

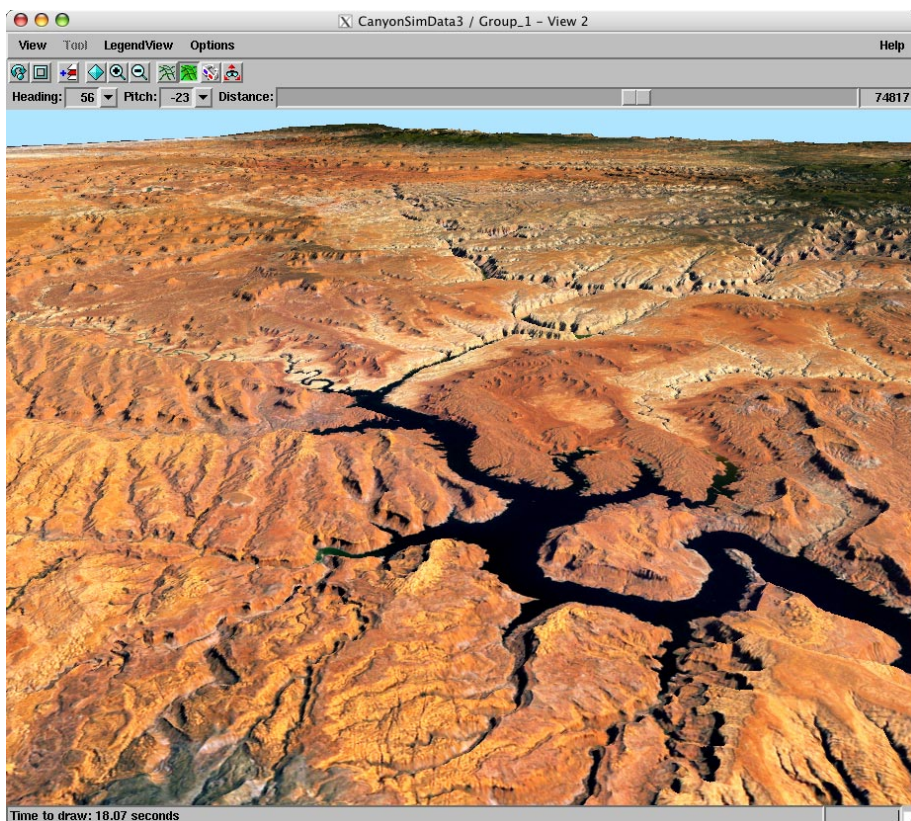
Faster Display with Stored Terrain Properties

TNTmips 3D perspective views model the terrain surface as a variable triangular mesh of elevation values sampled from the terrain raster. The level of detail of this triangulation (triangle size and accuracy) varies from place to place in the scene to provide the best detail and accuracy in the foreground and in areas of high local relief. These accuracy requirements are scene-dependent, so this triangulation is rebuilt from the surface raster each time the 3D viewpoint changes.

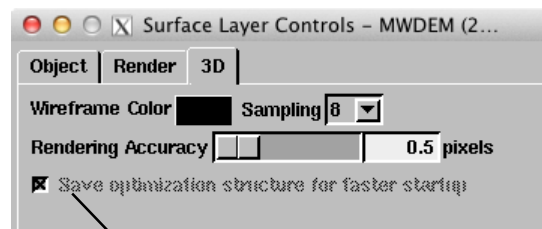
Computation of this variable triangulation requires not only the elevation values, but also several additional computed properties of each terrain raster cell. Since these terrain properties, such as a measure of local relief, are independent of the viewpoint, they can be computed once for the terrain raster, then used for each new viewpoint to quickly rebuild the variable triangulation on-the-fly.

If an elevation raster does not have stored surface properties, the Display process automatically computes them the first time the 3D view is rendered using the elevation raster as a terrain layer. The time required for this initial computation is directly related to the size of the raster and can be several minutes for larger rasters. Subsequent retriangulations and redraws in the viewing session are then fast. The Surface Layer Controls window provides the option to save these computed terrain properties with the raster object. Saving the terrain properties increases the stored size of the terrain raster by a factor of 2 to 10 times (depending on the raster size and data type), but in subsequent 3D viewing sessions the terrain properties are read automatically from the stored structure, so the first display of the 3D scene is 10 to 20 times faster.

If you elect to turn off this default option, the terrain properties are stored and used only for the duration of the current 3D viewing session and must be recomputed each time the terrain raster is used in a 3D view.



Computing terrain properties for a large terrain raster, such as the 4891-line by 4695-column elevation raster used in this scene of Canyonlands National Park, Utah, USA, can require several minutes. Saving the terrain properties with the terrain raster insures fast startup during subsequent viewing sessions.



Leave the *Save optimization structure* toggle button on to ensure that terrain properties are saved with the surface raster for all subsequent viewing sessions.

NOTE: The Import operation for some raster file formats offers the option to compute and store 3D Surface Properties during the import.

