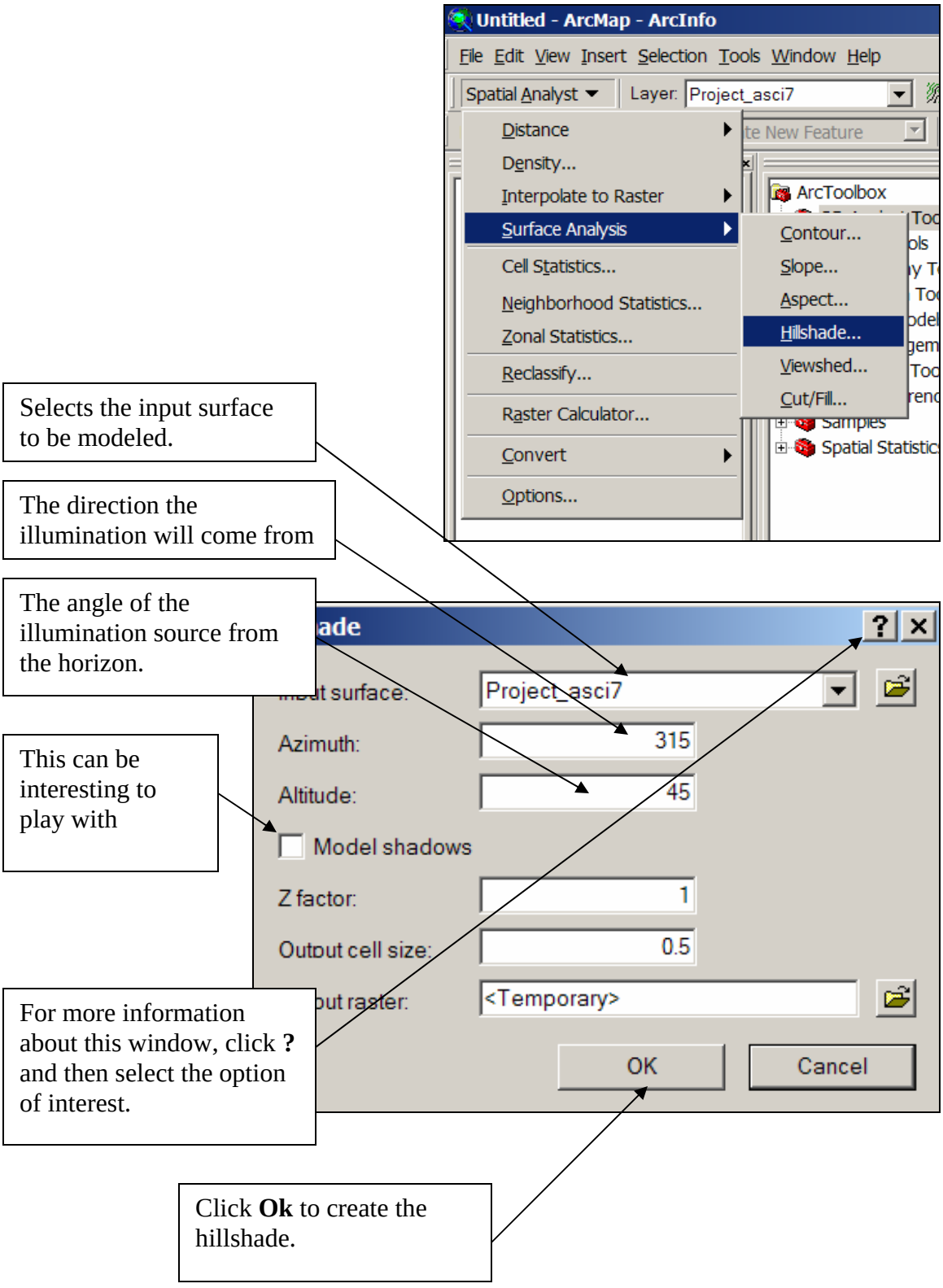
If this is the first time you have used the Spatial Analyst tool, you may need to turn on the extensions. To turn on the extensions, select the **Extensions** option from the **Tools** menu.



Check the 3D Analyst and the Spatial Analyst options, click **Close.**

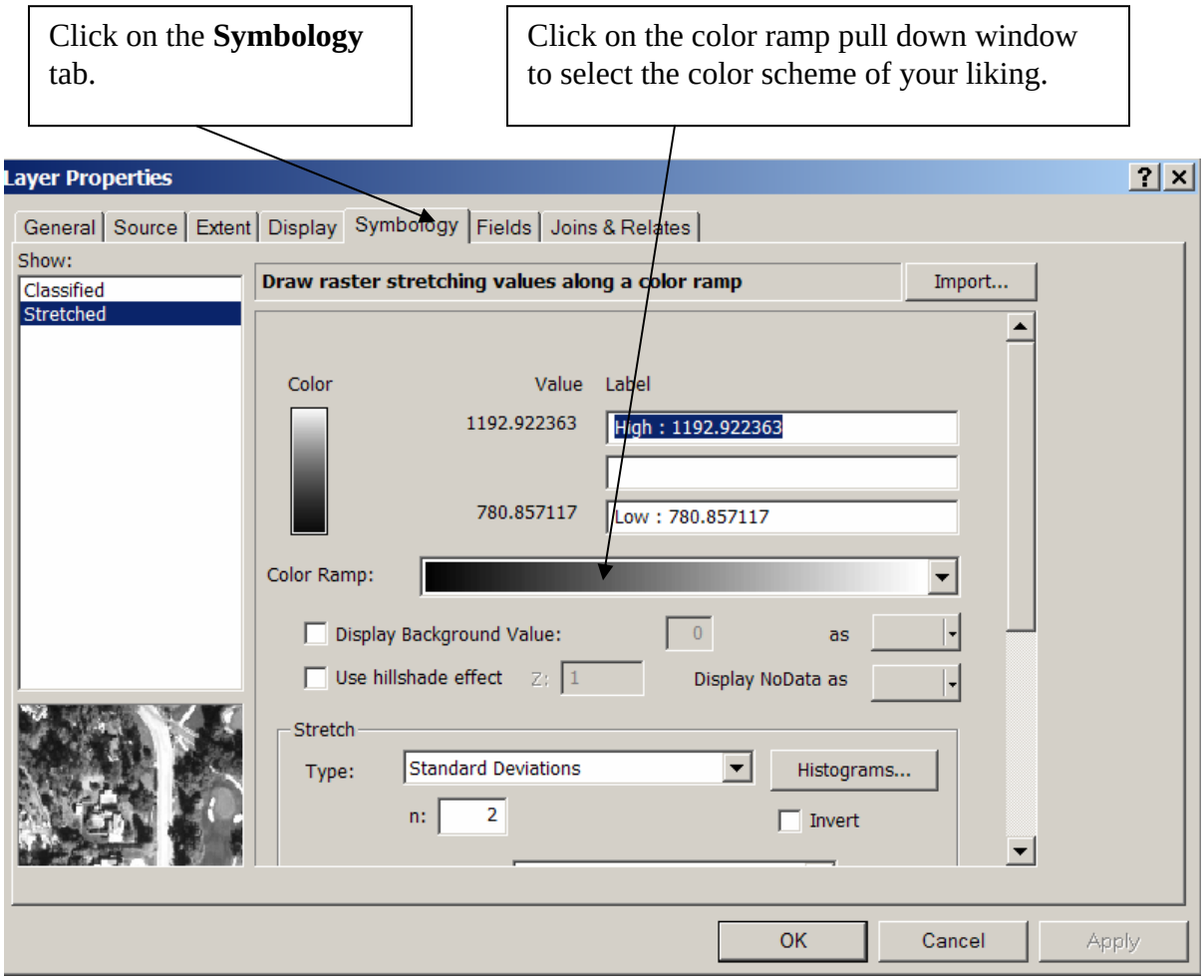


Now to make a hillshade map, select the **Surface Analysis** option under the **Spatial Analyst** pull down menu. Click on **Hillshade**.

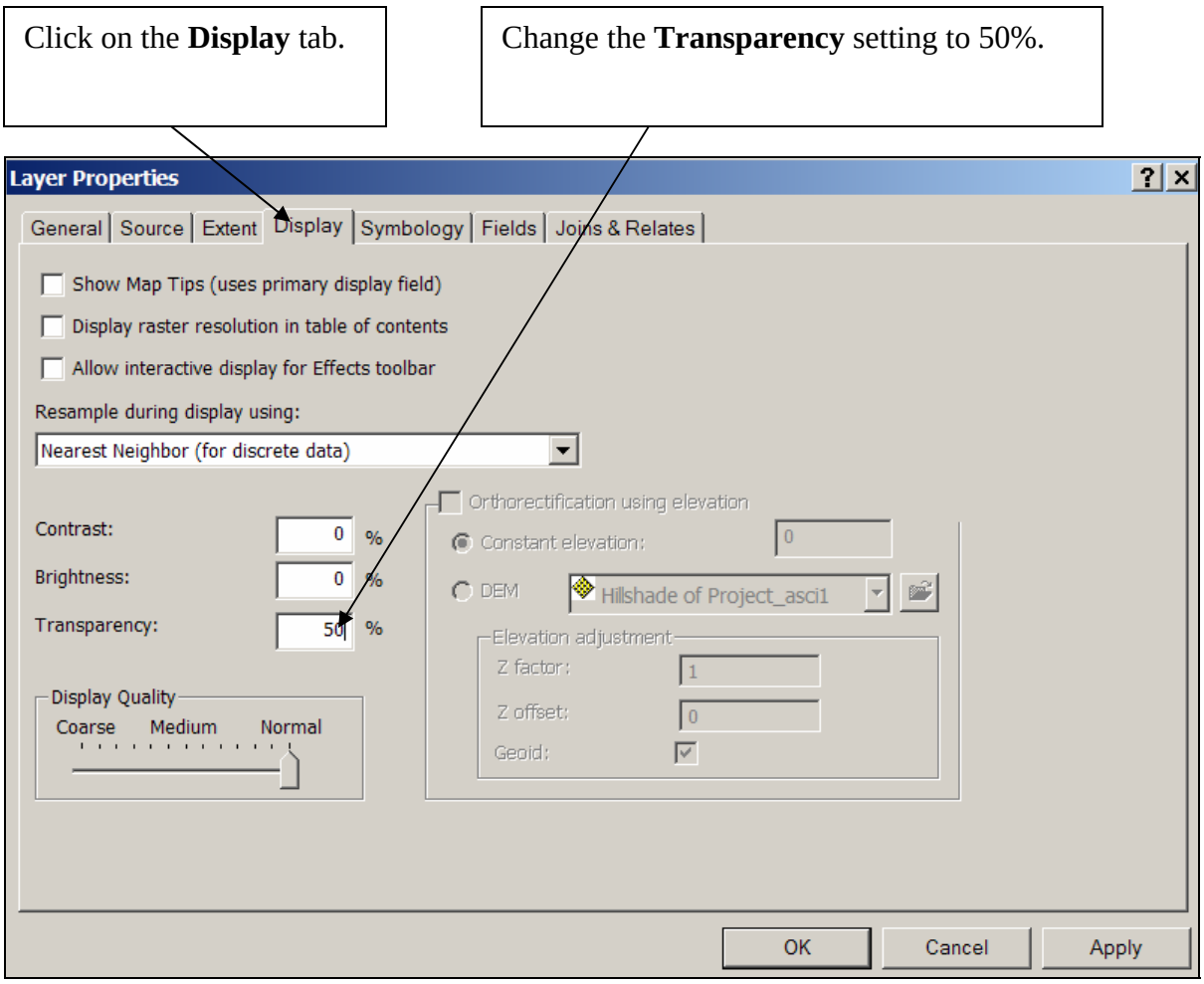


Step 4 Combining the Hillshade and DEM, creating a color map

If you have the DEM and hillshade loaded make sure that the DEM is on top in the Layers pane. This can be done by simply clicking on the desired layer and dragging it above the hillshade. To color the DEM, right click on the DEM and select **Properties** then click on the **Symbology** tab.



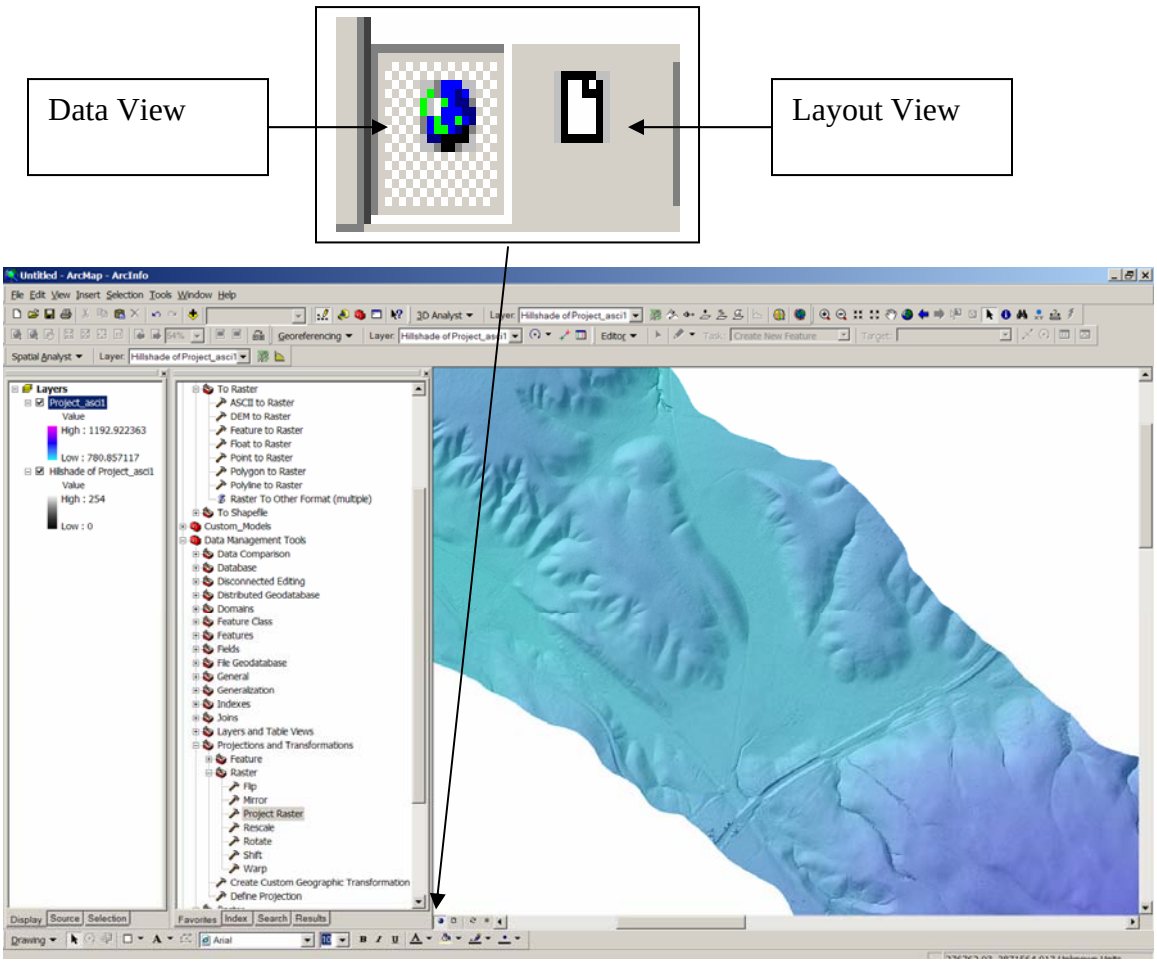
Once you have chosen a color scheme click on the **Display** tab. Change the Transparency setting to 50%. Then click **Ok**.



The effects can be astonishing. Now you have a colored map.

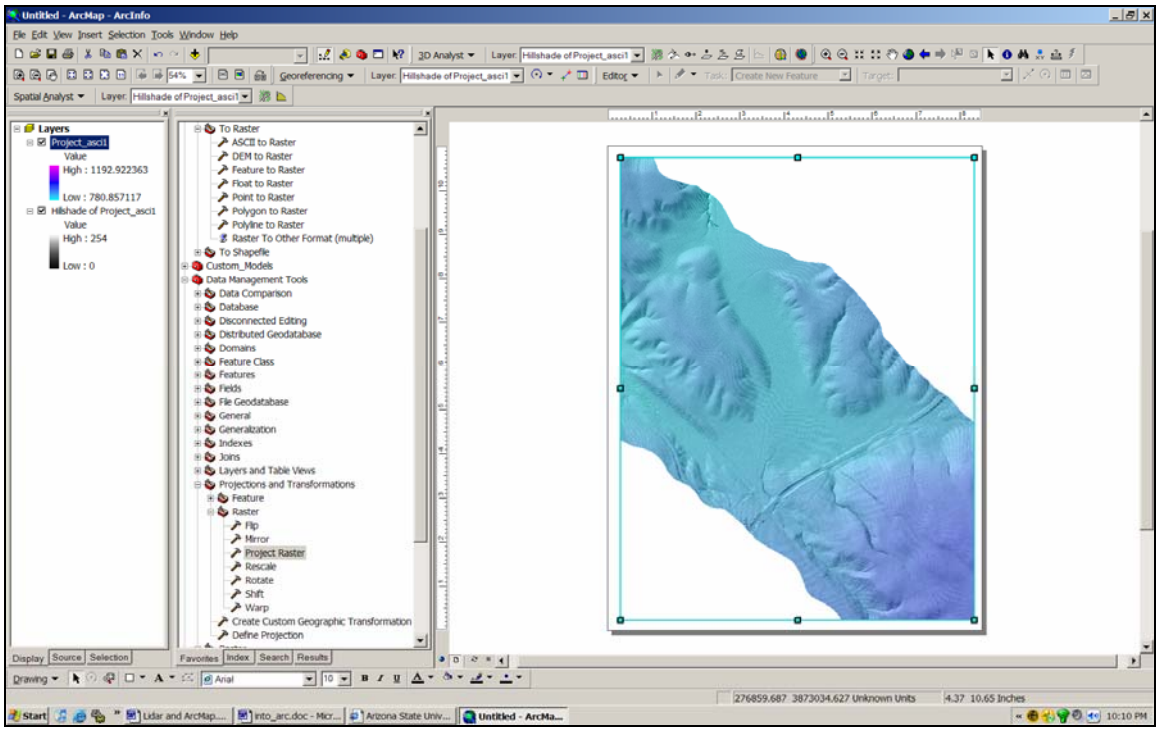
Printing the map

To print the map, first change from the **Data View** to the **Layout View**.



You will now see how the image will look on an 8.5 x 11 sheet of paper.

You can now see how the image will be centered and look on an 8.5 x 11 sheet of paper. You can now stretch the image or shrink the image by using the arrow button and clicking on the image. You can use the hand tool and adjust what part of the image is seen. You can also change the paper properties by choosing the **Page and Print Setup** option from the **File** menu.

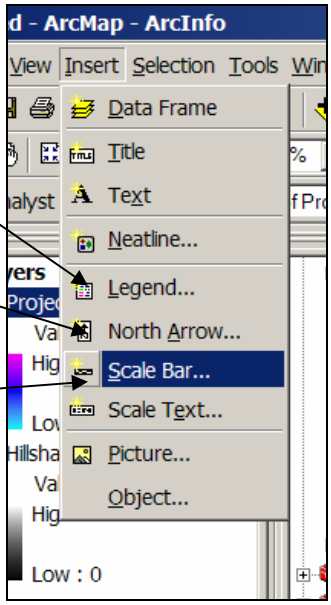


To add a scale bar, legend, and compass rose click on the **Insert** menu at the top of your screen.

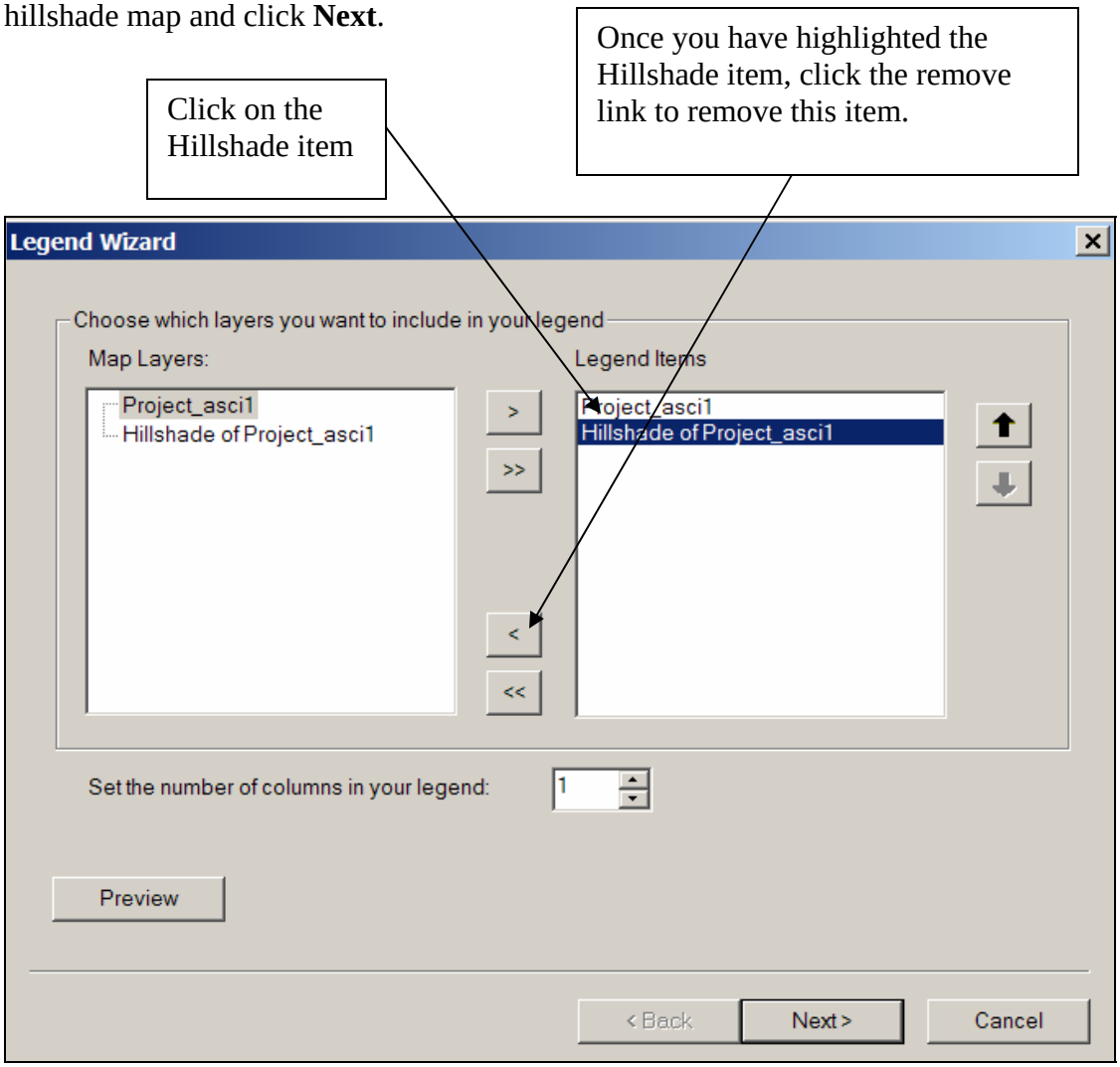
Select **Legend** to add a legend to your map.

Select **North Arrow** to add a compass rose to your map.

Click **Scale Bar** to add a scale to your map.



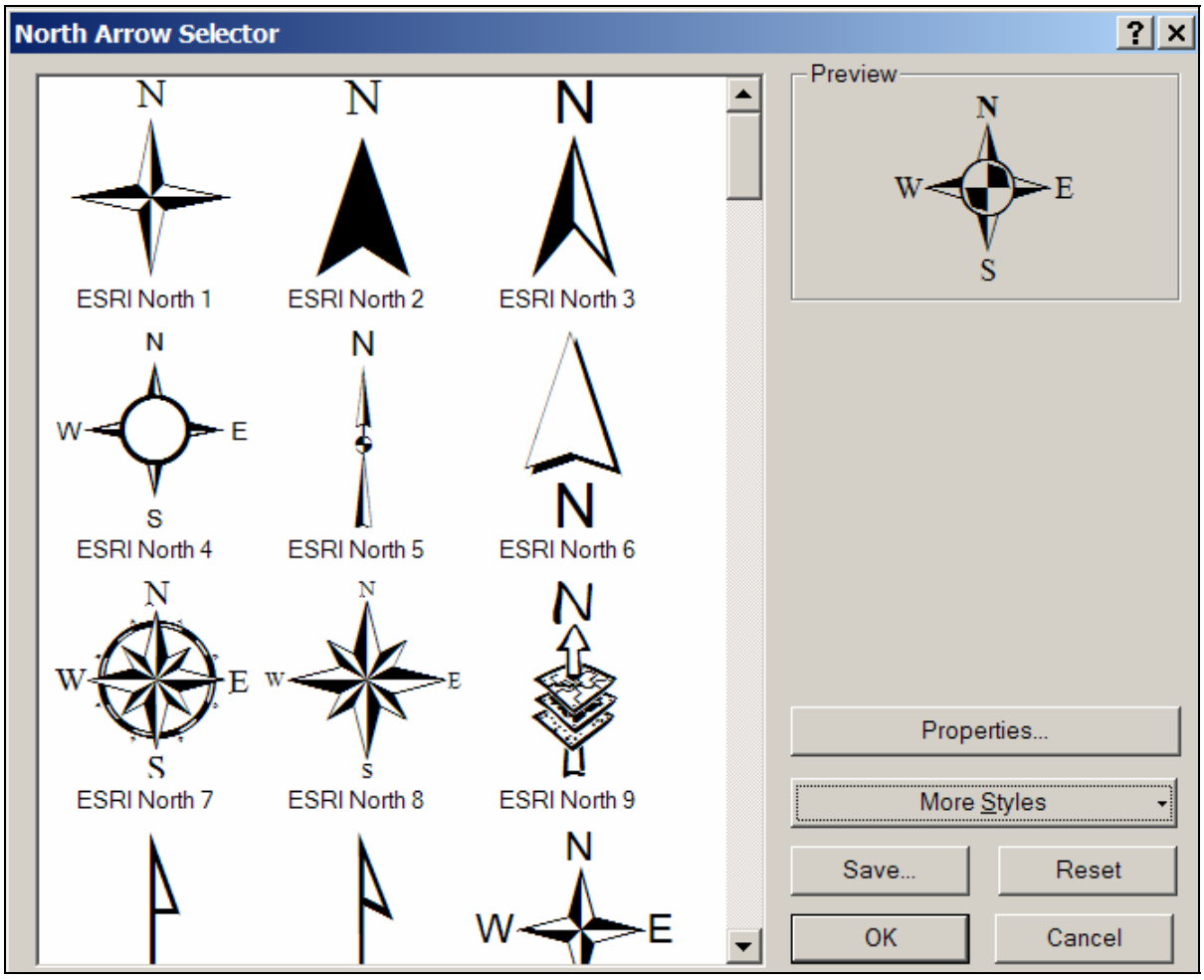
When you choose **Legend**, a new window will open like the one below. Remove the hillshade map and click **Next**.



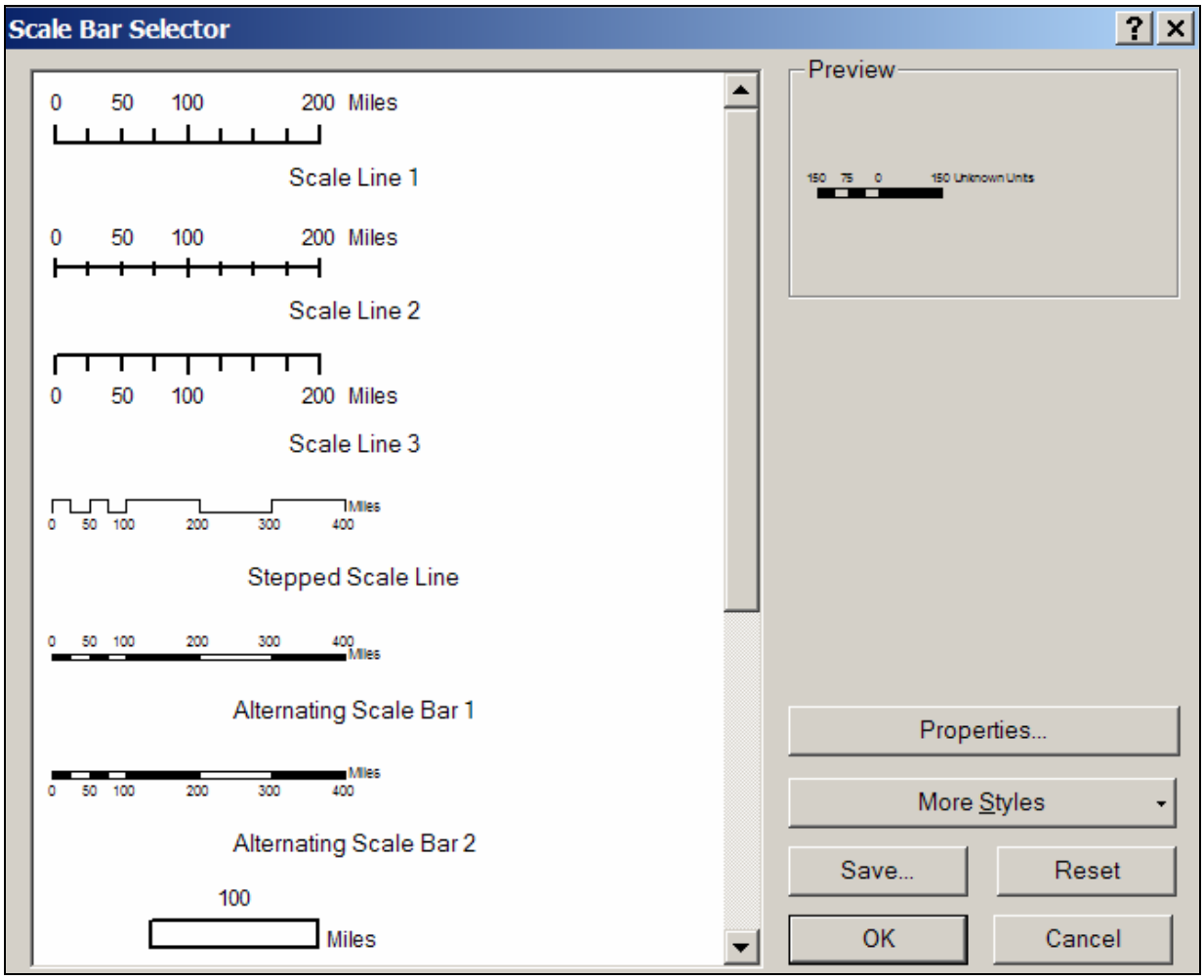
You can then click through the next four windows keeping the default settings or you can specify the options you would like for your legend. For more information about legend options, see the Arc help pages.

The end of this document goes through a tutorial on cleaning up the legend: http://arrowsmith410-598.asu.edu/Lectures/Lecture9/DEM_data.html.

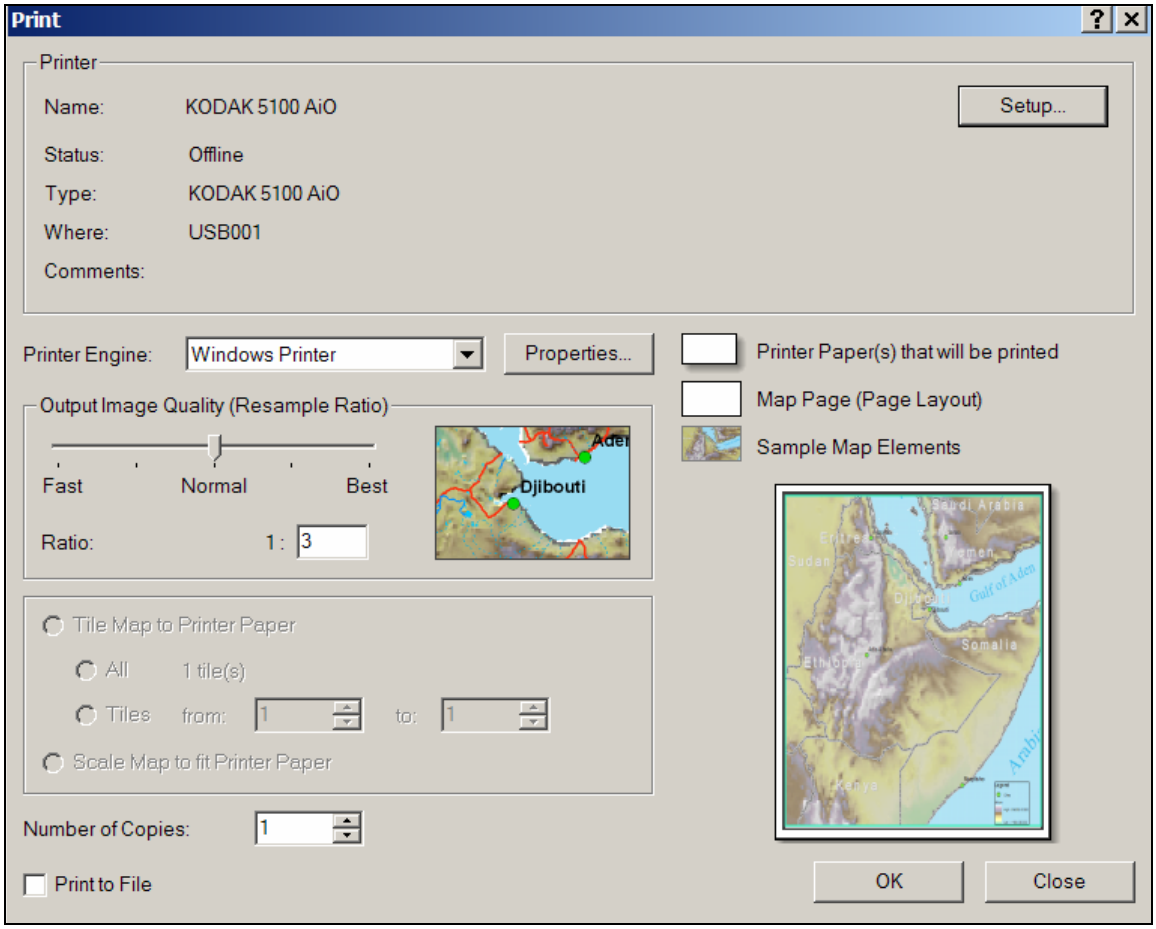
When you select **North Arrow** a new window will open like the one below. Select the north arrow you would like and click **Ok**. You can further refine your choices with the **Properties** button or the **More Choices** button.



When you select **Scale Bar** a new window will open like the one below. Select the style of scale bar you would like and click **Ok**. You can further refine your choices and you can define the units with the **Properties** button or the **More Choices** button.



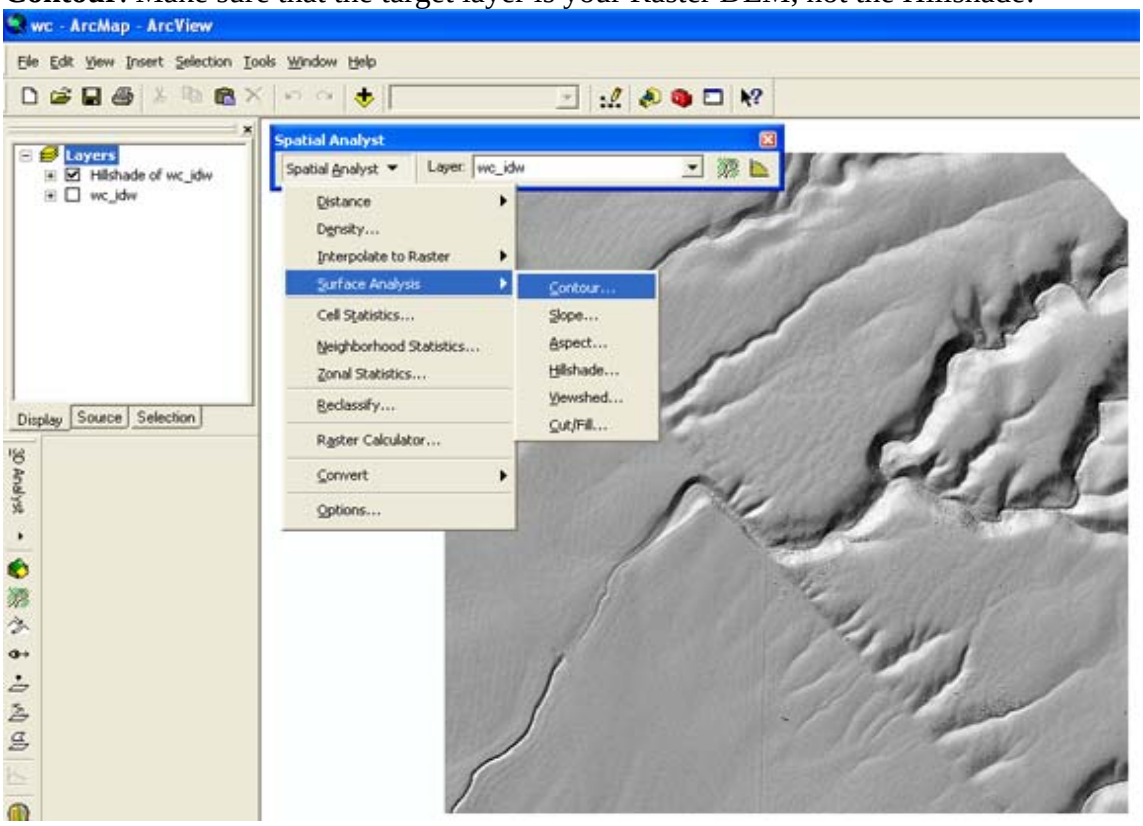
To print the map, select **Print** from the **File** menu. A window will open like the one below. Here you can specify the options you would like. When you are satisfied with your options, click **Ok**.



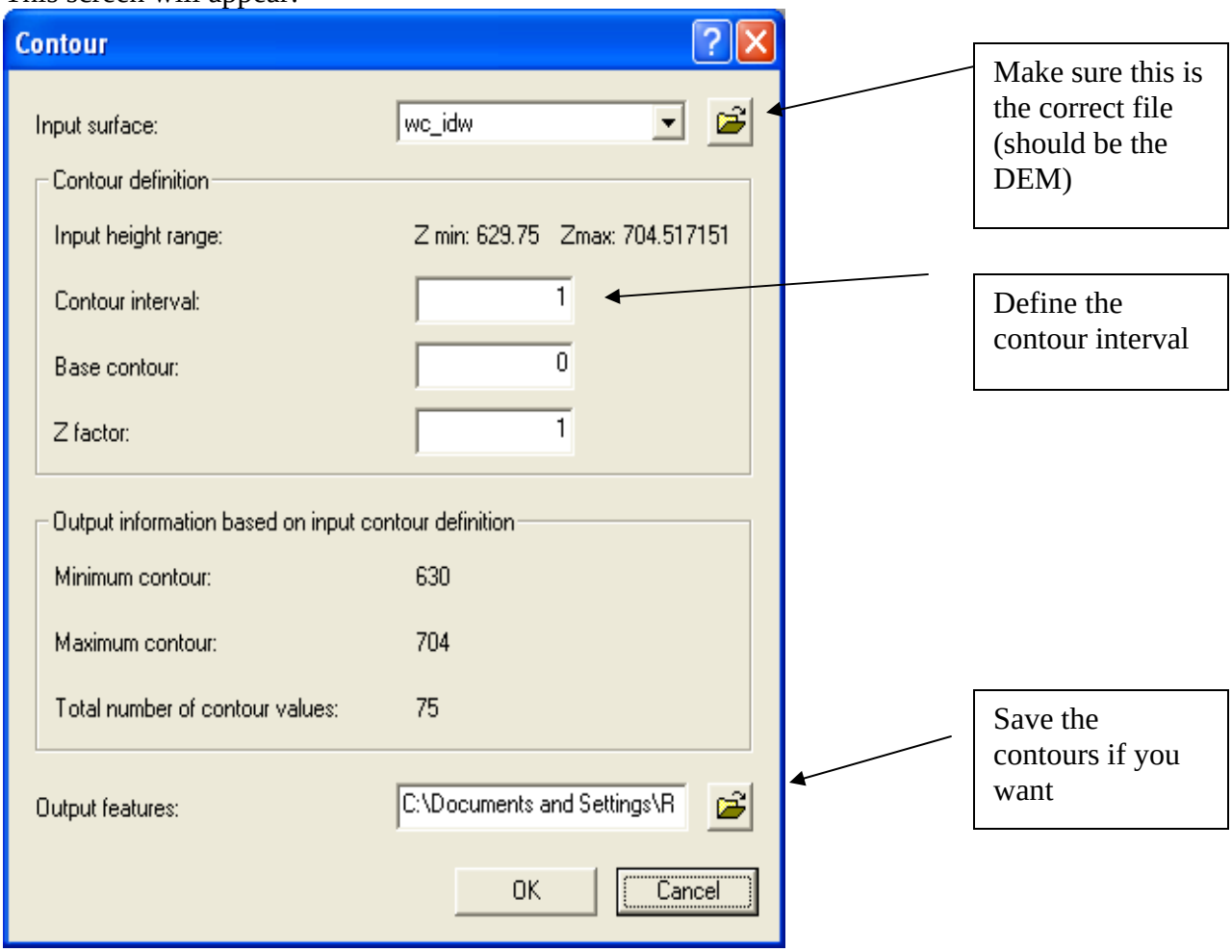
Other activities

Making a contour map

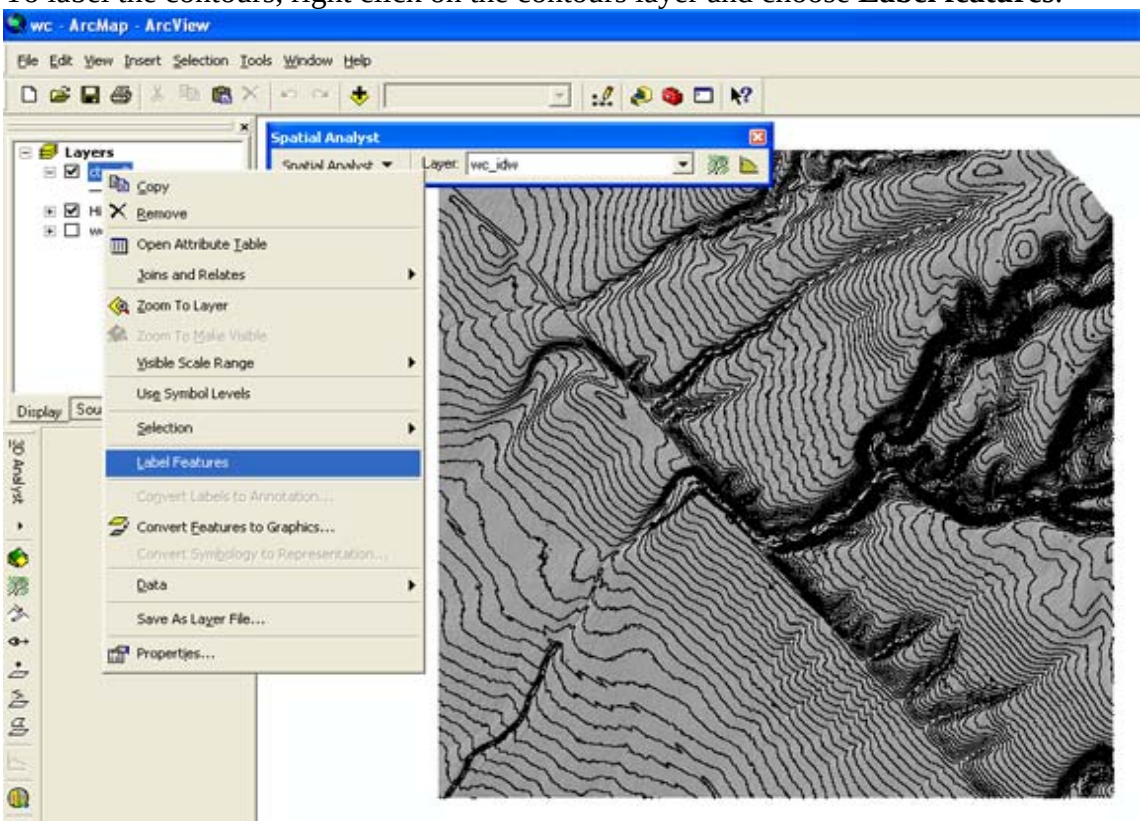
Select the **Surface Analysis** option under the **Spatial Analyst** pull down menu. Click on **Contour**. Make sure that the target layer is your Raster DEM, not the Hillshade!



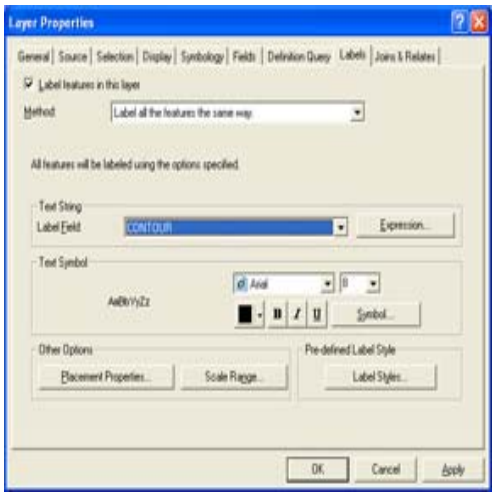
This screen will appear:



To label the contours, right click on the contours layer and choose **Label features**:

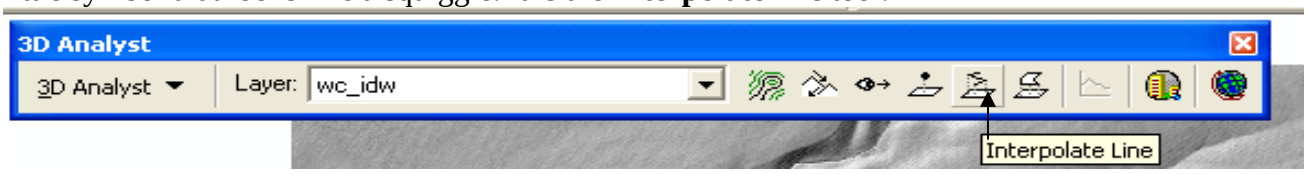


The problem will be that the labels will probably be for the line ID and not the elevation! So, then right click on the layer again, but this time choose **Properties->Label Tab, and make sure that the Label Field is CONTOUR:**

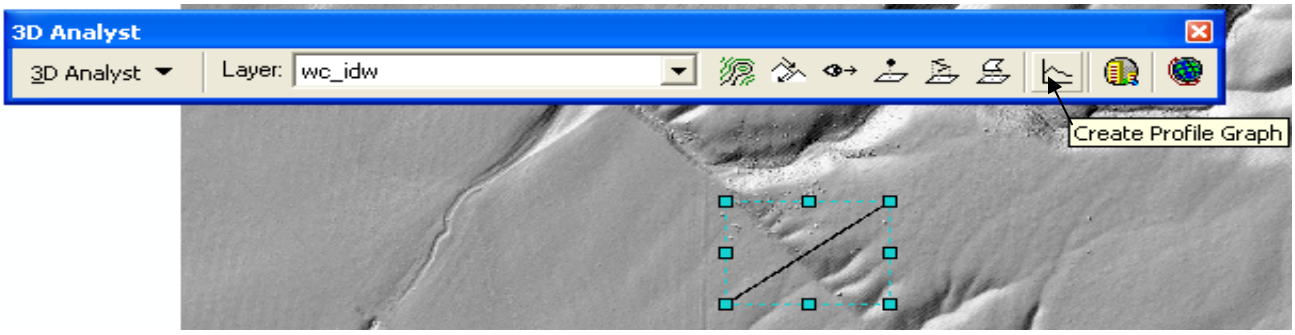


Topographic profiles

To make a topographic profile along a path you define on the DEM, do the following:
You will need the 3D analyst tool, so make sure that under extensions, its check box is checked (as you did above for the Spatial Analyst).
Then under View->Toolbars->3DAnalyst, select that and the toolbar will appear.
Make sure that the target layer is the DEM you have made above, and then click on the little symbol that looks like a squiggle. It is the **Interpolate line** tool.

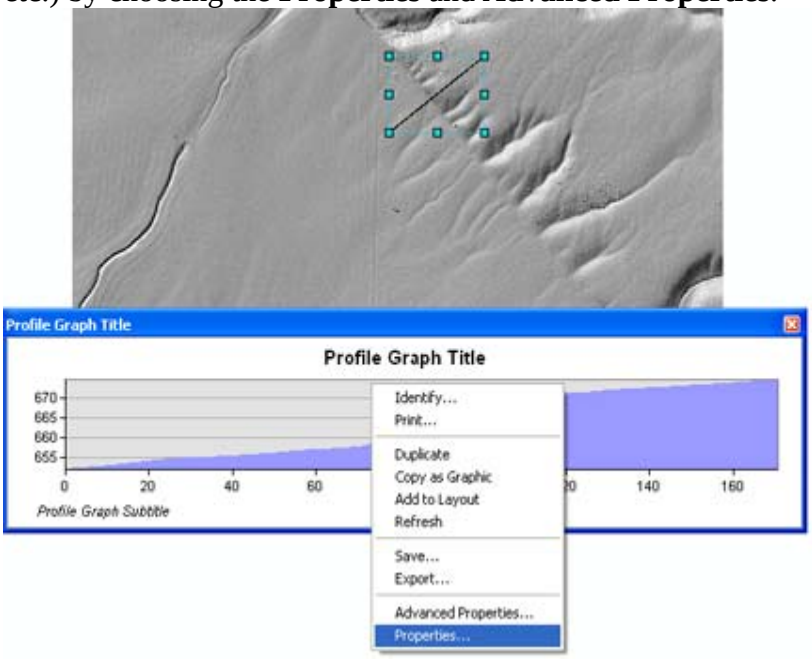
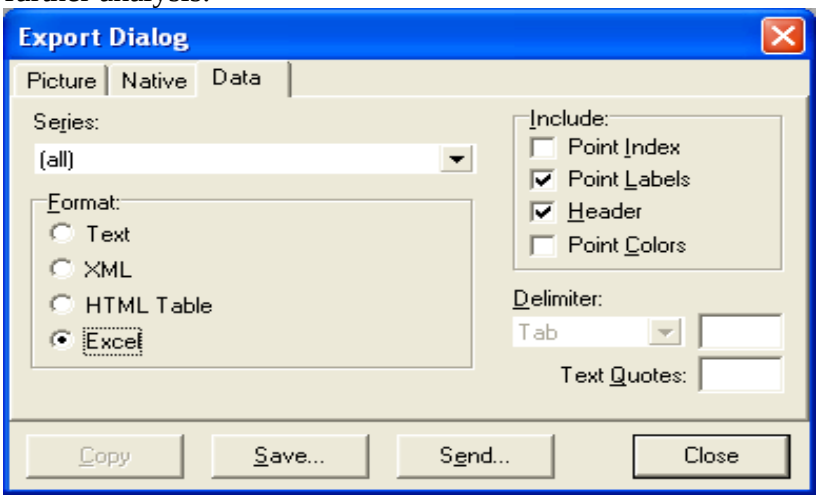


Use that tool to define your profile. Click once to start, and then click for each vertex along your profile (it does not have to be a single straight line profile). Double click at the end. When you double click, it may take quite a while (tens of seconds) at first for anything to happen. The program is going through the DEM and finding your pixels that are nearest to the line you chose.



To actually draw the profile, click on the symbol that looks like a profile (**Create Profile Graph** above).

If you right click on the resulting plot, you can set various parameters of the plot (labels, etc.) by choosing the **Properties** and **Advanced Properties**.



One choice under that menu (the one above that you get when right clicking on the plot), is **Export**. This is a new addition it seems in ArcGIS9.2. You can export the data from your profile to something like Microsoft Excel. Choose the **Data** tab and then the **Excel format.** This will export a two column XY or Distance-Elevation file that one can use for further analysis.