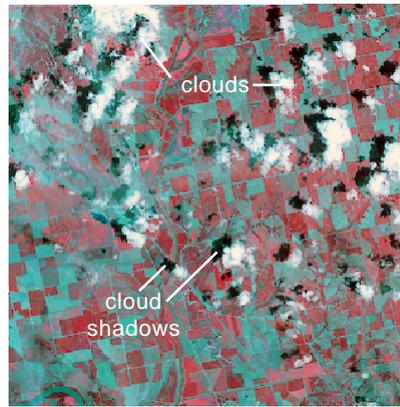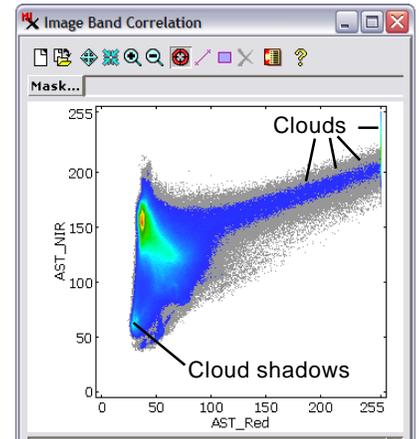# Create Masks from Image Correlation Plot

The Image Band Correlation window provides a Highlight within Range tool that allows you to select and highlight image cells with values within the designated ranges in a pair of image bands (see the Technical Guide entitled *Spatial Display: Highlight Image Cells from Correlation Plot*). You can also save a binary raster mask marking all of the cells within those ranges. When you create this mask you must choose which image cells are assigned the value 1 in the mask: those inside the designated ranges, or those outside these ranges. Use the Inside Designated Range option if you want the resulting mask to "mask in" the designated cells or the Outside Designated Range option if you want to "mask out" these cells.
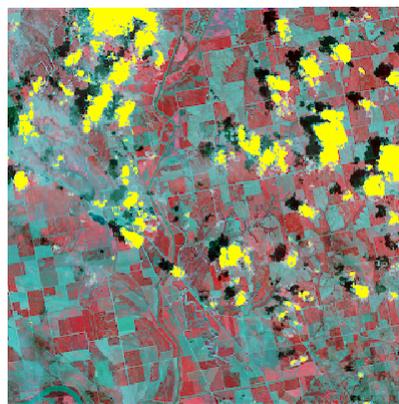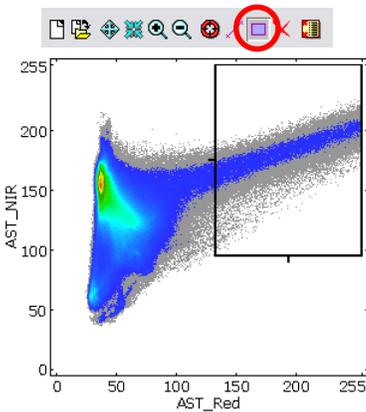
As an example of the latter option, consider a multi-spectral image with clouds and cloud shadows that you would like to exclude from further spectral analysis. The illustrations on this page show how you can use the cell range selection and masking capabilities of the Image Band Correlation window to create the desired binary mask raster objects.
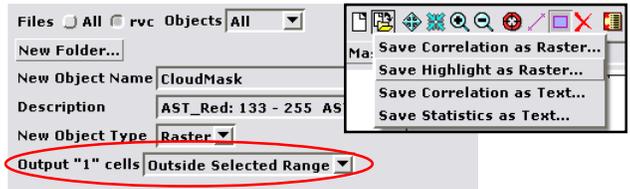

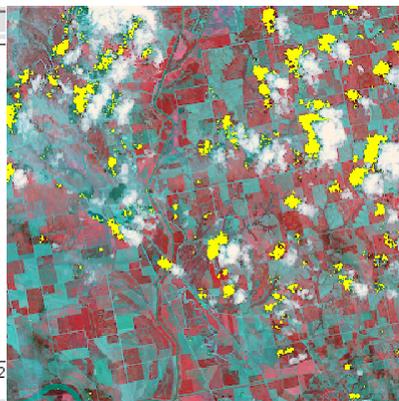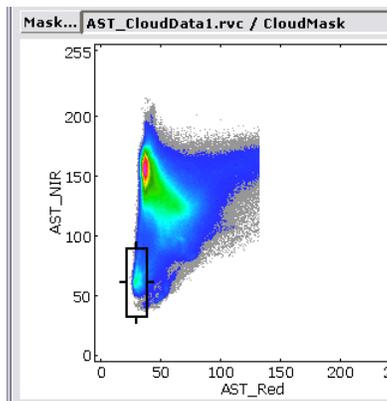RGB display of Near Infrared, Red, and Green bands (in that order) of an ASTER multispectral image of an agricultural area with scattered clouds and cloud shadows. In the Image Band Correlation plot of Red and Near Infrared bands, the "white" cloud cells have high Red and high Near Infrared brightness values. The long "tail" of cloud cells extending toward the upper right abruptly terminates at Red = 255 (due to the gain set for this sensor band) and then extends upward along the right edge of the plot to Near Infrared = 255. The cloud shadow cells cluster at the lower left edge of the scatterplot.

1. The Highlight within Range tool is used in the correlation plot to outline the Red and Near Infrared brightness ranges of the brightest clouds and highlight these cells in yellow in the View.

2. All of the image cells within the ranges selected with the Highlight within Range tool are saved to a binary mask raster using the Save Highlight as Raster menu option from the Save icon button. The dialog for naming and saving the mask includes a menu for choosing whether cells inside or outside the selected range should be assigned the value 1 in the binary raster object. Because the cloud mask is intended to "mask out" the cloud pixels, they are assigned the 0 value using the Outside Selected Range option.

4. The cloud and cloud shadow mask objects are used as inputs to the Algebraic: Multiply operation in the Raster Combination process (Image / Combine / Pre-defined) to create a combined mask in which cloud and cloud-shadow cells are masked out.

3. With the new Cloud Mask applied to the scatterplot (using the Mask button), the Highlight within Range tool is used to outline the brightness ranges of the cloud shadows and highlight these cells in the view. These cells are then saved as a cloud shadow mask.

RGB display of the image bands using the combined mask to render transparent pixels for the masked cloud and cloud-shadow cells (pale yellow in this illustration).