# Auto-Linking to LAS Point Clouds

You can view and use LIDAR point clouds in the standard LAS file format directly in TNTmips Pro. The first time you select an LAS file for viewing or other use, a number of auto-link procedures are carried out to prepare the file for efficient use. Because LAS files may contain tens of millions of points, the points must be scanned to build a search tree that allows fast access to the points and their attributes. This scan takes only a few seconds. A boundary region is also created automatically for LAS files containing LIDAR swath data. You can also choose or create the point classes that

will be available for use with the point cloud and specify a coordinate reference system if if it is not specified in the LAS file. The Auto-Link Issues to Resolve window for LAS files that controls these procedures is illustrated above.
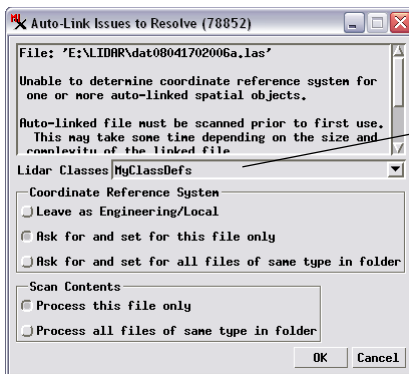
The Auto-Link Issues to Resolve window lets you set the guidelines for linking to one or more LAS files.
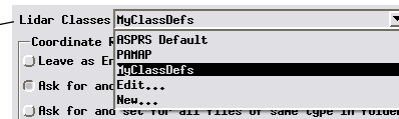
The Lidar Classes menu lets you choose the point classes that will be available for use with the LAS file(s) being linked. You can choose the default ASPRS class set, a custom set you have previously defined, or create a new class set. If the menu defaults to one of your custom class sets, you also have the option to edit that set.

Choosing or Setting Up LIDAR Point Classes

The LAS file format specifies a range of standard point class numbers and names, some of which have been assigned specific usages (such as Ground, Building, High Vegetation, and Water, among others). However, many point classes in the LAS standard set have not been assigned to particular materials, and including them all in point legends and class selection controls would be confusing. In addition, you may wish to define your own custom use for one or more of the unassigned LAS classes. Therefore in the auto-link procedure you can specify a specific set of point classes to use with the LAS file(s) being linked and define your own class usages. The Lidar Classes menu lets you choose the standard LAS point set (ASPRS Default), choose a custom class set you have created previously, or create a new class set. Choosing New from this menu opens the Setup Lidar Classes window illustrated to the right, which allows you to specify which individual classes to use, a point color to associate with the class, and to change the Usage field associated with individual classes. The classes you select for the set, along with any additional classes used in the LAS file when first scanned, are the only ones that will be included in tables and point legends when the LAS file is used.

Dialog for selecting classes to include in a new LIDAR point class set.
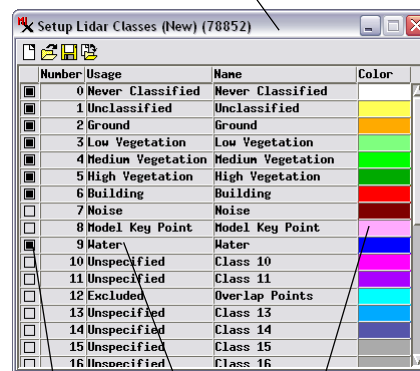

Toggles for choosing classes

Left-click in Usage field to edit.

Left-click on color sample to change the class color.

Coordinate Reference System

If no georeference information is detected in the LAS file, the Auto-Link Issues window includes a Coordinate Reference System panel. A toggle in this panel lets you keep the reference system as Engineering /Local. But if you wish to view the LAS file with other spatial data and have metadata describing its spatial reference system, you can set a toggle to be prompted for the information for the selected file or all LAS files in the same directory. If you choose one of these options, pressing OK on the Auto-Link Issues window launches the standard Coordinate Reference System window, allowing you to specify the spatial reference system to use (see the Technical Guide entitled *Coordinate Reference System Window*).

Zoomed-out view of Object Boundary for a LIDAR swath.
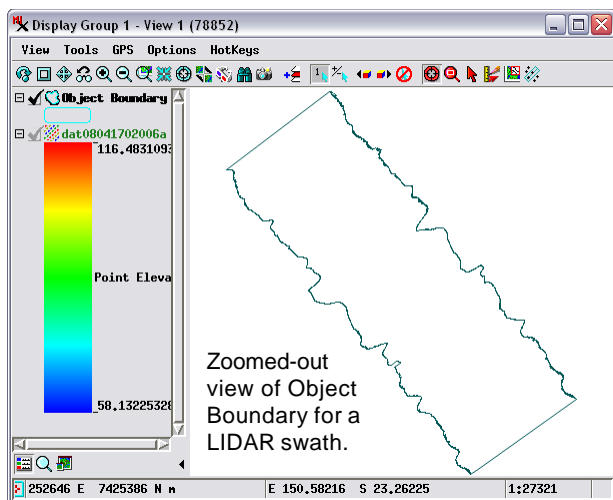
Boundary Region

LAS files containing points from a single LIDAR flight swath include an attribute indicating points on the edge of the cloud. If these edge points are present in the LAS file, the auto-link procedure automatically creates an Object Boundary region connecting these points. This region object is stored in the link file created for the LAS file. By default the TNTmips Display process only displays LAS points when you are zoomed in to small scale values at which points can be separately rendered to the screen. The object boundary region can be displayed along with the LAS file to indicate the edges of the point cloud when you are zoomed out beyond the scale range in which the LIDAR points are drawn, as shown in the View illustration to the left.