

Automatically Smooth Traced Lines



Lines and polygons that you draw on-screen in the Spatial Editor's continuous drawing mode typically include various types of digitizing artifacts. Screen cursor positions cannot be resolved more finely than the spacing between screen pixels, so continuous diagonal lines are digitized with stair-step artifacts. Imprecise hand movements can produce spurs and closed loops in the line. When you use a stylus with a tablet display or graphics tablet, extra stylus positions can be digitized at the beginning and end of lines as the stylus approaches or lifts from the surface.

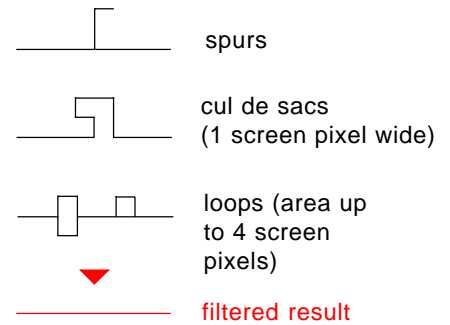
The Editor's Draw mode automatically removes digitizing artifacts from the active line segment each time you lift the stylus (or lift up on the left mouse button if you are using a mouse). Spurs, cul de sacs ("wide spurs" that are no more than one screen pixel in width), and closed loops up to four screen pixels in size are removed automatically in an iterative manner. The start and end of the line are also automatically filtered to remove extraneous vertices. The filtered line is then smoothed to remove stair-steps according to the setting on the Smoothing slider. A slider value of 0 results in no smoothing; values 1 through 4 provide increasing smoothing. (Smoothing increments do not represent variations in a single smoothing parameter; different filter logic is used for each smoothing level). No line vertex is moved more than one screen pixel distance at any smoothing level. The pre-smoothing version of the active line is kept in memory so that you can change the Smoothing slider to judge the effects at each smoothing level before resuming drawing. You can thus vary the smoothing setting as you draw different parts of a single line, or set and keep a consistent smoothing setting. Artifact removal and smoothing are available in Draw mode when you add or edit lines or polygons.



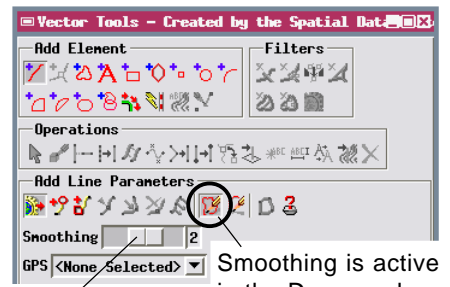
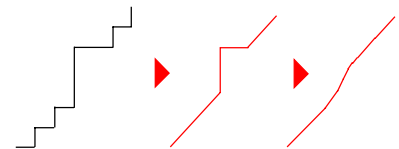
The red line in the illustration to the left was traced over a color orthoimage in the Spatial Editor using a small graphics tablet and stylus. Below are special magnified views that show the original drawn line with digitizing artifacts (black) overlain by the line produced by automatic artifact removal and smoothing (red) for different levels of smoothing (shown by the Smoothing slider illustration in the upper left corner of each). The large gray circles show details of the smoothed result for three segments of the line with different types of digitizing artifacts.

Line Smoothing Provides:

- 1) automatic iterative removal of the digitizing artifacts shown below prior to smoothing (at all smoothing levels):



- 2) progressive smoothing of stair-steps:



Smoothing is active in the Draw mode when you add or edit lines and polygons.

