Convert Raster Data Type

The Convert Raster Data Type process (Image / Convert Raster / Data Type) allows you to change the data type and/or rescale one or more continuous-value (grayscale) raster objects. This type of task can also be performed in the Raster Arithmetic and Indices (Scale / Offset operation) and Raster Extract processes, but the Convert Raster Data Type process provides a set of simple controls dedicated specifically to data type conversion and rescaling.

Rasters List

The upper part of the Convert Raster Data Type window is a columnar list of the rasters selected for processing. Press the Select pushbutton under the list to choose one or more raster objects to process. You can choose any grayscale (non-composite) raster object in a Project File or any raster file format supported for direct use in TNTgis, including TIFF/GeoTIFF, JP2/GeoJP2, Arc Grid, JPEG, PNG, MrSID, and others. All input rasters must have the same data type, and all are processed using the same settings. You can remove any raster from the list by left-clicking on its listing to highlight it and pressing the Remove pushbutton. Press [Remove All] to clear the list.
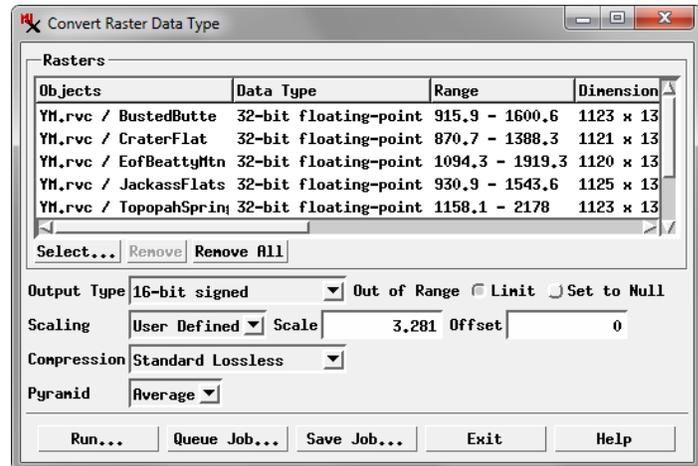
The columns in the Rasters list show the object names, data type, range of values, dimensions, cell size, geographic extents, and coordinate reference system for each input raster. A Scale value is also listed if the input raster has a Value Scale factor other than 1.0 set in its object information. Likewise, an Offset value is listed for any input raster with a nonzero Value Offset set, and the Unit is listed if the raster has a Value Type and Unit set.

The value range is read from the raster histogram. If the histogram is sampled, the range values are followed by a question mark (?) to indicate that some raster values may be outside the range shown. If the histogram is outdated (parent raster has been modified since the histogram was computed), the range is followed by an asterisk (*). If the raster does not have a histogram, the Range column shows "unknown". To update and compute full histograms if needed, remove the rasters from the list, use the Compute Full Histograms process (Image / Utilities / Compute Full Histograms), then reselect the rasters in the Convert Raster Data Type process.
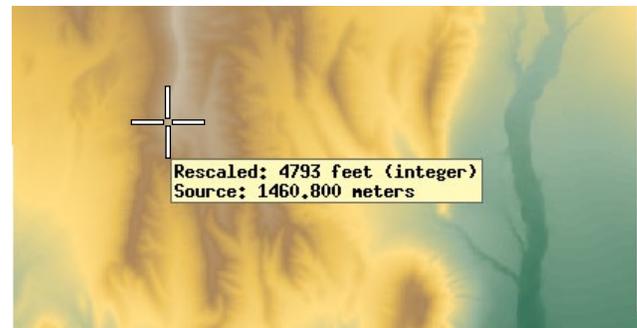
Output Type and Out of Range Controls

Use the Output Type menu to select the data type for the output rasters. The choices include 8-bit, 16-bit, or 32-bit signed or unsigned integer, and 32-bit or 64 bit floating-point.

Depending on the source and output data type and the scale and offset settings, some source values may translate to values outside the selected output data range. The Out of Range controls determine how such values are handled. The options are Limit, which resets any out-of-range value to the limiting value of the valid range, and Set to Null.

Convert Raster Data Type window. The input elevation rasters have floating-point values in meters; these values are being rescaled to integer feet in the 16-bit signed data type using a User Defined scale factor. The illustration below shows a display of the source and result for one of the elevation rasters with a DataTip showing the source and output values for one raster cell location.

Scaling

The Scaling menu provides three options for scaling the source values to the selected output data range. The Automatic option rescales the source values automatically to fill the output data range and ensure that all values fit within it. The From Source option is available when all input rasters have scale factors other than 1.0 set in their object information; source values are rescaled using each raster's scale factor. Choosing the User Defined option activates the Scale and Offset numeric fields to allow manual entry of values to control the rescaling.

Compression and Pyramid Settings

Use the Compression menu to set a compression type for the output rasters (or Uncompressed). The compression options are Standard Lossless, Huffman (lossless), JPEG2000 Lossless, JPEG2000 Best Quality, and JPEG2000 User Defined. When you choose the latter option, a Ratio numeric field is provided so you can set a target compression ratio. Use the Pyramid menu to set the method for computing pyramid tiers for raster display; the choices are Average, Sample, and None.