

Tool Tip: Smoothen Points - XYZ Option

TerraScan for CONNECT, versions 017.001 and above



GeoCue Group Support

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Introduction

Smoothen points is a command that smooths the attributes of points relative to adjacent points. Until recently, the modifiable point attributes were elevation, intensity, or color. The elevation option could be used to iteratively adjust elevation values of points using plane-of-best-fit equations to result in a smoother surface. The intensity option could be used to average the intensity values of points with their neighboring points to help make better looking intensity images. In a similar manner, the color option could be used to average the color values of points with their neighboring points to help make better looking 3D colored point clouds.

Starting with TerraScan version 017.001, a new smoothen XYZ option was added to the Smoothen points command. This XYZ option modifies points so that they better match a 3D surface. This option can be used as an optional step when processing noisy data such as a photogrammetric point cloud or data from low quality laser scanners.

XYZ Option

Point Clouds collected from low quality LIDAR systems or derived via photogrammetric methods (Dense Image Mapping) are known for their very noisy data that make it difficult to accurately represent a surface. Particularly for feature extraction purposes. The new XYZ option allows for the elimination of some of this noise to make the data more useable. It does this by smoothing points on a vertical surface in the XY direction, and points on a horizontal surface in the Z direction. Note that the smoothen process moves the points to the new location and there is no undo option available so it should always be performed on a copy of the data, and should only ever be performed once.

Below is an example of the XYZ method in practice showing a road surface more accurately represented by the point cloud (Figure 1).

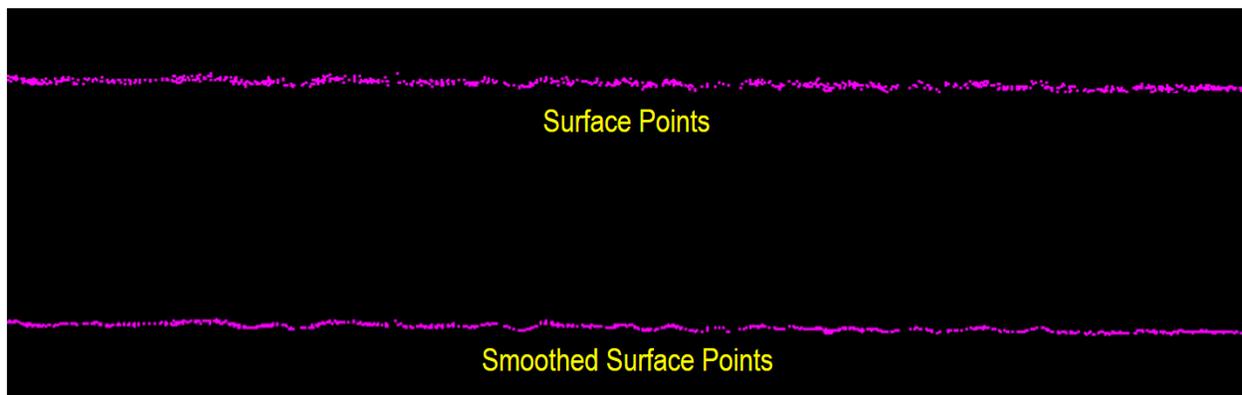


Figure 1: Smoothen XYZ in practice

To smoothen points using the XYZ option:

1. Select **Smoothen points** command the Tools pulldown menu.

This opens the Smoothen points dialog (Figure 2):

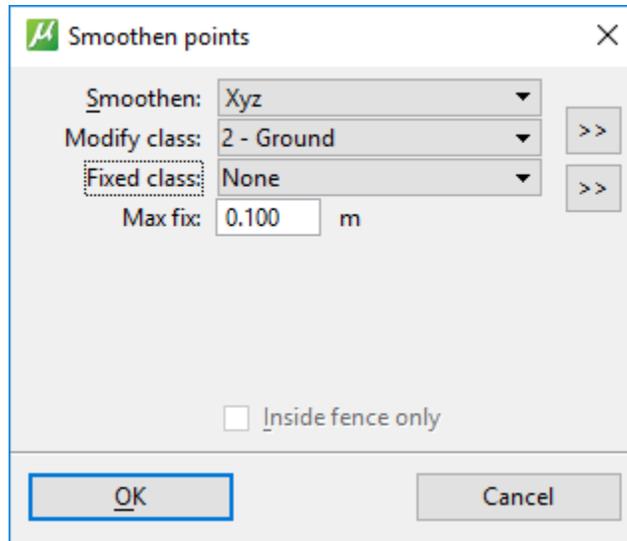


Figure 2: Smoothen points dialog

2. Select the XYZ option in the Smoothen dropdown menu.
3. Designate the class(es) of points to be smoothed in the Modify class dropdown menu.
4. Optionally, designate the class(es) to be used in the smoothing process calculations, but not to be modified in the Fixed class dropdown menu.
5. Set the Max fit value. This value is the maximum 3D distance that any point can be moved.
6. Click OK to start the smoothing process.