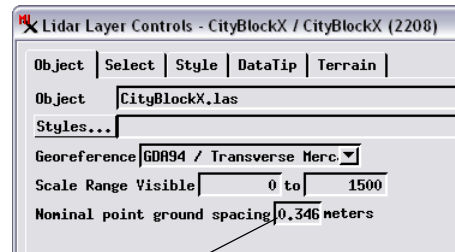# LAS Point Cloud Display Options

LIDAR point cloud files in the standard LAS file format can be used and displayed directly in TNTmips Pro, Basic, and Free. LAS files record not only the point elevations, but also a variety of acquistion parameters for each point. Attributes such as the number of returns from the light pulse, the individual return number, return intensity, and scan angle can be used along with point elevations to analyze the point cloud and aid in classifying or reclassifying groups of LIDAR points.

LAS files are presented as a distinct LIDAR layer type in the TNTmips Display process and are provided with a specialized Lidar Layer Controls window. This window provides tabbed panels with controls that allow you to easily use the various LIDAR point attributes to choose which points to show in the view, to choose the style used to render the points, or to display a virtual terrain surface constructed from the points.
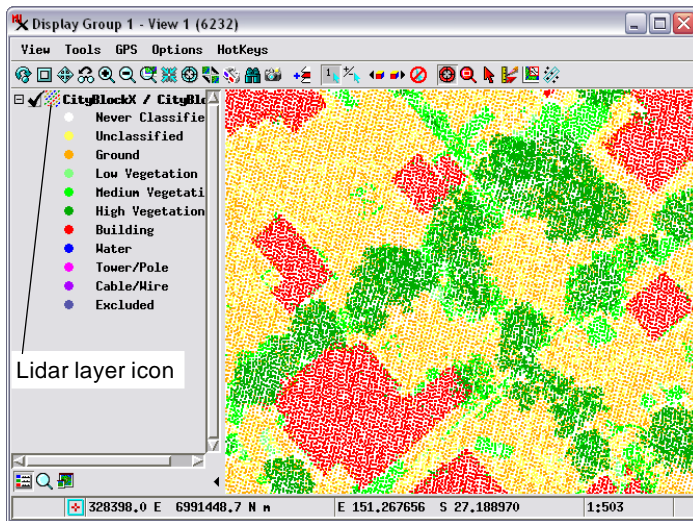
The Select, Style, and Terrain tabbed panels on the LIDAR Layer Controls window provide a variety of display options for LIDAR point clouds in LAS files.
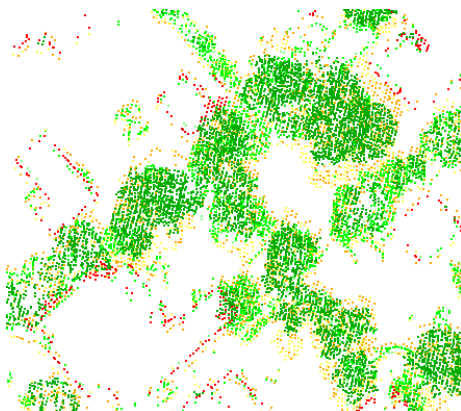
The average ground spacing of LIDAR points is computed the first time you select the LAS file for use in TNTmips. This value is shown on the Object tabbed panel.

You can select points to be shown by LIDAR point class, return type, range of return intensity, range of scan angle, or any combination of these attributes. Point selection controls on the Select tabbed panel are described and illustrated in the Technical Guide entitled *LIDAR: Select Points by Class, Return Type, Intensity*.

Special style options for LIDAR points are found on the Style tabbed panel. You can assign point colors based on LIDAR point class, by return type or return number, by intensity of the return pulse, or by elevation. Point symbol size can also be varied automatically by return intensity. The controls for assigning these specialized LIDAR point styles are described and illustrated in the TechGuide entitled *LIDAR: Style Points by Class, Elevation, Intensity*.

You can also choose to display a virtual terrain surface constructed on-the-fly using your choice of the LIDAR points (selected by class and return type). You can view this surface colored by elevation, in grayscaled shaded-relief, or in a combination of shading and elevation color. Optional smoothing is available for the shading options to reduce noise. Terrain visualization options for LIDAR point clouds are discussed in the TechGuide entitled *LIDAR: Virtual Terrain Visualization for LAS Point Clouds*.


All Points Shown, Styled by Class

Display of an LAS file with classified LIDAR points for an urban area. All points for this area are selected to be shown, with point colors set by LIDAR point class as indicated by the legend.

A Small Sampling of Other Available Display Options for the Point Cloud in the View Above:

Multiple-Return Points Only, Styled by Class
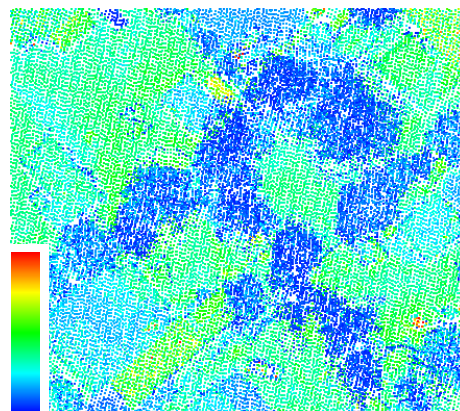
All Points Shown, Styled by Intensity
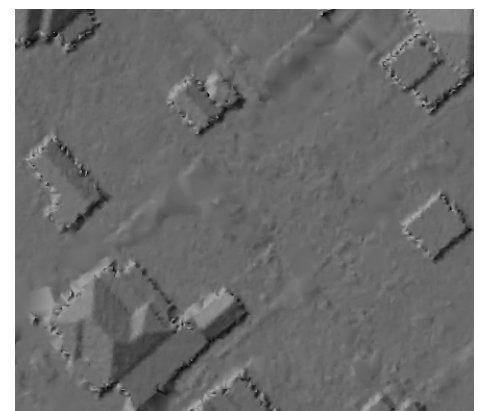
Smoothed Relief Shading from Ground and Building Points