

# Hyperspectral Explorer

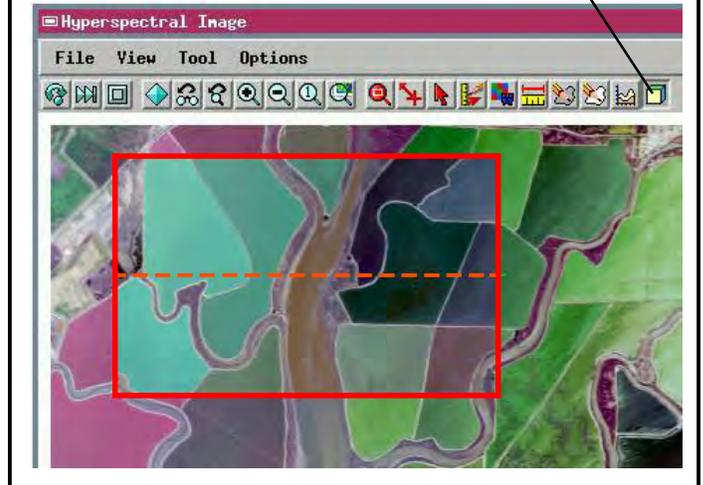
Have you ever tried to find a colorful RGB combination of bands to highlight essential features of a hyperspectral image? Checked combination after combination (selected from tens or hundreds of available bands) by trial and error? Now you can automate this task by using the unique Hyperspectral Explorer, a new part of the Hyperspectral Analysis process in TNTmips V6.00.

To use the Hyperspectral Explorer, first designate an inspection box in the Hyperspectral Image window (up to the product of 256 by 256 cells in size). The inspection box provides a rapid animated preview of a large number of RGB band combinations from which you can select the best combination to use for analysis, display, or printing.

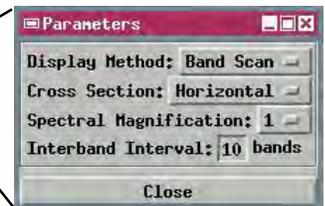
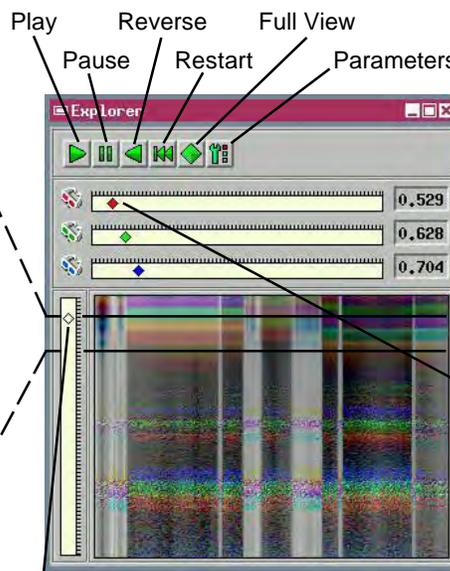
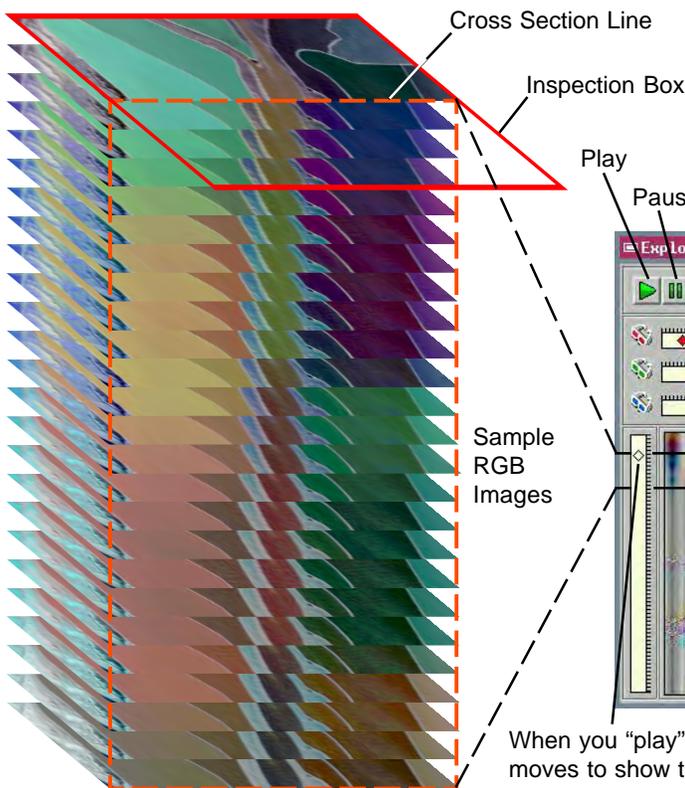
The Hyperspectral Explorer creates a sample set of RGB images using fixed intervals (number of bands) to separate the Red, Green, and Blue components. You can set a single overall interband interval or use different Red-Green and Green-Blue intervals. Setting a single interband interval of 10, for example, creates RGB images using bands 1, 11, and 21; 2, 12, and 22; 3, 13, and 23; and so on until each band has been used in at least one RGB image.

The Explorer window provides controls for the animated preview. When you press the Play button, the process cycles through the prepared set of RGB combinations in order of increasing wavelength and displays them at one second intervals in the inspection box. Other icon buttons allow you to pause, reverse, or restart the sequence. When you find a combination that highlights the features of interest, press the Full View icon button to change the full window display to this RGB combination.

Press the Hyperspectral Explorer icon button, draw a rectangular inspection box in the Hyperspectral Image window, and click the right mouse button to load the boxed portion of each band into memory. The dashed line shows the location of the Explorer window cross section view.



To understand the lower part of the Explorer window, imagine that all of the prepared RGB images of the inspection box are stacked on top of each other, with the lower wavelength combinations at the top (see illustration below left). Then make a vertical slice down through the stack along a line through the middle of the inspection box (shown as the dashed cross section line in the view window). The Explorer window displays this vertical slice. Each horizontal line of pixels in the window pane shows the colors produced by one of the RGB combinations along the cross section line. The display gives an overview of the range of colors produced by each of the band combinations, allowing you to zero in on useful ranges of combinations.



The Parameters window allows you to choose a cross section direction (horizontal or vertical) and set a single interband interval.

You can also move the colored sliders to choose initial RGB band assignments, establishing both interband intervals and the wavelength order of bands in each RGB sample image. The wavelength of each current band is shown to the right of the slider.

When you "play" the Explorer, the white indicator moves to show the position of the current image in the stack of sample RGB images. You can also drag the indicator to quickly move to a different stack position.