# Use Active/Marked Elements for Measurement, Sketch, and Profile Generation

You can easily create a region from one or more geometric elements (polygons, lines, points, or nodes) that you have marked in the View and use this region to view measurements, add the region to a sketch, and create profiles and cross-sections.

The Region tabbed panel in the GeoToolbox window provides a tree-control that lists all groups and layers currently being displayed. The list entry for a group can be expanded to show its contained layers by left-clicking on the ⊞ control to the left of the group entry (see illustration to the right). A geometric layer (vector, shape, or CAD) that has elements marked in the View also has a tree control in the list; expanding the layer's entry provides listings for the Active Element (the last one marked) and for all Marked Elements. The exact wording of these entries de-
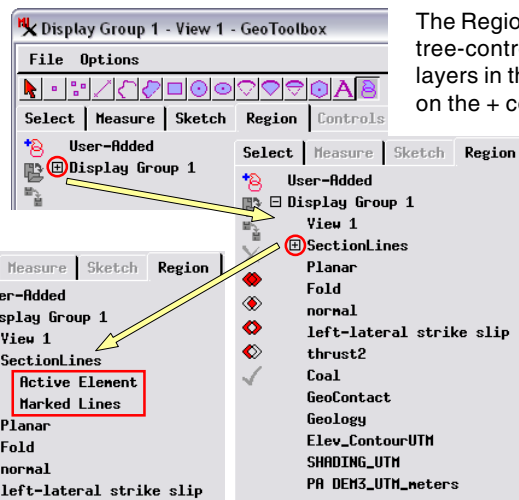
The Region tabbed panel provides a tree-control list of all groups and layers in the current display. Clicking on the + control for a group expands the list to show all of the layers in the group. If any elements in a geometric layer have been marked in the view, that layer's entry in the list also has a tree control that you can expand to show entries for active and marked elements, which you can select to create a corresponding region.
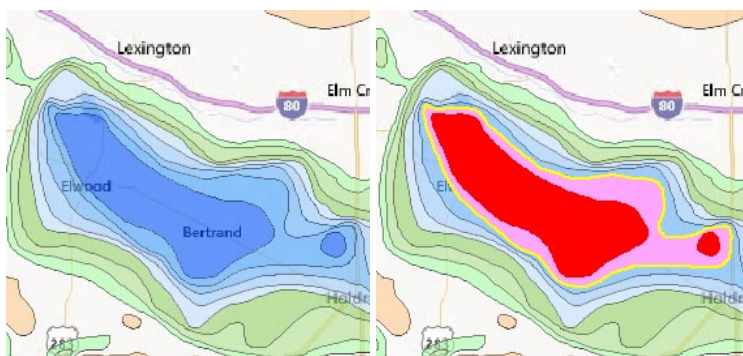
Part of a vector map with polygons outlining areas of differing historic change in groundwater level.

Above left, three polygons have been marked in the View (red and pink colors), and the Marked Polygons entry for this layer has been selected on the Region tabbed panel in the GeoToolbox (middle illustration) to create a region (yellow outline). The illustration above right shows the Measurement tabbed panel with measurements for this temporary region, including perimeter and area.
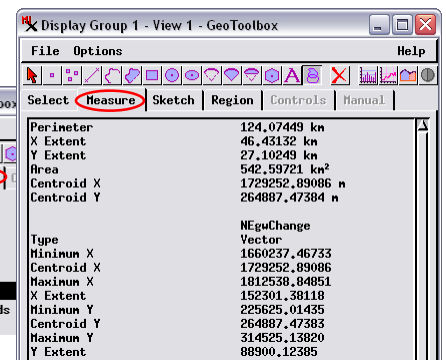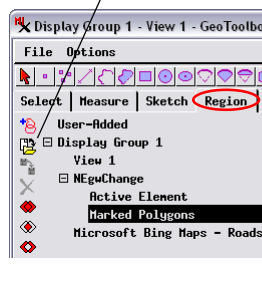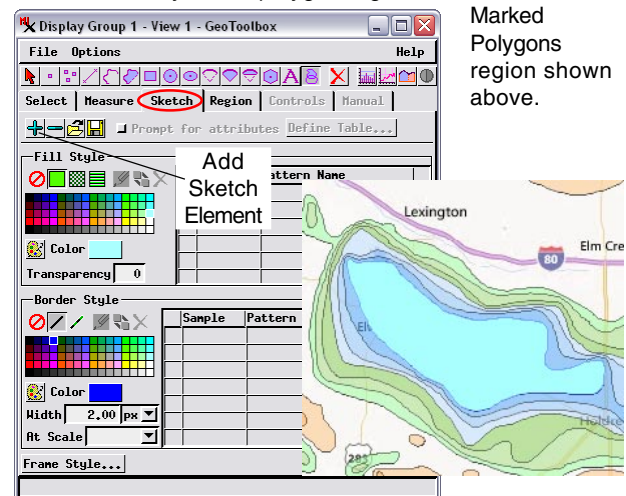
pends on which type of geometric object is displayed and which type(s) of elements are marked. Selecting one of these entries creates a region from the specified element or elements. The region is shown in the View using the color and line width currently set for the primary graphic tool.

You can also select any of the group or layer entries in the Region list to create a region from the extents of that group or layer (see the Technical Guide entitled *GeoToolbox: Regions from Group, Layer, and View Extents*). You can also create new regions from combinations of those in the list (see the TechGuide entitled *GeoToolbox: Combining Regions*). You can save any region selected in the Region list as a region object in a Project File by pressing the Save Region icon button on the left side of the panel (see illustrations above).

Add Region to Sketch

You can also add any selected region to a sketch layer by opening the Sketch tabbed panel in the GeoToolbox, setting the desired style parameters, and pressing the Add Sketch Element icon button (see illustration to the right). If you have selected only a single element type, the Sketch panel shows style controls appropriate to that element type. If the region has a mix of element

A region created from active/marked polygons, lines, and/or points can also be added to a sketch layer. On the Sketch tabbed panel, set the desired style parameters, and press the Add Sketch Element icon button. Shown below is the sketch layer with polygon region created from the Marked Polygons region shown above.

(over)
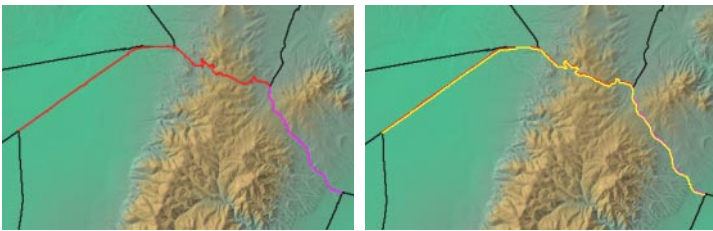
Shapefile with 5 contiguous lines marked in view (above left) and with region (yellow, above middle) created from the lines by choosing the Marked Elements entry for this layer on the Region tabbed panel in the GeoToolbox (above right). The illustration top right shows the Measurement tabbed panel listing linear measurements for this region. The illustration to the right shows a Profile View plot of elevations along the line region. These elevations were derived from the NED 10m USA web terrain tileset (hosted at microimages.com) added to this group as a terrain layer and displayed in color shaded relief in the illustrations above.

types, the Sketch panel shows style controls for only one element type, prioritized in the order polygons > lines > points. When a region with a mix of element types is added to a sketch, up to three sketch elements are created, one for each element type in the region.

Measurements

You can view measurements from the selected region by opening the Measure tabbed panel (see illustrations above and on the previous page). Measurements for all element types include X and Y Extent, X and Y coordinates of the centroid, and minimum and maximum X and Y coordinates of the region extents. Regions from active/marked polygons also show perimeter and area measurements, while those from active/marked lines show the aggregate length.

Profiles

You can use a region from active/marked lines to create a raster/terrain profile by pressing the Open Profile View icon button on the GeoToolbox window (see illustrations above). If the group includes a single raster or terrain layer, that layer is automatically used to construct the profile. If there are multiple useable layers in the group or no useable layers in the group, you are prompted to select the layer or object to use (see the TechGuide entitled *GeoToolbox: View Raster and Web Terrain Profiles* for details). If the marked lines used to create the region are connected to form a single continuous feature, the profile is constructed for the full length of the line region. If the marked lines are not connected, or more than two lines connect at the same point, the profile is constructed for the line element with the lowest element number along with any lines connected in simple fashion to it.

Cross-Sections

You can also create a prototype cross-section from a polygonal vector map (such as a geologic map) and a terrain layer using a region from active/marked lines to designate the section line (see illustrations to the right). The group that includes the layer with the active/ marked lines must also include a polygonal vector layer and a terrain layer. A topographic profile is constructed from the terrain layer and prototype vertical section boundaries are automatically generated at the points of intersection between the section line and the polygon boundaries in the polygonal vector layer (see the Quick Guide entitled *Cross Sections with Styles*). The resulting cross-section vector can be manually edited to produce the desired configuration of subsurface contact lines and structures.
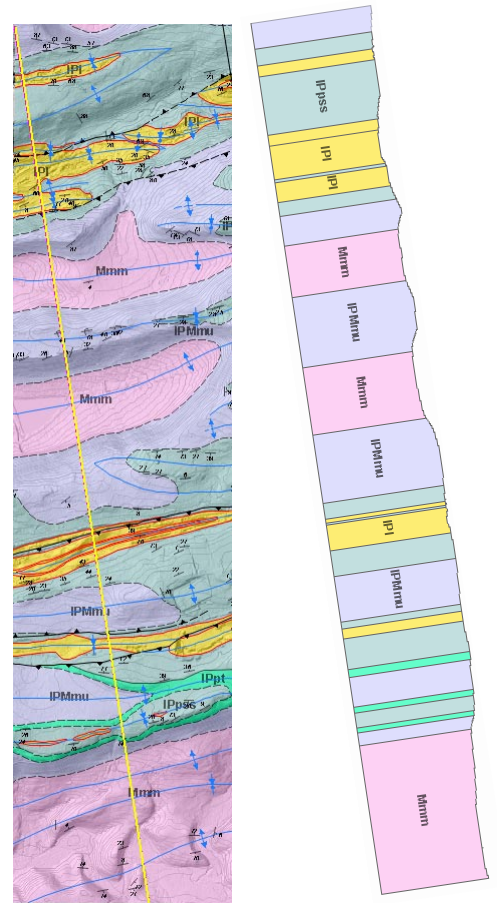
You can generate a prototype cross-section from a polygonal vector map and a terrain layer along a line specified by an active/marked line region. In the illustrations above, a group with a number of geologic map layers includes a vector layer with designated cross-section lines, one of which has been marked in the View (middle illustration) and converted to a line region by selecting Active Element on the Region panel in the GeoToolbox (left illustration). Pressing the Generate Cross Section icon button in the GeoToolbox created a prototype vector cross-section (right illustration) with topographic profile derived from the terrain layer in the group, polygon boundaries generated automatically from the section line intersections with polygon boundaries in the Geology vector layer, and polygon styles set from that layer. The polygon boundaries in this prototype cross-section vector can be edited to the proper geometry to create the desired interpretation of the subsurface geologic structure.