# Comparing Automatic Classification Results

As you classify LAS point clouds in one or more steps in the Lidar Classification process in TNTmips, you have the option to save each previous classification along with the reclassified LAS file (see the Technical Guide entitled *LIDAR: Automatically Classify LAS Point Clouds*). When you view a reclassified LAS file in the Display process, you can choose any of these previous classification results (see illustration to the right) to use along with the current classification as the basis for selecting and styling points for display and comparison of the classifications (see illustrations below).
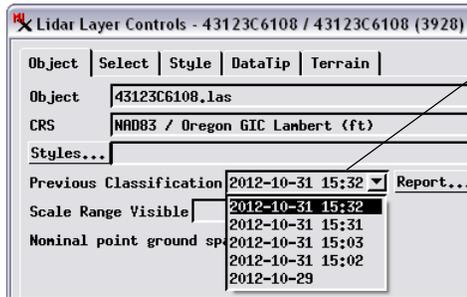
The Previous Classification menu on the Object tabbed panel of the Lidar Layer Controls window allows you to choose which saved previous classification to use for selecting and styling points. Each classification is identified on the menu by its date and time.
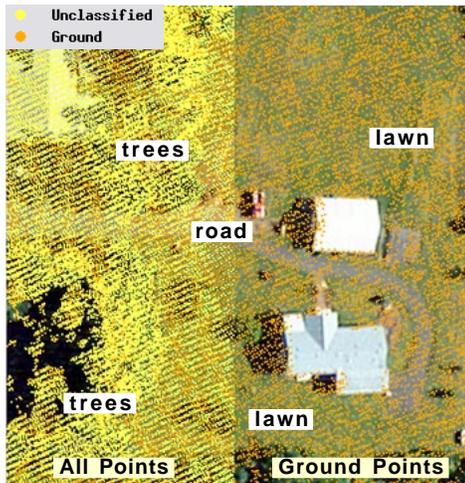
Previous Classification

Ground Points, Current Classification
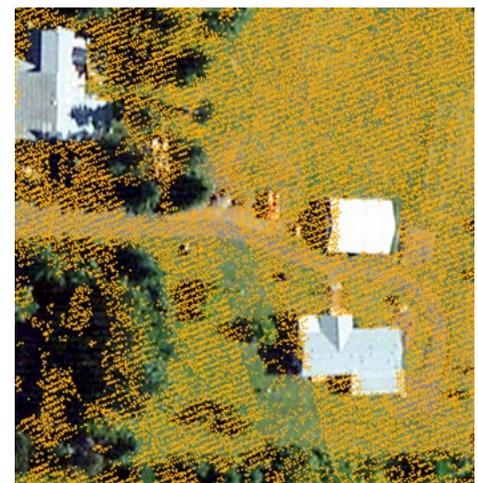
Changed Points, Current Classification

Portion of a single LAS file (displayed over Bing Maps imagery) with LIDAR points selected and styled to compare the current classification with a saved previous classification. Above left, points are styled using the saved previous classification, which included unclassified (yellow) and ground (orange) points. All points (both classes) are shown on the left half of the illustration, whereas only ground points are selected to display on the right half. Above center, ground points are selected and styled using the current classification, which is the result from the TNTmips Lidar Classification process using the Terrain Following ground classifier limited to processing only unclassified points in the input. Many of these previously unclassified points in open areas (lawn and road) were reclassified as ground in this operation. The illustration above right displays only the points whose class assignment changed (unclassified to ground) between the previous and current classification; these points are styled using the current classification and are thus shown as ground points.

You can use controls on the Select and Style tabbed panels on the Lidar Layer Controls window (see illustrations to the right) to select points for display by their current or previous class assignments and/or to color the points by their current or previous class assignments (among other options). You can also choose to display only points that have had their class changed (or not changed) by the current classification. You can use these various options to quickly change the LAS point display to assess the results of the different classifications.
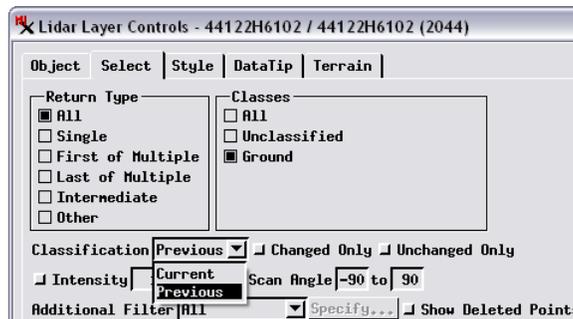
When you choose to display only certain Lidar point classes (using the controls on the Select tabbed panel in the Lidar Layer Controls window), you can use the Classification menu to set whether the current or previous classification is used to select the points. Checkboxes to the left of this menu let you further restrict the selection to only points that have been changed between classifications, or only those left unchanged.
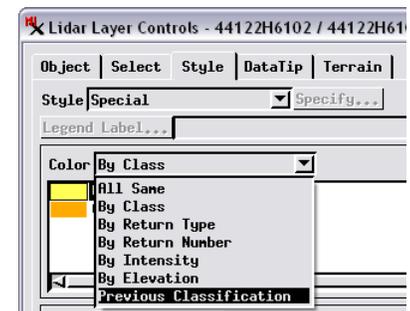
Using the Color menu on the Style tabbed panel, point colors can be set to show the current class assignments (the By Class option) or the class assignments from the previous classification (among other options).

(over)

When you choose classes to use to display a virtual terrain surface (shaded, color elevation, or color-shaded) from the LAS points, you can also use either the current classification or the selected previous classification. The Terrain tabbed panel on the Lidar Layer Controls windows provides a Classification menu in addition to controls for choosing individual classes to use to create the surface visualization (see illustrations to the right).

As you make visual comparisons between current and previous classifications, you can also create and view a report summarizing the class changes using the Report button next to the Previous Classification menu on the Object tabbed panel (see illustration below).

Color Shaded Relief from Ground Class Points Only
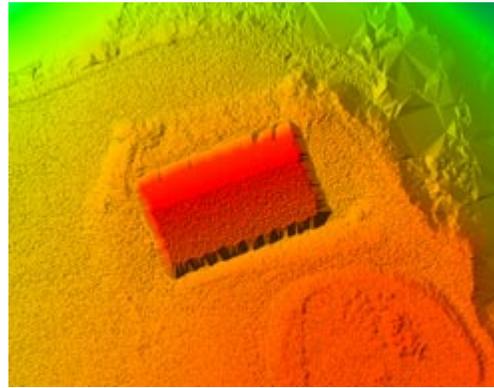
Previous Ground Classification   **Current Ground Classification**
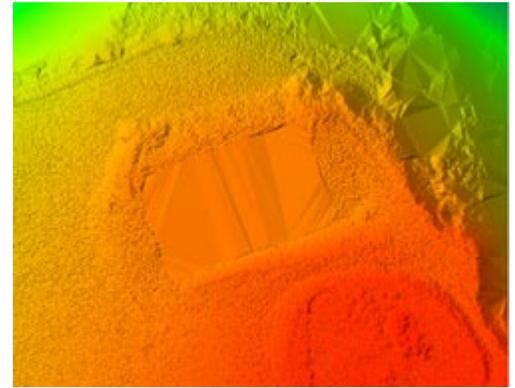
Color shaded-relief virtual surfaces created from ground class points for a portion of a single LAS point cloud that has undergone several ground classification steps. The illustration on the left shows the surface created from ground points from the previous classification, whereas the one on the right shows the surface from the current ground points. In the previous classification, returns from the roof of a large building were misclassified as ground, and therefore the building is included in the virtual surface. The later ground classification with revised settings changed the roof points to unclassified. These roof points are now correctly excluded from the virtual ground surface, which is interpolated across the building footprint at ground level (producing the large triangular facets in the center of the image).
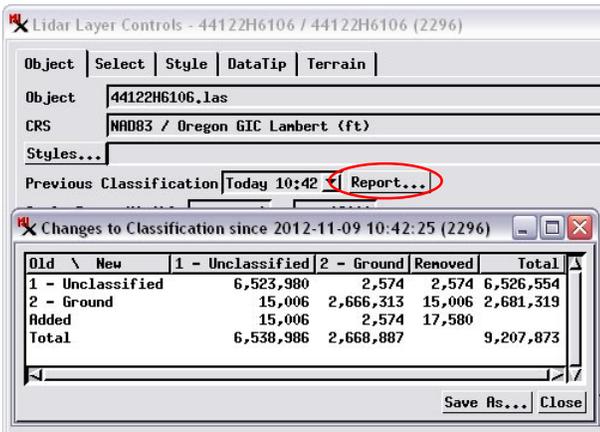
Press the Report button to generate a listing of the class changes between the selected previous classification and the current classification.
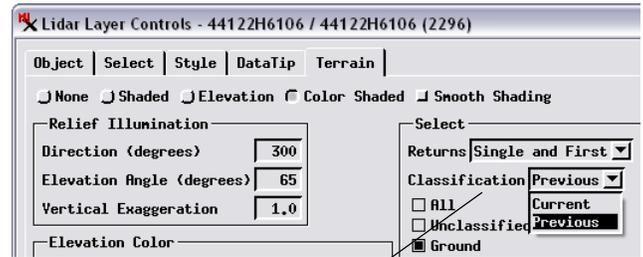
Use the Classification menu on the Terrain tabbed panel to choose which classification to use in conjunction with the class toggles to display a virtual terrain surface.