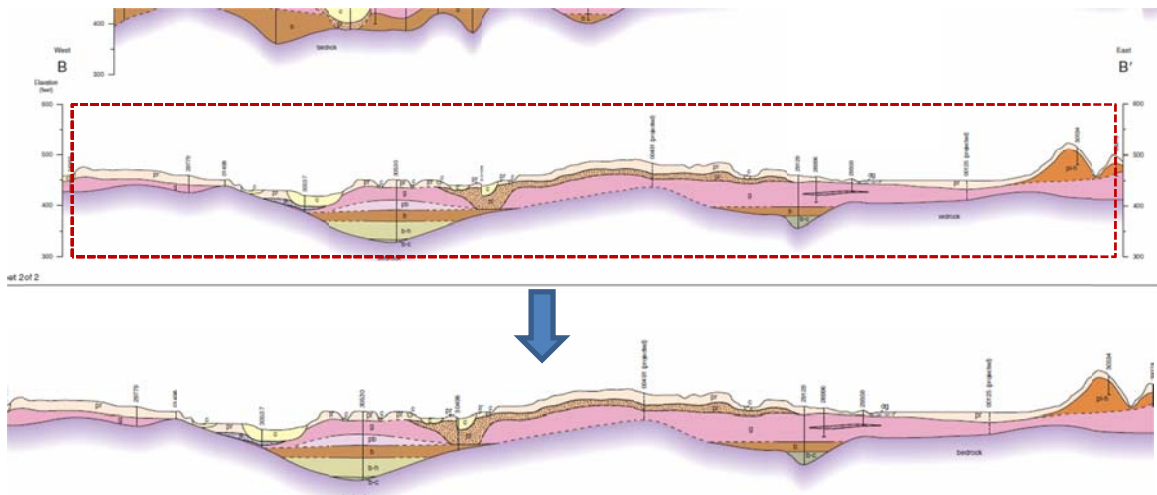
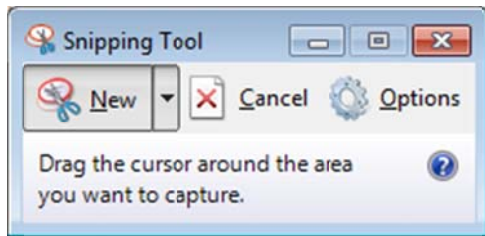


Creating 3D cross sections from raster images in ArcScene

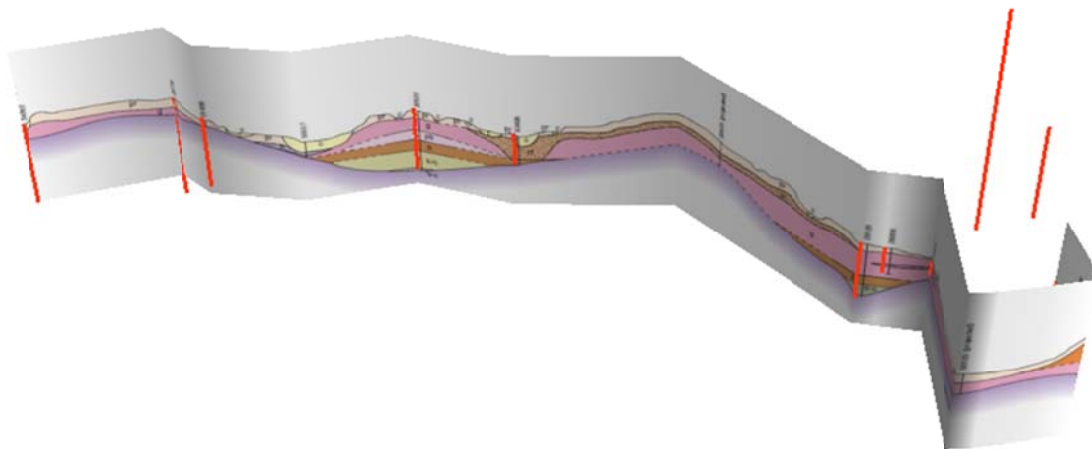
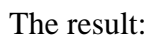
Jennifer Carrell, Illinois State Geological Survey, 10-27-11

1. Create a clip of the cross section image, bounded on the top and bottom by known elevations from the cross section's axis, and clipped on the left and right to the exact extent of the line of section. The Windows Snipping Tool is a quick way to create a low-resolution jpeg that will load fairly quickly into ArcScene.



2. Open ArcScene. If the vertical units of your cross section are feet, set the Scene's Coordinate System (under Scene Properties) to a projection that uses feet, such as Illinois State Plane. To use meters for the scene units, see item 10 below.
3. Set the Scene's vertical exaggeration to match the vertical exaggeration of the cross section image. In the example cross section shown, the exaggeration is 20x.
4. Add the shapefile or feature class containing the line of section to the scene. Perform a definition query if necessary so that the layer contains just the one line that corresponds to the image.
5. In the Base Heights tab of the line layer, set the "Layer offset" equal to the bottom elevation of the image, 300 feet in this example. If you are using ArcGIS 10, the base heights may not work properly. In that case you need make the line into a true 3D feature by adding a Z value of 300: in ArcCatalog create a new line shapefile that will contain Z values. Copy the line into the new shapefile. Run the tool under Data Management Tools > Features > Adjust 3D Z.
6. Open the layer's properties dialog. In the Symbology tab, click "edit symbol" to show the Symbol Property Editor. Change the Type from Simple Line Symbol to

width = 6000



9. Save the layer as a Layer File (.lyr). You must do this because ArcScene will not remember how to scale the cross section the next time you open the .sxd. The workaround is to add the saved layer file to the Scene, making sure that the scene projection units and exaggeration match the cross section. You can streamline this process by creating one layer that contains multiple symbolized cross sections.
10. It may be desirable to keep the scene units in meters, e.g., if the other map layers are in a UTM projection. In that case it is necessary to apply a conversion factor of 3.281 feet/1 meter to the scene vertical exaggeration and the symbol width.
 - a. Keep the scene's coordinate system as UTM/meters
 - b. Set the scene's vertical exaggeration: cross section vertical exaggeration divided by 3.281. In the example above, the calculation for the scene V.E. would be $20/3.281 = 6.1$.
 - c. the calculation for symbol width would be $300/3.281 * 20 = 1829$