ESRI Generic Binary Viewer Manual

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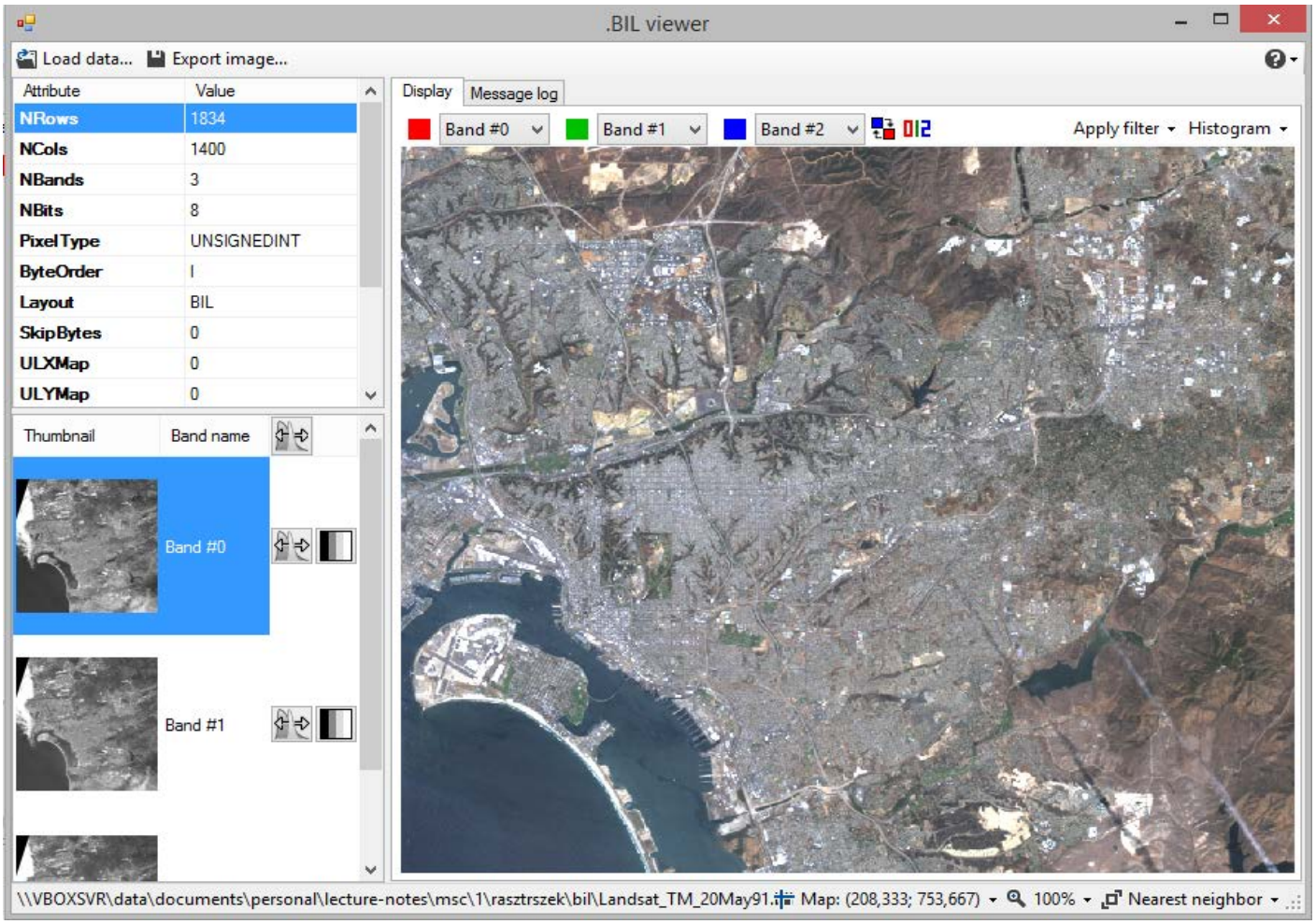
Introduction

This application is a most simplistic tool for loading and manipulating multiband raster datasets that are in the ESRI binary grid format (also known as .BIL, .BIP and .BSQ files).

This manual can also be accessed by clicking on the Help dropdown ( ) on the main toolbar, then choosing Help... .



The application's main window showing a true color Landsat image.

Data input and output

Loading data

Datasets can be loaded by pressing the Load data... button on the main toolbar. After selecting a file the corresponding header file will be parsed, then all raster bands are loaded.

Attribute	Value
NRows	500
NCols	500
NBands	7
NBits	8
PixelType	UNSIGNEDINT
ByteOrder	M
Layout	BIL
SkipBytes	0
ULXMap	475926.912642
ULYMap	3628700.286761

If parsing is successful, a list of header attributes is shown in the left pane.

If parsing is successful and the dataset contains at least 3 raster bands, an RGB composite is created from the first three bands. If less than 3 bands are available the first band will be shown as a grayscale image.

Format limitations

- Currently only datasets with 8 unsigned bits/pixel are supported. Trying to load files with a different pixel format will result in an error.
- The header attributes `skipbytes`, `byteorder`, `bandrowbytes`, `totalrowbytes` and `bandgapbytes` are read but not supported.
- The parser assumes the dataset's endianness to match that of the host architecture's (CLR's).

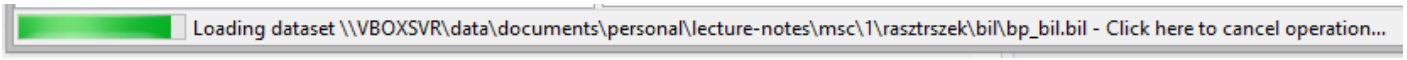
Saving images

The composited image can be saved by pressing the Export image... button on the main toolbar. The image format can be selected in the save file dialog. Currently .PNG, .JPEG and .GIF files are supported.

The resolution and bounds of the exported image match that of the original dataset's regardless of the current zoom, position and interpolation settings.

Asynchronous operations

Parsing (as well as other resource-intensive graphical operations) are performed asynchronously. You can track an operation's progress on the status bar. The currently running operation can be cancelled at any time by clicking on the status message.



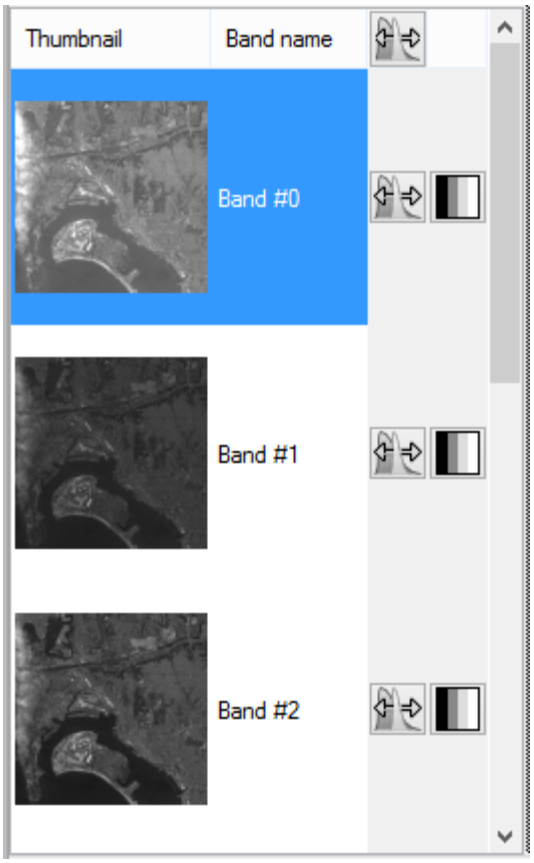
Progress of asynchronous operations are shown in the status bar.

Working with raster bands

The currently loaded dataset's raster bands are listed in the bottom of the left pane. Besides a thumbnail the list

also contains buttons for per-band histogram equalization ( ) and single-band grayscale display ( ).

Histogram equalization can also be performed on all bands at the same time by pressing the button in the column header.



List of the available raster bands.

Creating an RGB composite

An RGB composite image can be created from any three raster bands by associating bands with color components using the image manipulation toolbar:

RGB band selection.

Any of the three components can be omitted by selecting "(none)" from the dropdown list.

As some datasets contain true color bands in BGR order, the red and blue channels can be quickly swapped by pressing the button.

If at least three raster bands are available, a composite can be created of the first three bands by clicking on the *Create default RGB composite* ( ) button.

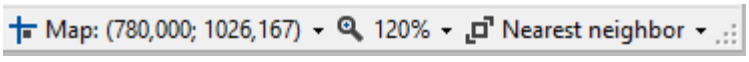
Navigation in the main view

The displayed composite image can be navigated using the mouse.

- To **pan (move around),** click and hold the left mouse button, then drag the image.
- To **zoom in or out,** scroll the mouse wheel.

While panning, a thumbnail with the viewport's current bounds is displayed in the lower right corner.

Display options in the status bar



Display options in the status bar.

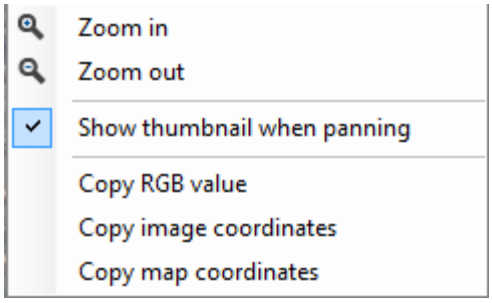
Various display-related options reside in the right side part of the status bar.

Either map (projected) coordinates or pixel coordinates are displayed when the mouse is being moved over the image. Coordinate type can be chosen by opening the associated dropdown menu ( ). Projected coordinates are only available when the dataset header contains the necessary fields `ULXMap`, `ULYMap`, `XDim` and `YDim`.

The current zoom level is also displayed. A specific zoom level can be selected by clicking on the dropdown menu ( ).

A choice of image interpolation methods is also offered in the rightmost dropdown menu ( ). Nearest neighbor, bicubic and bilinear interpolations are available as well as high-quality versions of the latter two.

Context menu



Context menu in the main view.

A context menu can be accessed by right-clicking on the image. Besides zoom controls there is an option for toggling display of the thumbnail, as well as for copying position-dependent information (coordinates, pixel color) to the operating system clipboard.

Image manipulation

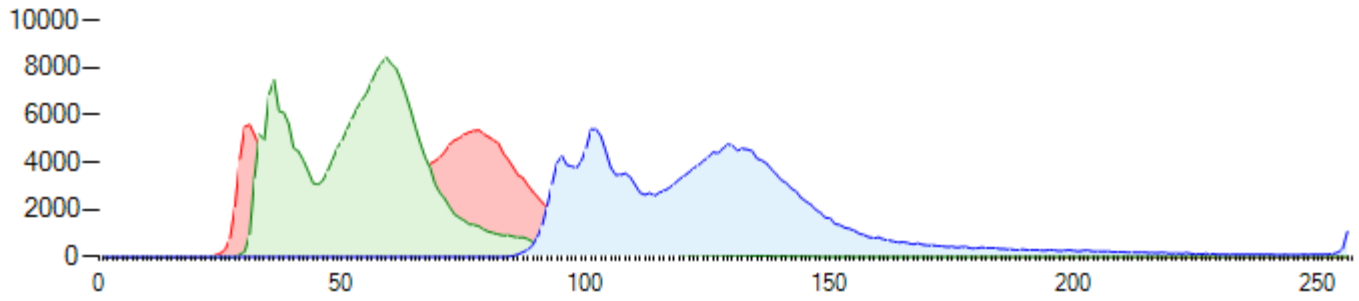
Simple image manipulation and filtering can be done using the Apply Filter and Histogram dropdowns on the image manipulation toolbar.

Histograms

A histogram of the bands of the RGB composite can be shown by selecting the Show histogram option from the Histogram dropdown.

You can redistribute space between the image and the histogram view by clicking and dragging the empty space between the two panels.

When the histogram panel is shown, it is recalculated and redisplayed every time the image changes.



Sample histogram of an RGB composite image.

Histogram equalization can also be applied to the current composite from the Histogram dropdown. This is done by equalizing histograms on the involved bands and then recompositing the image.

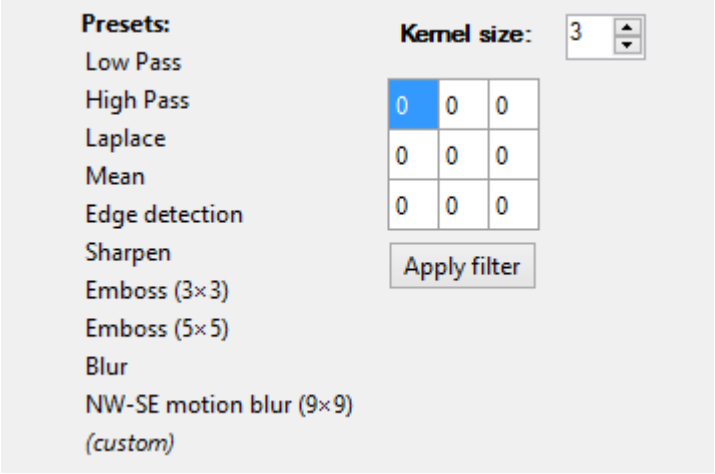
Image filters

Simple filters can be applied to the current image using the Apply filter dropdown. The following filters are available:

- **Invert** – inverts colors.
- **Grayscale** – applies a grayscale transformation, which computes each pixels luminosity (Y) by applying the following expression:

$$Y = 0.2126 \times R + 0.7152 \times G + 0.0722 \times B$$

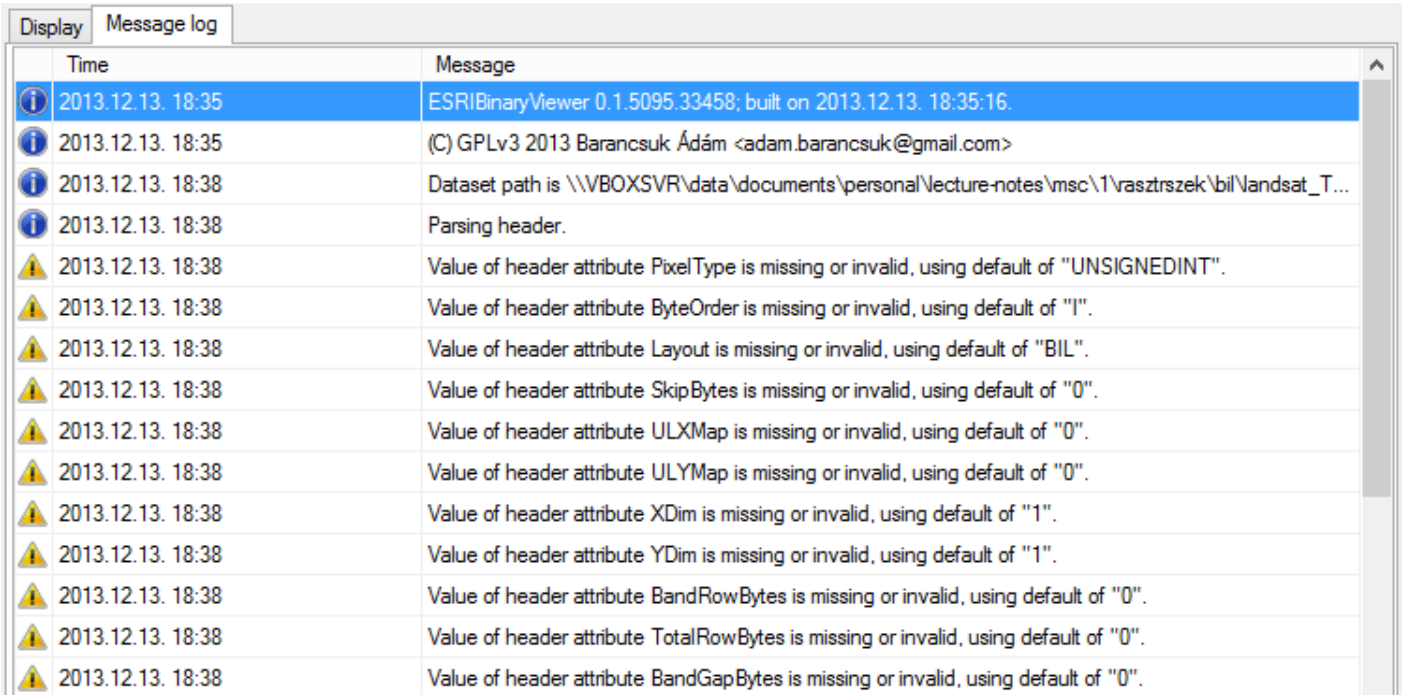
- **Median** – applies a median filter of variable kernel size.
- **Convolution** – provides an interface for defining and applying simple convolution filters. Besides a list of presets custom kernels (of odd sizes between 3 and 15) can also be defined and edited using the panel.



The convolution filter panel.

Message log

The message log records notices, warnings and errors concerning dataset parsing and image operations. A timestamp and a severity is associated with each entry. Time consumption of asynchronous operations is also recorded for debugging and performance measurement purposes.



Message log.

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