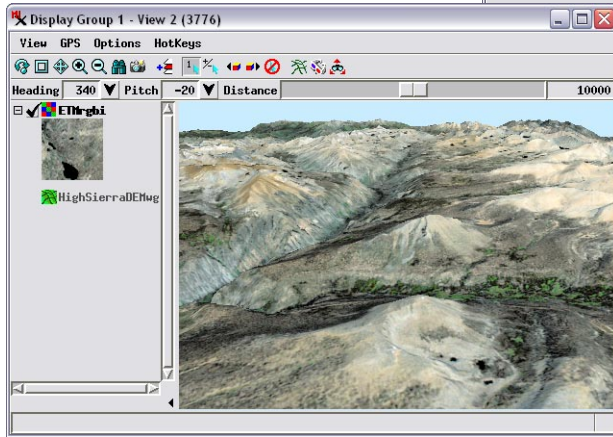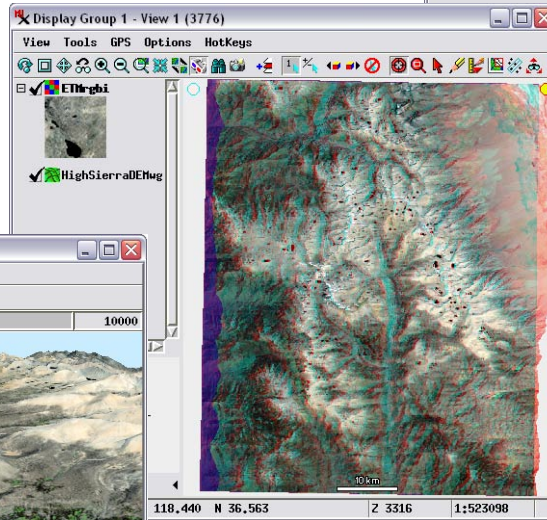# Using Terrain Surface Layers

Raster objects and web terrain tilesets with elevation or other continuously-varying numerical values can be added to geospatial views in the TNT products as *terrain surface layers*. Surface layers are used primarily to visualize other draped images in stereoscopic or 3D perspective renderings. Terrain surface layers can also be viewed directly as independent layers, including in stereoscopic renderings. Examples of renderings using terrain layers are illustrated to the right and below.
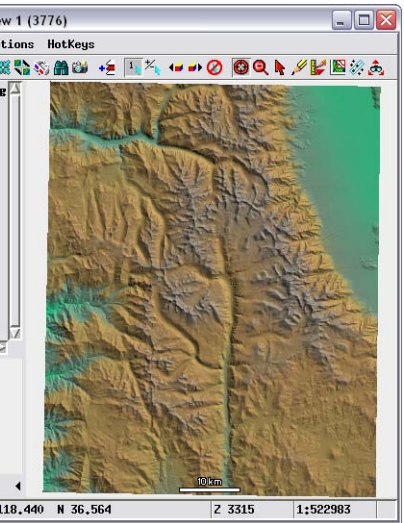
Terrain surface layer displayed using a combination of color-coded elevation and relief shading.

Anaglyph stereoscopic rendering of image drape using a terrain layer.

3D persective view with image drape over a terrain layer.

See the Tutorial entitled *3D Perspective Visualization* for instructions on how to use terrain surface layers to create 3D perspective views.
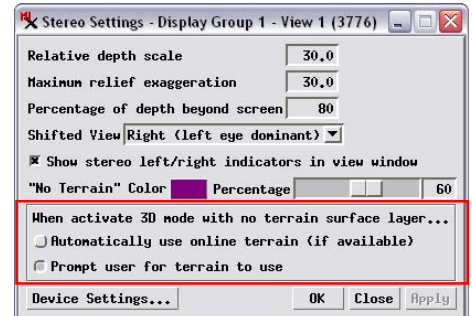
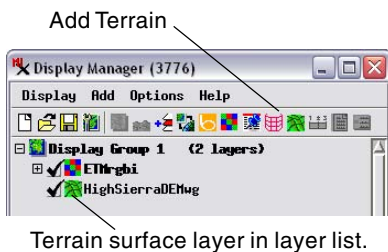Add Terrain

Terrain surface layer in layer list.

Stereo icon button on View

The Stereo Settings window allows you to choose the behavior when stereo mode is activated with no terrain surface layer.
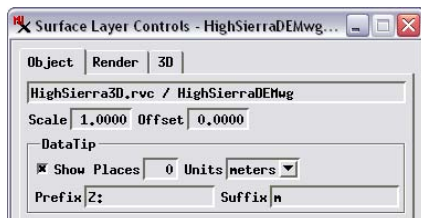
Use the Add Terrain icon button on the Display Manager to add a raster object or web terrain tileset to a view. A web terrain tileset (see the Technical Guide entitled *Tilesets: Web Terrain Structures*) can only be used as a terrain surface, so you can also use the Add icon button and Add Web Layer icon buttons to select web terrain tilesets from local and web sources (respectively) to use as surface layers.

You do not need to add a terrain surface layer to a view prior to activating stereo rendering using the Stereo icon button on the view. In this situation you will either be prompted for the terrain to use, or an online web terrain tileset hosted at microimages.com that covers the view area with the highest detail will be automatically selected if available. You can choose which of these behaviors to implement using controls on the Stereo Settings window (Options / Stereo Settings from the View window) as illustrated above (see the TechGuide entitled *Stereo Viewing: Display Settings*).

You can set vertical Scale and Offset values for stereoscopic and perspective renderings on the Object tabbed panel in the Surface Layer Controls window.

The Surface Layer Controls window (opened by clicking on the icon for the layer in the layer controls) provides controls on the Object tabbed panel that allow you to set vertical scale and offset factors to apply to the elevation values when creating stereoscopic and perspective renderings (see illustration to the left). This panel also provides DataTip settings for the layer. The Units menu selection and the DataTip suffix text are set automatically for a web terrain tileset. These values are also set automatically for a raster object that has the Value Type and Units set in the raster's Object Information (see the QuickGuide entitled *Terrain Layer Value Type and Units*). The Render panel on the Surface Layer Controls window allows you to set the rendering options for viewing the terrain surface as an independent layer (see the TechGuide entitled *Terrain Layer: Visualizing Terrain Layers.*