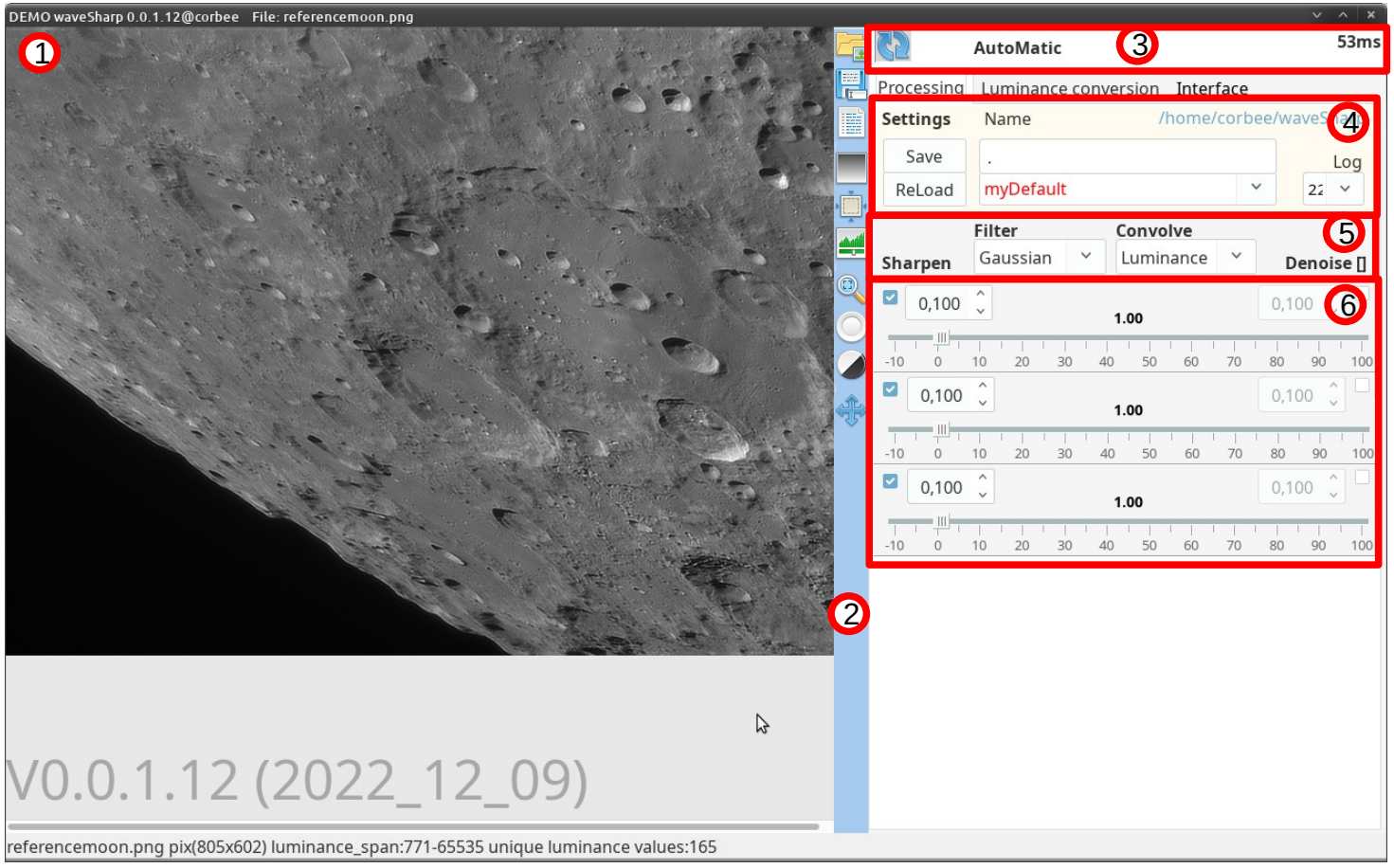
MAIN INTERFACE



1) Image

2) Toolbar

3) Processbar

4) Presets

5) Filter/Convolve

6) Sharpen/Denoise layers

1) Open File Dialog : load a PNG or TIFF file

2) Save File Dialog : save a file as PNG or TIFF

3) Recently loaded files : the 10 most recently used files/directories

4) Colour or BW processing : switch between BW and colour processing

5) Minimize processing area : will try to minimize the area of processing (mainly usefull for planetary processing)

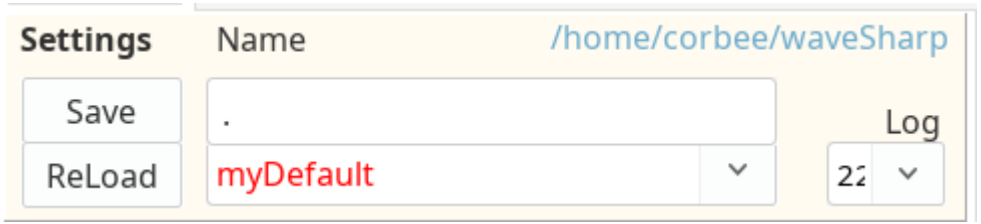
6) Show Histogram: opens a histogram window

7) Select Zoom area: opens a fixed 2x zoom window

8) Select whitepoint : allows selecting a part of the image as a base for RGB-colour-balancing

9) Show darks/highs: shows pixels that are too dark/too bright(outside the 0..65535 range) after sharpening to show details

10) move image: allows moving a larger image around with a mouse



This group of controls allows you to use presets for the sharpening/denoise operations. Every preset contains all settings of the filtersizes/sliderpositions and the filterstyle (Gaussian/ZeroGauss) and Convolvestyle (Luminance/RGB). Selecting a different preset will directly process the image.

The **SAVE** button will save a preset using the provided name (currently ".") in the **NAME** field next to it.
The **RELOAD** button will process using the preset shown in the field to its right. This field has a dropdown which allows you to select from the currently known presets.

If a preset is available with the name "**mydefault**" that will always be used when a new image is loaded.

The **LOG** dropdown allows you to step back in time, it automatically saves your latest used settings every 5 minutes and keeps 10 of these available. The log is kept separate from the presets.

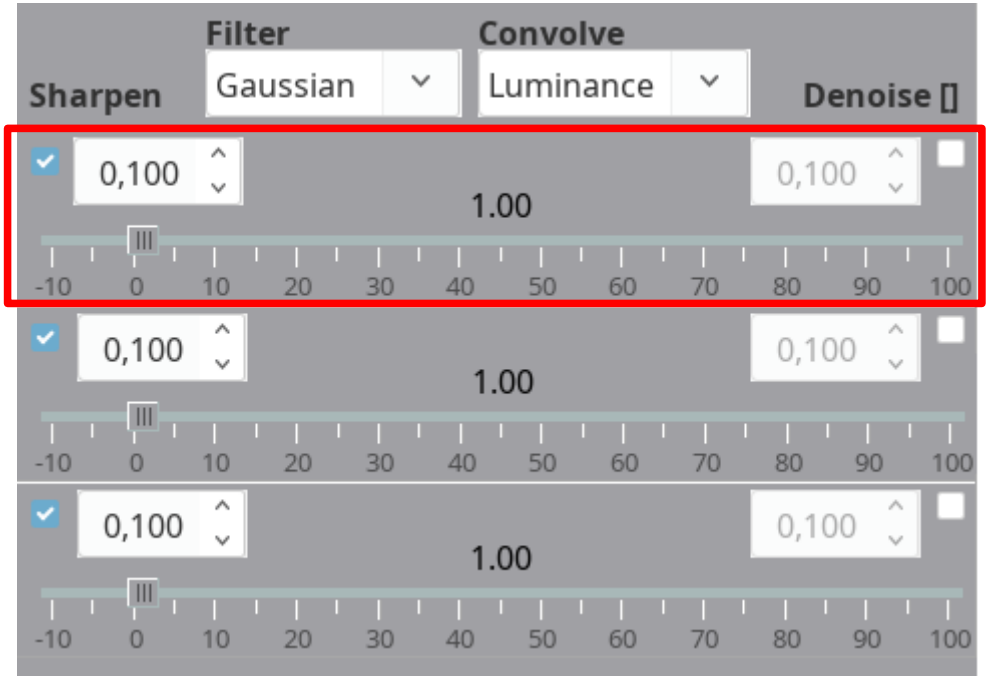
On the top-right you see a directory-name, that is where the INI-files of waveSharp are stored. You can click on the link to open that directory.

This control allows you to select which type of filter is used and which method is used to convolve (sharpen) the image.

Filter is either Gaussian (RegiStax6 style) or ZeroGauss(new in WS).

Convolve can be set to Luminance or RGB. Luminance will sharpen the image but won't change the recorded colours. RGB (as used in RegiStax6) will sharpen each layer separately which also will have effects on the colours of the final image.

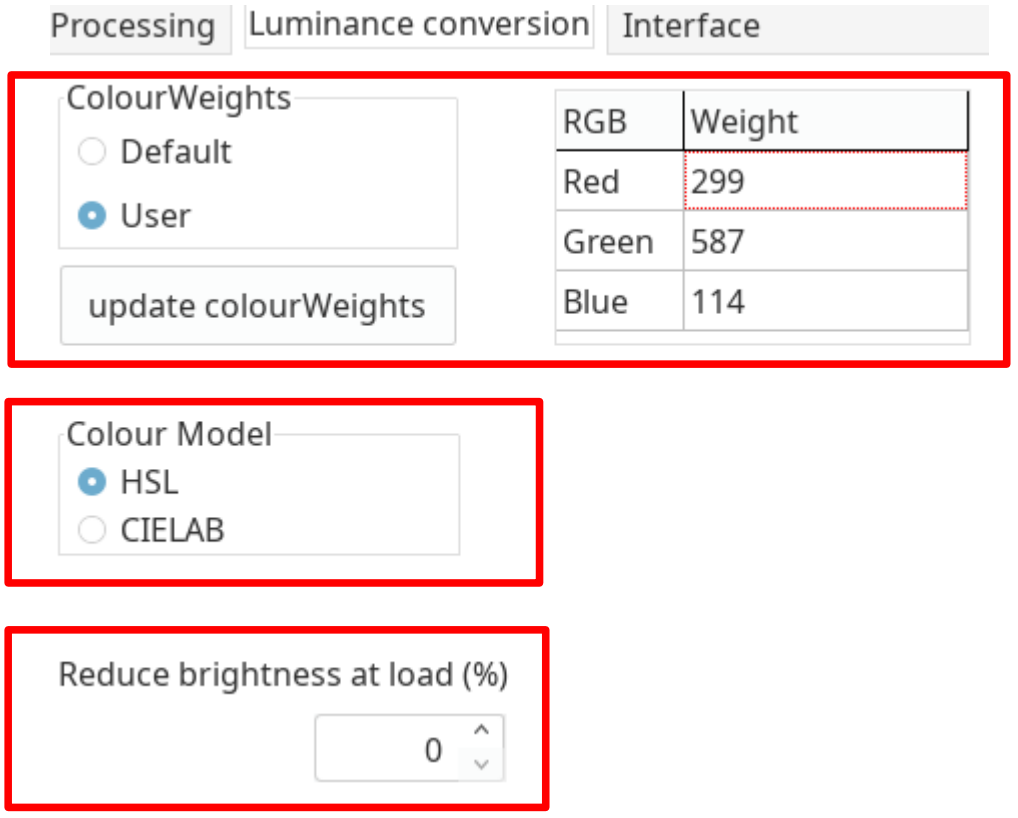
The Luminance can be derived in two ways, HSL or CIELAB. This is controlled by a setting on the "luminance conversion" tab.



This is the main processing part. The three identical layers have controls for sharpening (checkbox and a filter) and denoising (checkbox and filter). The filters are only active when the checkbox is active. By default all denoise-filters are OFF. Functionality is not different from RegiStax.

The spinners(default 0.100) / slider(default 1.00) also can be controlled using the thumbwheel of your mouse. The slider moves at 0.5 steps using the thumbwheel. Spinners move at 0.02 using the thumbwheel and 0.1 using the arrows next to the spinner. You can also manually enter a value in the textfield of the spinner.

RightClick on the slider will reset its position to the default.

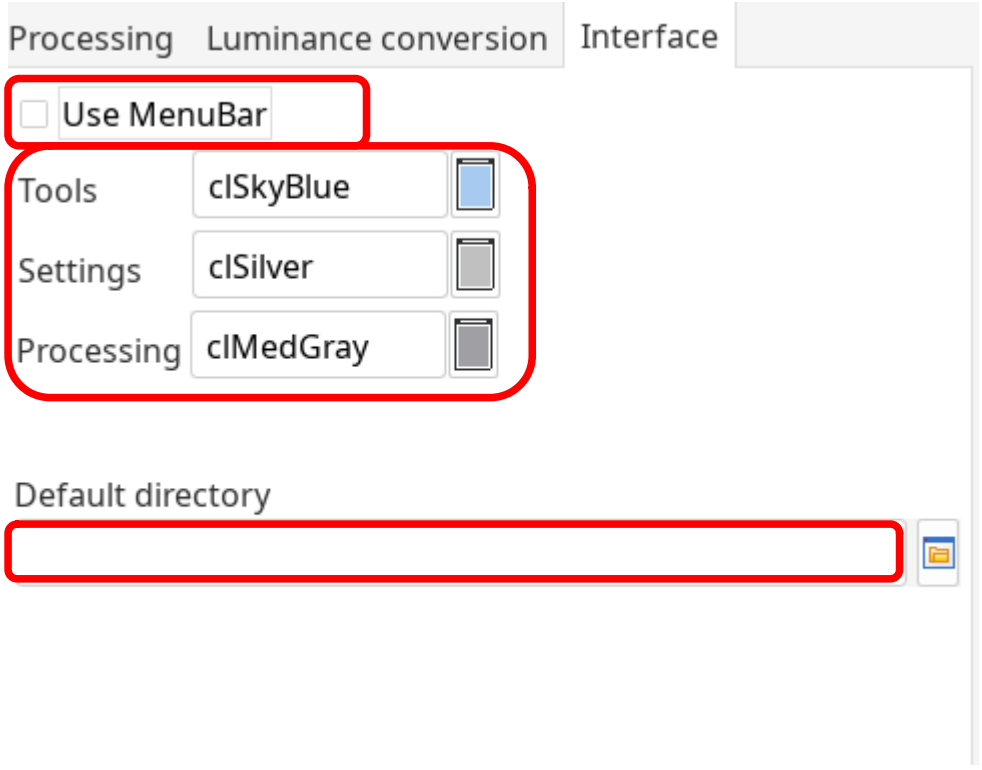


This is the tab of the main screen that has controls that normally should be set before loading an image.

Colour Weights: When sharpening using the luminance with the HSL colour-model we convert RGB values to Luminance based on weights. The default weights are as shown to the right. These can be changed by the user. After changing press “update ColourWeights”

Colour Model: When sharpening using Luminance-Convolve and/or when changing saturation in the histogram RGB values have to be converted to luminance and back. Two colour-models are available for this: HSL and CIELAB. HSL can use user-defined colour-weights, for CIELAB this is not an option.

Reduce brightness: When loading a stacked image that is relatively bright into waveSharp enhancing might lead to overlit areas that cannot be resolved properly even with the histogram. To counter this the image can be loaded at a lower maximum brightness, this does NOT have any effect on sharpening as this lower brightness is based on floating-point values.



The Interfac Tab has several controls that allow the user to modify parts of the interface. These settings are automatically stored when leaving the application.

Use MenuBar: by default waveSharp does not use a menubar. If you select this checkbox a menubar will appear on the top that has the file open/save options and recent files options.

Tools/Settings/Processing Tab
The buttons of these controls allow the user to set the colours of part of the interface. Click on the button to the right of the control to select a colour.

Default directory
This is the directory where waveSharp will start looking for images at startup.

HISTOGRAM

1) Histogram. Can show RGB (coloured lines) and Luminance (gray).

2) Settings. You can save the settings of most of the controls (except lo-hi clipping). Functionality is alike the settings on the MAIN window.

3) 7) Colour Balancing: this works in conjunction with (7). When you press **AutoBalance** the application will try to create a white-balance for the image.

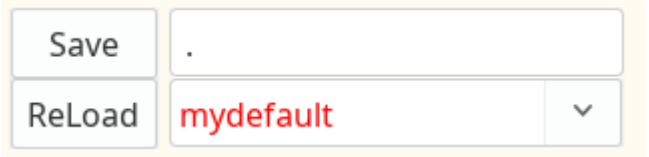
4) **Histogram updates**. These control how the histogram is updated.

5) **channels:** The histogram can show RGB, and the Luminance on screen(Screen_L) and the raw luminance.

6) **Gamma:** A simple gamma control

8) **Luminance and Saturation**. These controls have a spinner (left) and a slider. The slider has a middle thumb and L also has a hi-lo thumb.

9) **RGB.** The RGB section has many controls that allow shaping the image/histogram

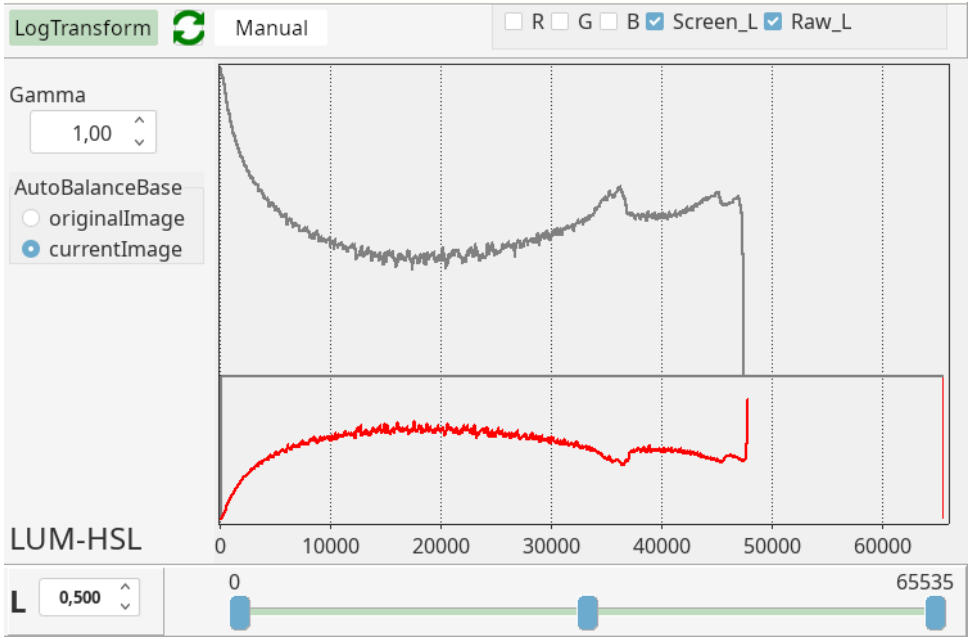


This group of controls allows you to use presets for histogram operations. Every preset contains most of the settings (but no clipping values).

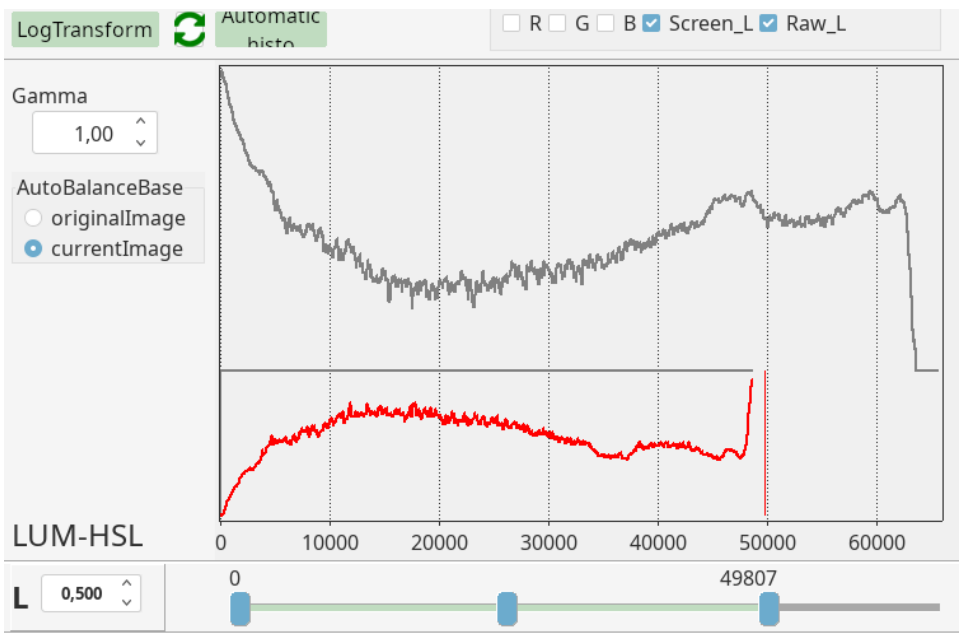
The **SAVE** button will save a preset using the provided name (currently ".") in the **NAME** field next to it.
The **RELOAD** button will process using the preset shown in the field to its right. This field has a dropdown which allows you to select from the currently known presets.

If a preset is available with the name "**mydefault**" that will always be used when a new image is loaded.

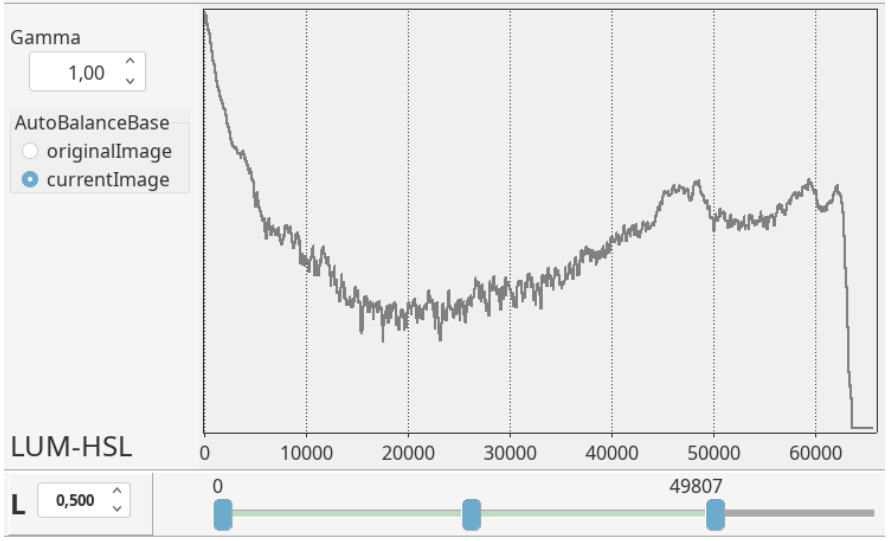
These 3 buttons control how the histogram appears. By default histograms are shown "**logTransformed**", clicking this button will switch to "**Linear**".
Also by default histograms are recalculated automatically. When pressing the "**Auto histo**" button this becomes grayed and recalculations are manual. The button in the middle can be pressed at all times to recalculate the histogram.

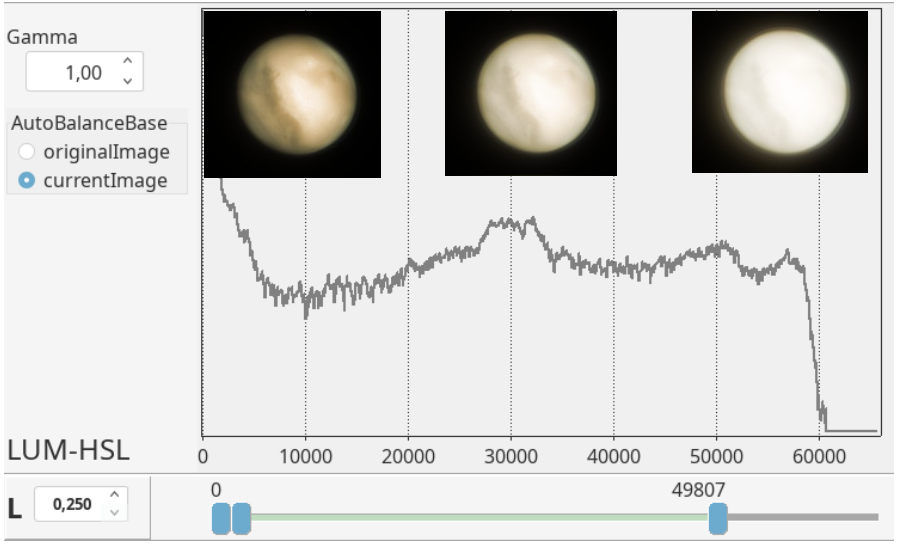


The controls on the top allow looking at the different colour channels and the luminance of the image. This shot shows both the luminance of the visible image and the raw image (from sharpening). This is before any sharpening and the curves are thus equal. Notice that the raw luminance is show with a negative axis and at half the height of the screen luminance.



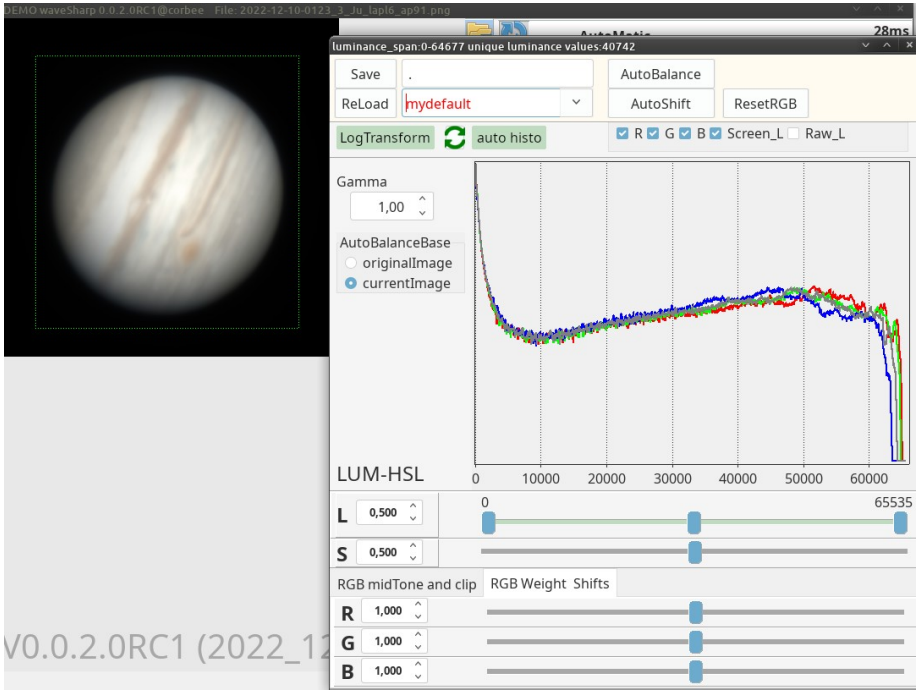
In this image the luminance values have been “clipped”. The highest luminance value (the vertical line in the raw_L graph) is just above the maximum value. This has increased the luminance of the image on screen to be close to the maximum value that can be displayed on screen. The left/right thumbs of the luminance slider allow clipping the image to a section of the available luminance values. The labels above the thumbs will show the actual clipping values.

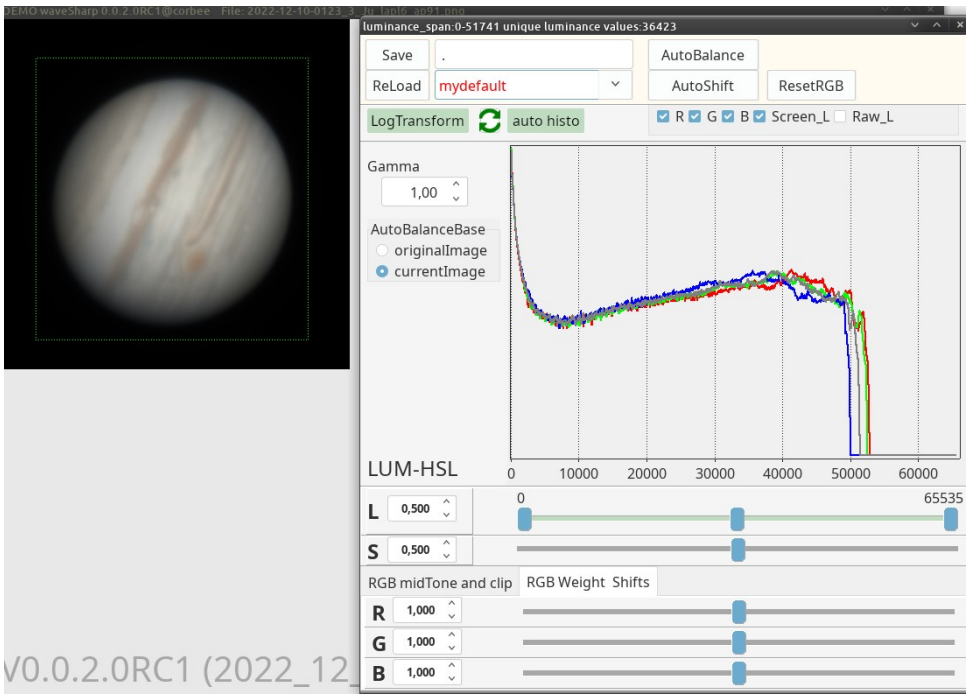




Warning: these are just examples to show the functionality of the controls, most of the time using the extreme values of a slider isnt a good way to enhance images.

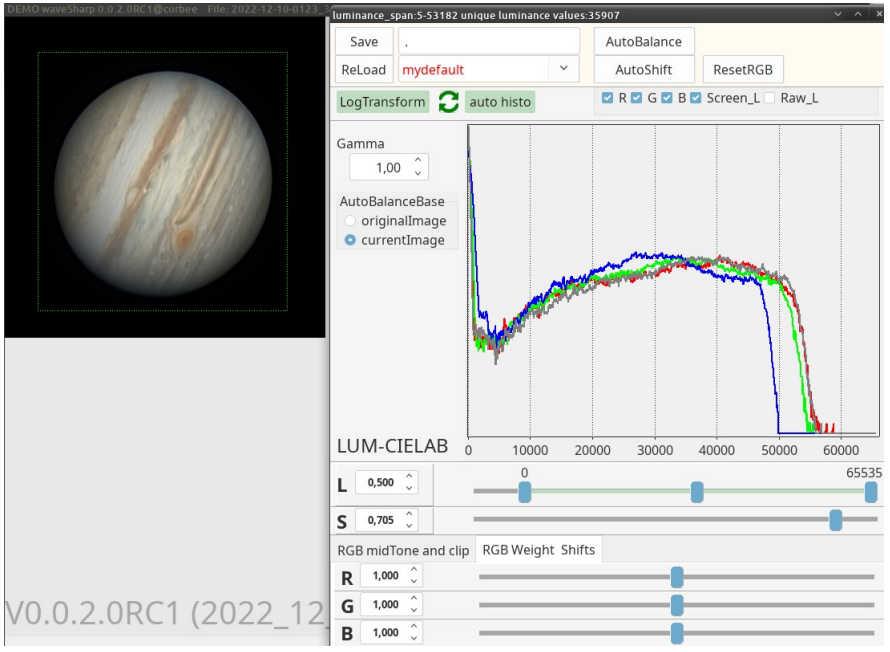
This example shows how the midTone position can change the appearance of an image/histogram. On the left is the default histogram with midtone at 0.5.
Shifting the midtone to the far left(0.25, either by setting the spinner or the middle thumb of the slider) will darken the average of the image (see leftmost image of mars) but the histogram still uses the same span of image intensities. The two other images show the midtone at 0.5 (default, unaltered histogram) and 0.75(brighten the average).

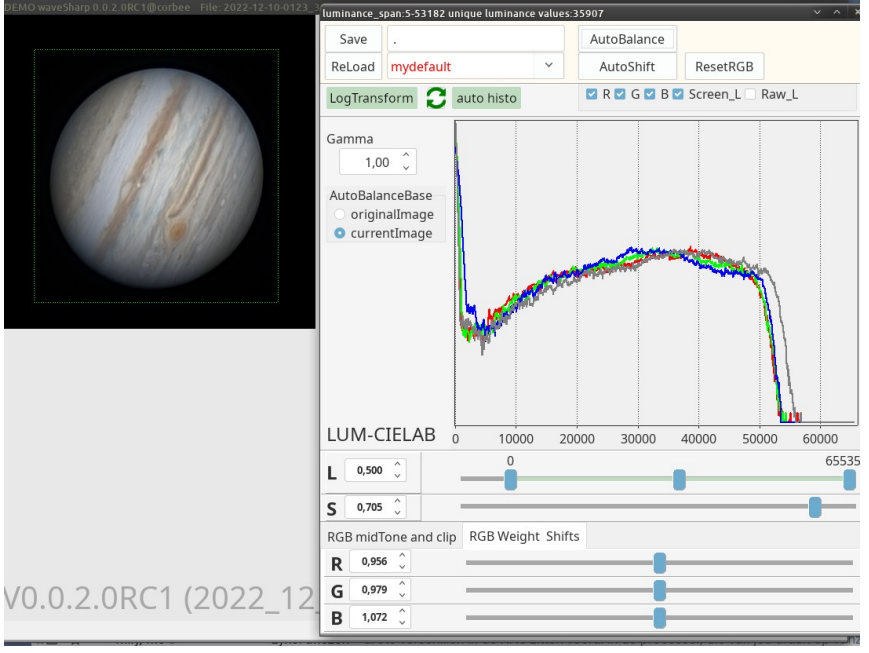




Reduce brightness at load

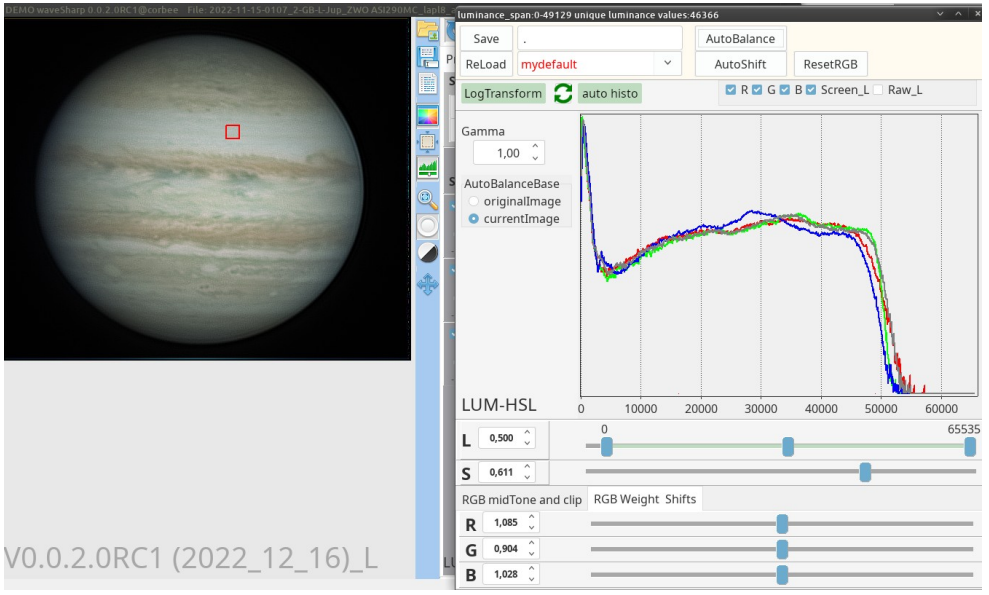
On the Luminance conversion tab we have a setting that allows (only when loading a new image) to reduce the brightness of an image. This can come in handy when the stacked image is close to full brightness. In these cases using sharpening will brighten the image further without an option to prevent overlit sections of the image. This control allows you to reduce the image brightness.
The example above shows an image loaded without reducing brightness (left) and with the control set to 20%. Although the image on the right looks dimmer at the screen this can be easily changed by using the luminance rightmost thumb of the slider.

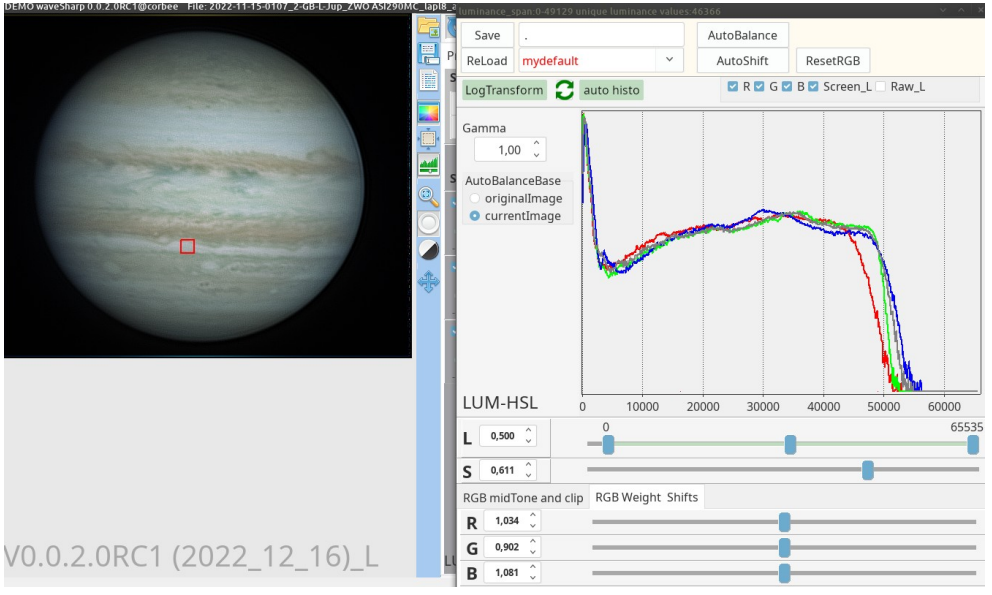




Automatic Colour Balance

After changing the saturation of an image (and all other settings of the colour-sliders) you can use AutoBalance to estimate “weights” for the RGB channels that will remove an colour-cast from the image. The histogram on the right clearly shows how the different colours now have more overlap than before. This procedure is NOT failsafe, if your image should be looking on average for instance a bit “reddish” (like mars) using Autobalance might give odd results. You can use resetRGB to set the colourweights back to the normal position.





Whitepoint colour-balance

Another way to get an estimate for a colour-balance is to use the whitepoint control (white circle in the toolbar below the zoom-icon). When this control is active you can click on the image to set a box in an area that should appear “white/gray”. Using the pixelvalues of that area the application will estimate a new colour-balance by changing the weights for RGB (see lowerleft values). You can change the area by simply clicking at a different spot.

The thumbwheel of your mouse can be used to increase/decrease the size of this area, make sure you are not ON the box itself when you do that.