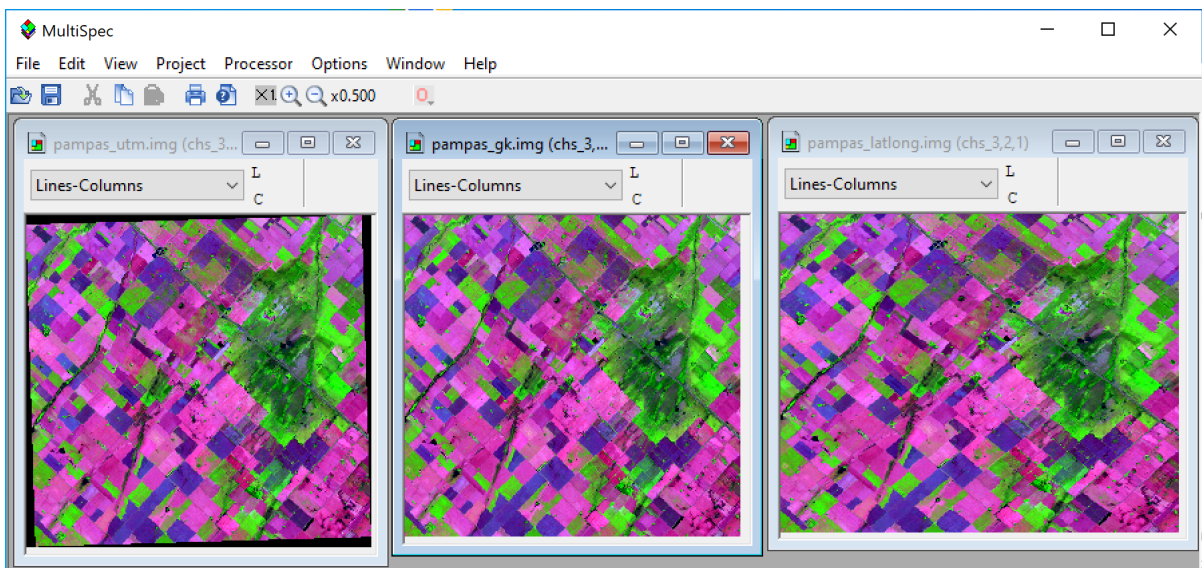


MultiSpec Tutorial: Selecting Areas and the Coordinate View

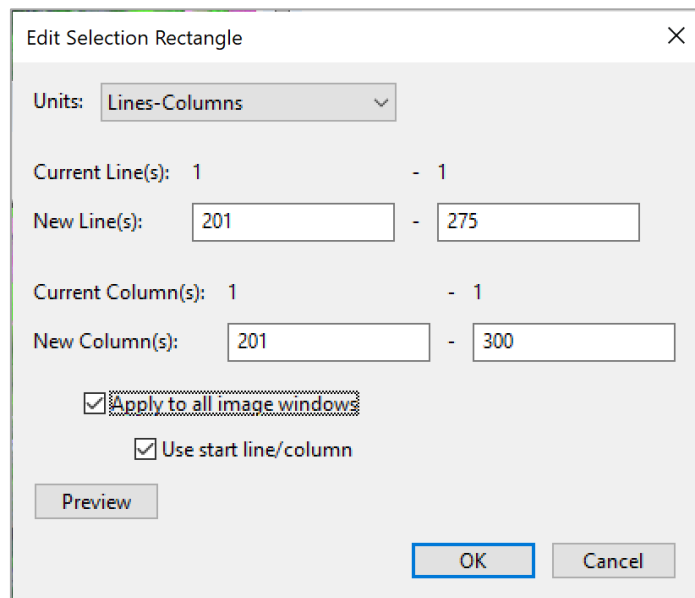
Requirements: MultiSpec application and pampas_XXX.img image files.

One can make selections of areas within an image using line-column, map or latitude-longitude units. The map and latitude-longitude units are only available for images where the required map projection information is available. Currently, MultiSpec can handle selections in latitude-longitude for image in geometric (latitude-longitude) and UTM, Transverse Mercator, Albers Conical Equal Area, Cylindrical Equal Area, Lambert Azimuthal Equal Area, Sinusoidal, Orthographic, Krovak and a few State Plane map projections.

- 7.1 Open the three pampas_XXX.img image files (pampas_gk.img, pampas_latlong.img, and pampas_utm.img). Position the images side by side.

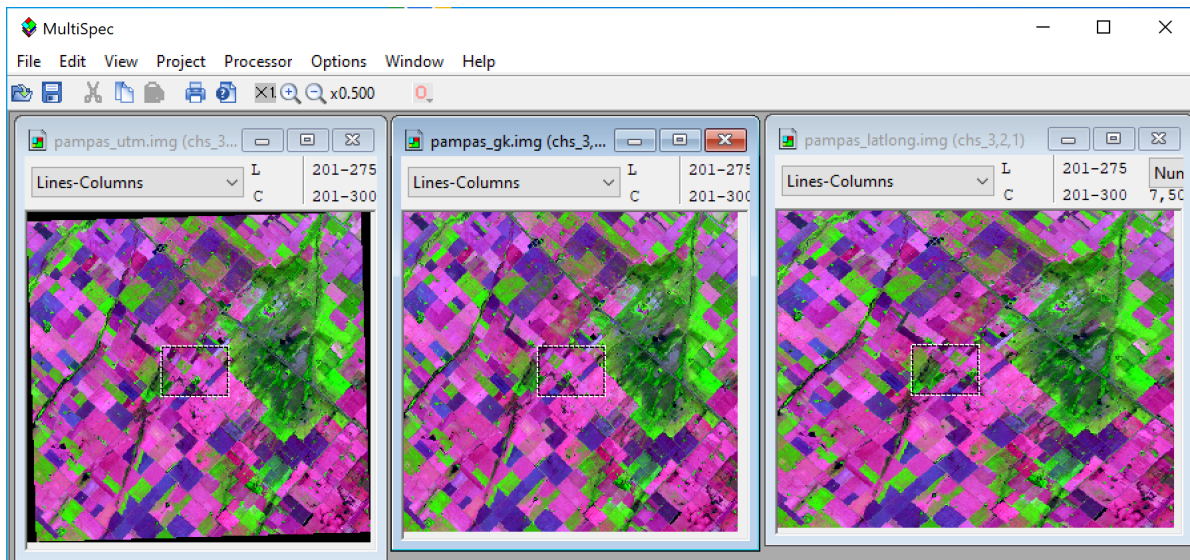


- 7.2 Using the pampas_utm.img as the active image, select the **Edit->Edit Selection Rectangle...** menu item to obtain the following dialog box to allow you to select the lines and columns for a selected area within the image.



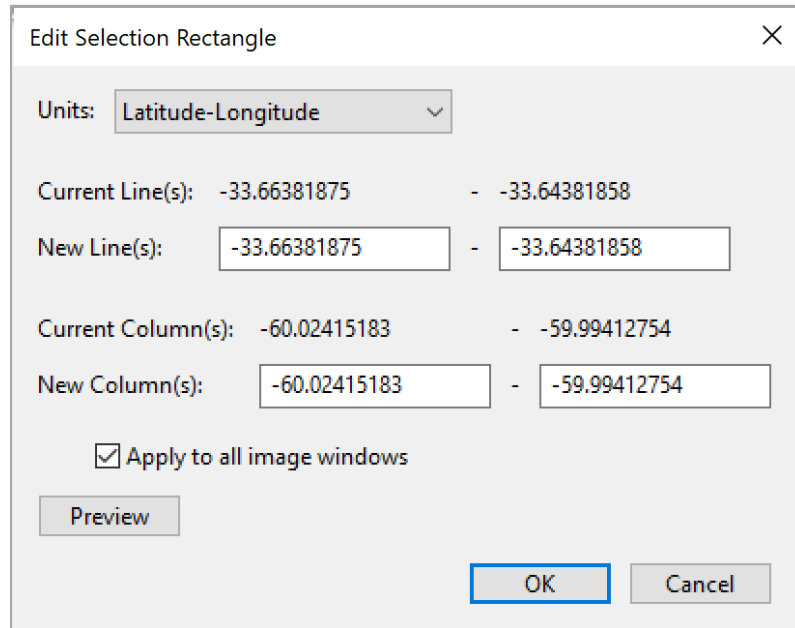
- A checkbox is available to allow one to apply the selection to all open image windows. If the selections are being made in line-column units one can turn off the option to take into account the start line and column of the images.

- A Preview button is available to apply the change for viewing before closing the dialog box. One will see the following selections in the three image windows in line/column units.

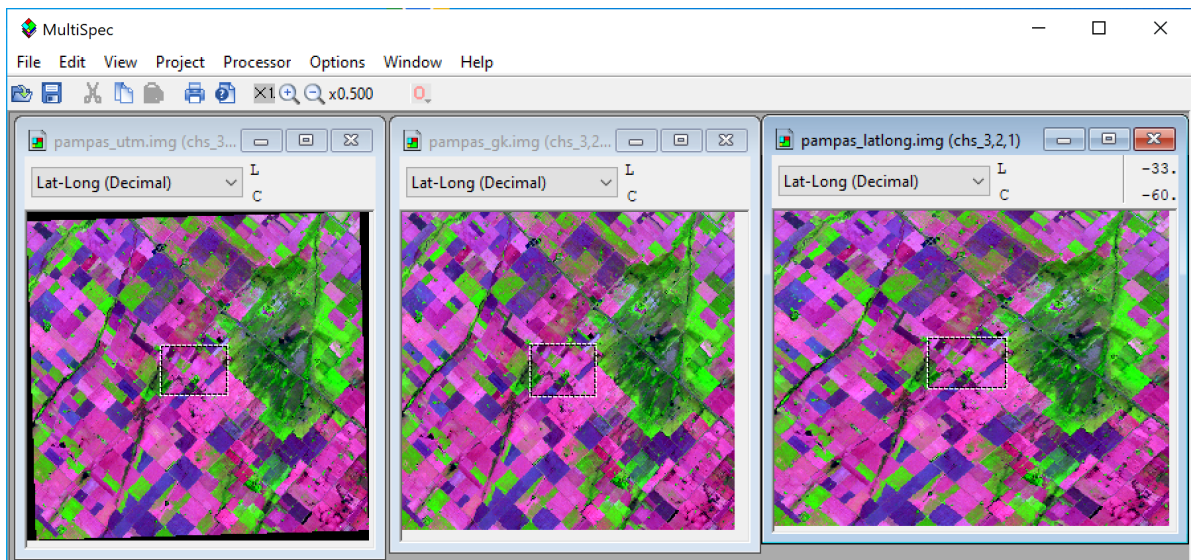


Notice that the selection areas do not represent the same areas in the images, particularly that for the lat-long image.

- 7.3 If the units being used are map or latitude-longitude units then the same area will be defined as well as possible across all image windows even if the pixel sizes are different. Change the units in the Edit Selection Rectangle dialog box to Latitude-Longitude.



And select the Preview Button. One will get the selected areas in all three images as below.



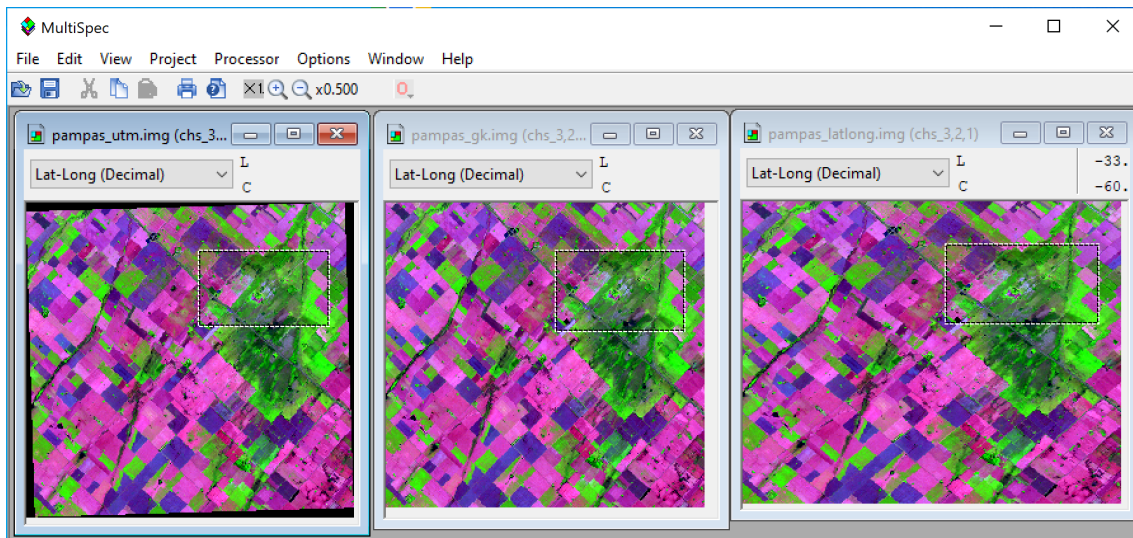
Note that the rectangle in the right image has a different shape (wider) than the selections in the other two images because the pixels in this image file were mapped to latitude-longitude units and the pixels in the other two images were mapped to other projections.

Note that applying to all images window when in map units only works for those images which have the same reference system, map projection, and projection parameters.

- 7.4 Similar capability to the **Edit->Selection Rectangle** menu item above, is also available using the coordinate views of the images and the mouse cursor. If you make a selection in an image window with the coordinate view in lines/column units and hold the control key (for WindowsOS and Online versions) and command key (for MacOS version) down when making selections, the same line and column selection will be made if possible in all open image windows. If one also holds the shift key down when doing this, any difference between the start line and column values will not be used.

If the coordinate view is in latitude-longitude units, the same latitude-longitude will be selected in all open image windows that contain the map projection information (which makes this possible). The same is true when selecting in map units of meters, etc as long as those units make sense. An image based on latitude-longitude does not have a specific map unit like meters.

The `pampas_gk.img` (Transverse Mercator), `pampas_latlong.img` (Latitude-Longitude) and `pampas_utm.img` (UTM) files can be used to illustrate these features. The figure below illustrates the result of a latitude-longitude selection in one image that was copied to the other open image windows when the control key (or command key for MacOS) was used in making the selection in the active image window.



Concluding Remarks

There are many other operations that one can do with MultiSpec including several Reformatting processes. See other tutorials or the MultiSpec Introduction at the MultiSpec web site for more information. The MultiSpec web site is: <https://engineering.purdue.edu/~biehl/MultiSpec/>. Or contact Larry Biehl at biehl@purdue.edu with questions.