

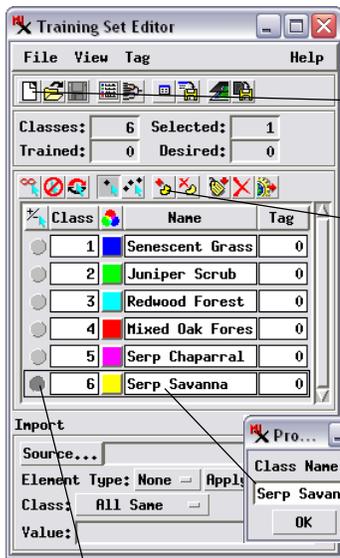
Create Classification Training Data

Supervised classification methods use samples of known features in the scene to “train” the classifier. The Training Set Editor in the Automatic Classification process provides several ways to prepare a training set raster. You can use the editor to create a new training set raster or open and edit a raster created in another process such as Feature Mapping. You can build training data manually by drawing over one or more reference images, such as a scanned ground truth map or an aerial or satellite image. If you already have vector objects containing training data as points or polygons, you can open these objects in the editor and automatically transfer the data to the training set raster. As you build up the training set raster, you can view training area statistics and a dendrogram at any time.

To create training data manually with the editor, simply set up a list of classes in the Training Set Editor window, select each class in turn, and draw one or more training area polygons for each in the Training Set View window. The training set raster is displayed transparently over your reference image or scanned map.

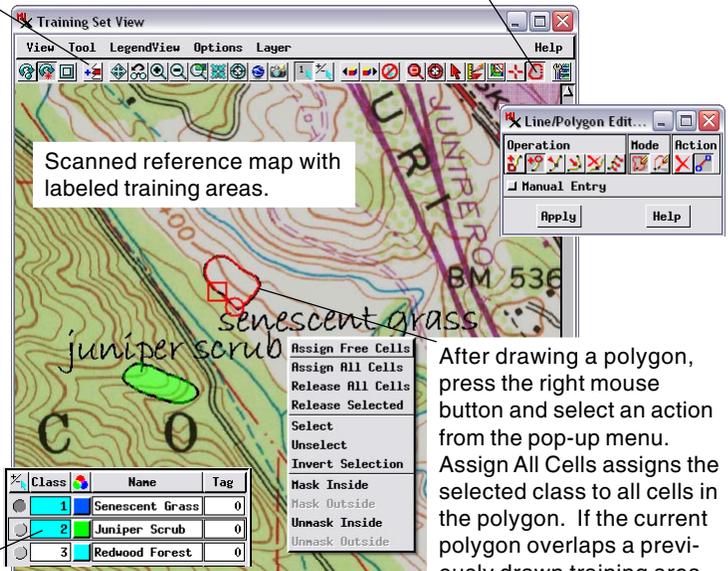
Use the controls on the Import panel to access training data in vector polygon or point form and add it to the training set raster. Classes can be read automatically from a field in an attached database table. For vector point data, you specify the radius of a circular training area centered on each point. You can enter a single radius value for all points, or assign a unique value for each point from a field in an attached database table.

Draw Training Areas



- 1 Press the Add Layer icon button on the View to select a reference map or image.
- 2 Press the New Training Set icon button to create a blank training set raster.
- 3 To set up a list of classes manually, use the Add Class icon button to add classes to the list. A color is automatically assigned to each new class, and the default class name is the raster value. Clicking on the name field opens a prompt window that allows you to rename the class.

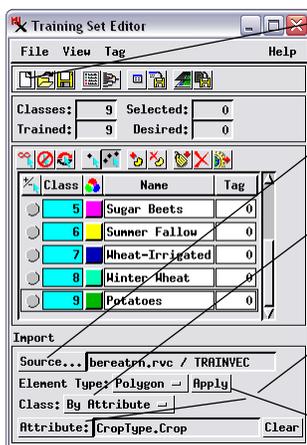
- 4 Turn on the Select Area icon button on the Training Set Editor View to use the standard Line/Polygon Edit tool to draw training area polygons over a reference image.



When you create a training set raster by drawing polygons, click a toggle button to select a class to associate with each newly-drawn polygon. The class number field is shown in color for classes that have at least one training area assigned.

After drawing a polygon, press the right mouse button and select an action from the pop-up menu. Assign All Cells assigns the selected class to all cells in the polygon. If the current polygon overlaps a previously drawn training area, Assign Free Cells assigns the current class to all cells that do not yet have a class assignment.

Import Training Areas from Vector Polygons



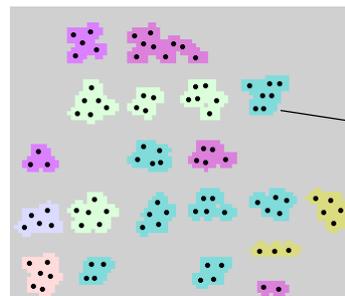
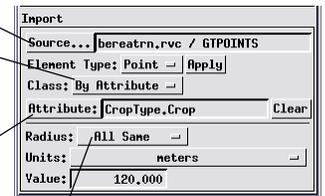
- 1 Press the New Training Set icon button to create a blank training set raster.
- 2 Press the Source button to select the vector object with polygons.
- 3 If the vector polygons have a database field with the class names, choose By Attribute from the Class menu.
- 4 Press the Attribute button to specify the database table and field containing the class names.
- 5 Press the Apply button.

Import Training Areas from Vector Points

Press the Source button to select the vector object with polygons.

If the vector points have a database field with the class names, choose By Attribute from the Class menu.

Press the Attribute button to specify the database table and field containing the class names.



Training areas are created for points by specifying a radius value. To use the same radius for all class points, choose All Same from the Radius menu and enter a value. Alternatively, choose By Attribute from the Radius menu and press the Attribute button to select a field containing the class-specific radius values to use. (over)

The training areas and class list are generated from the vector polygons and associated attributes. Class colors are assigned automatically (not read from the vector polygon styles).

Class Renumbering, Merging, and Color Assignment

The Training Set Editor allows you to assign a specific raster value to each class in the training set raster to match a desired class numbering system. You can also assign more than one input class to the same output class value, yielding merged classes. These functions can also be applied to a class raster produced by one of the unsupervised classification methods. Simply open the class raster in the Training Set Editor.

Clear Selected Classes from Tag

Combine Selected Classes to Tag

Apply Tag

Class renumbering is performed using the Tag field. Click on this field to open a prompt window to enter the desired class number.

The tag field is active only for classes that have assigned training areas.

Tag values are written to the training set raster when you Apply the tags by pressing the Apply Tag icon button or choosing the Apply Tag option from the Tag menu.

To merge classes, select the classes to be merged and press the Combine Selected Classes to Tag icon button. The tag Prompt window opens, allowing you to enter the desired tag number. You can also manually enter duplicate tag numbers for the desired classes. Classes are merged in the training set raster when you Apply the tags

You can change any class color by clicking on the color sample, which opens a standard Color Editor window.

Training Set Statistics and Dendrogram

The Training Set Editor can display updated statistics for the current training classes (calculated on-the-fly from the input raster set), as well as a dendrogram showing the degree of spectral relationship between the current training classes.

Statistics

Dendrogram

Training Set Statistics

Training Class	MNDVI_JUL30	MNDVI_JUN06	MNDVI_JUN24	MNDVI_MAY01	MNDVI_MAY19	MNDVI_OCT10
Alfalfa	196.97	196.20	201.33	199.40	224.30	227.40
Beans	200.82	130.04	131.96	131.91	134.38	134.32
Corn	225.14	132.39	161.43	131.52	132.79	157.16
Grass & Pasture	140.48	152.93	147.63	128.09	140.01	140.17
Sugar Beets	212.42	136.29	169.11	131.11	134.71	210.94
Summer Fallow	122.56	129.97	124.33	128.75	130.14	157.71
Wheat-Irrigated	141.66	218.31	207.38	196.93	218.65	169.40
Winter Wheat	139.23	180.38	161.36	170.60	186.79	147.78
Potatoes	219.99	129.65	126.41	131.80	131.58	137.68

Using the Training Set Editor to Create a Mask

The polygon-drawing tools in the Training Set Editor can also be used to create and edit a binary mask raster that matches the extents and cell size of your input image bands. The mask can be saved and used in the classification process to determine which parts of the input image are included and excluded from processing. More extensive mask editing tools are available in the Mask Editor (Image / Utilities / Edit Mask).

Open Mask

Save Mask

To make a mask, first press the New Training Set icon button to create a blank raster. Use the Select Area tool to outline areas as you would for training areas, but use the Mask options on the pop-up right mouse-button menu to mask or unmask areas. Press Save Mask to save as a binary mask raster.

