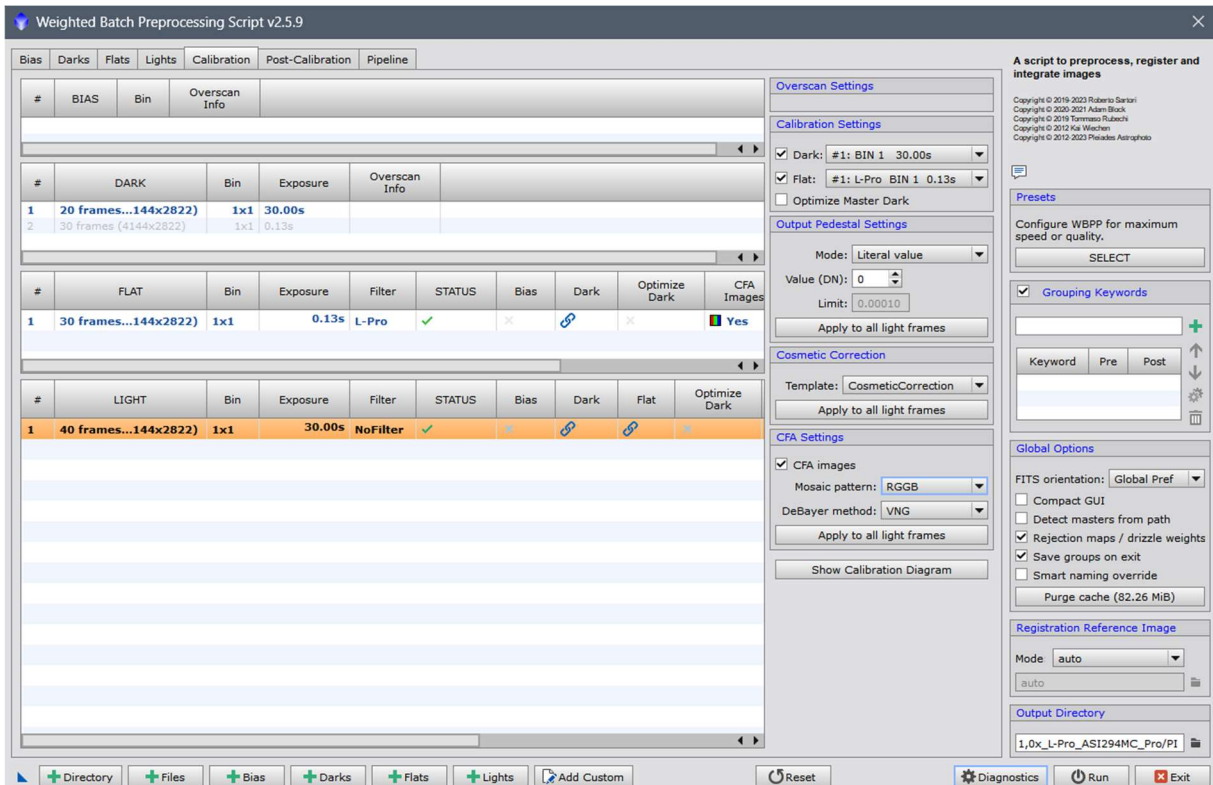
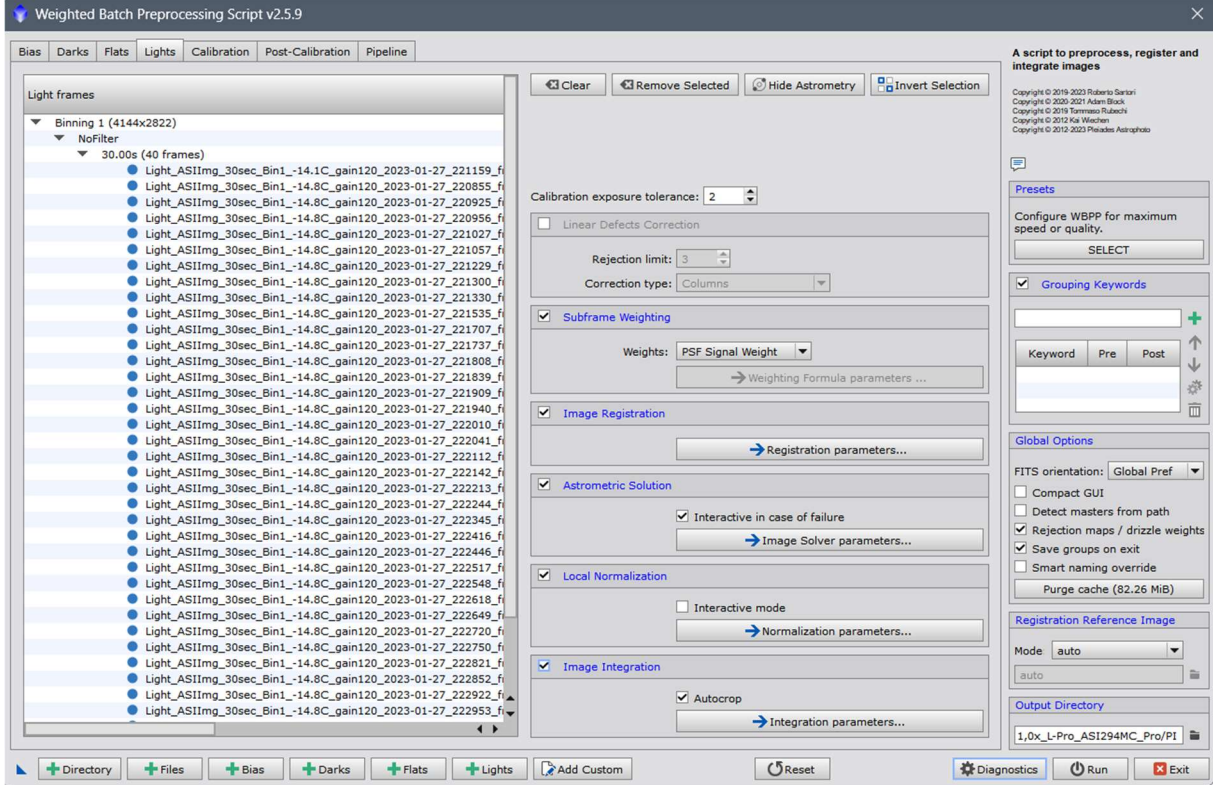
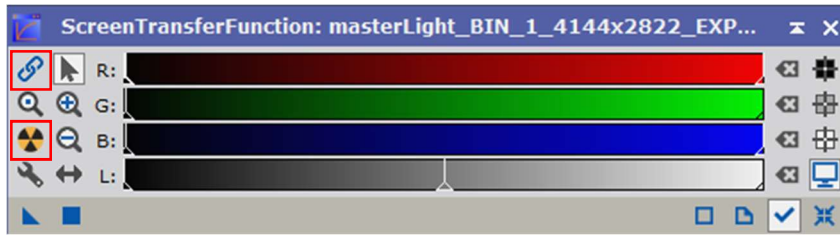


## Processing of comet images with an One Shot Camera in PixInsight (version 1.8.9)

The images can be stacked as usual with the script 'WeightedBatchPreProcessing' (WBPP). The star image is then obtained from the stacked sum image.



After opening the stacked RGB image the 'ScreenTransferFunction' should be opened from the menu item 'Process' should be opened. Deactivate the chain symbol in the upper left corner, otherwise the image will have "distorted" colors, and then click on the atom sign. The images will get an automatic stretching.




The stacked image shows the starry sky with the comet's path.



To perform a color calibration of the stars using 'SpectroPhotometricColorCalibration', PixInsight needs the position of the comet in the sky. If this is not available, the position can be determined via the website <https://nova.astrometry.net/upload> ermittelt werden.

To do this, a single image is uploaded to the page, and after some calculation time the result is displayed.

NOTE: signins should be working again... but read about [account migration](#). Not signed in | [Sign In](#)



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**Upload**

**Select a file or url to upload**

Durchsuchen... Keine Datei ausgewählt.


file  
 url

The following file types are supported:

- **JPEG, GIF, PNG, or FITS image**
- **FITS binary table**, containing a BINTABLE of detected objects, with X and Y pixel positions in "D" (double) or "E" (float) columns, with one object per row
- **text list**, containing two columns of digits separated by commas or whitespace, listing the X,Y positions of sources, sorted with the brightest sources first
- **tarball (.tar, .gz)**, containing files of any of the above types

[Advanced Settings \[+\]](#)

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**Submission 7236246**

<p>Submitter: <a href="#">anonymous</a> (1)</p> <p>Date Submitted: 2023-02-25T16:00:51Z</p> <p>Filename: Light_ASIIImg_30sec_Bin1_-14.8C_gain120_2023-01-27_221909_frame0008.fits</p>	<p><b>Upload Settings</b></p> <p>Parity: try both simultaneously</p> <p>Scale Units: width of the field (in degrees)</p> <p>Scale Type: bounds</p> <p>Scale Lower Bound: 0.1</p> <p>Scale Upper Bound: 180.0</p> <p>Downsample Factor: 2</p>
---	--



[Go to results page](#)

Job 7976980:

Success

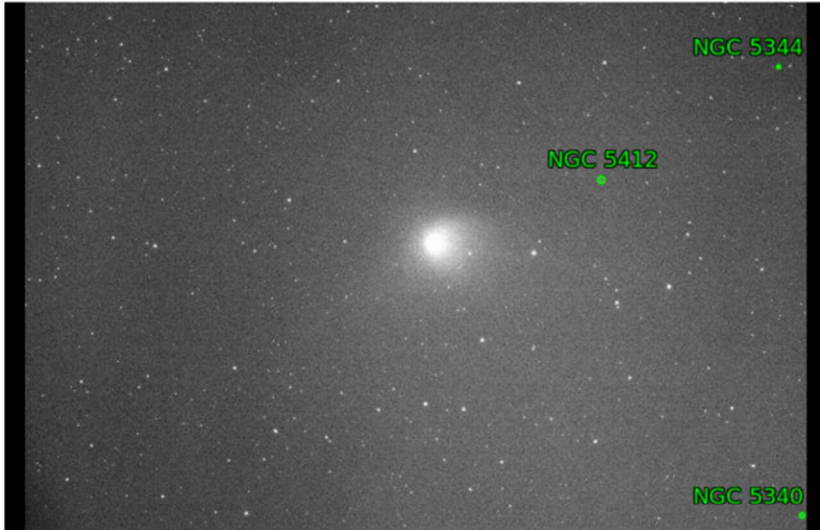
[Source extraction image \(fullsize\)](#)

[Log file tail \[-\] \(full\)](#)

```

B =          0          0 -2.8496e-07
      0  4.5186e-08
-1.2359e-07
AP =  2.1037e-05  1.984e-08  3.1506e-08
      1.3601e-08  2.897e-08
      2.664e-08
BP =  0.00013791  2.0266e-07  2.8472e-07
      -3.4433e-08 -4.5197e-08
      1.2355e-07
sqrt(det(CD))=1.96228 [arcsec]
Found tag-along columns from field: FLUX BACKGROUND
Field 1: solved with index index-4110.fits.
Field 1: tried 19438 quads, matched 32343 codes.
Spent 3.21027 s user, 0.221875 s system, 3.43214 s total, 3.4355 s wall time.
Writing 32 rows (of 1000 field and 32 index objects) to correspondence file.
cx<dx constraints: 0
meanx constraints: 93307
RA,Dec constraints: 0
AB scale constraints: 0
Spent 3.9368 seconds on this field.
    
```





Submitted by [anonymous](#) (1)  
on 2023-02-25T16:00:51Z  
as "Light\_ASImg\_30sec\_Bi...08.fit"  
(Submission 7236246)  
under [Attribution 3.0 Unported](#)

**Job Status**

Job 7976980:  
**Success**

**Calibration**

Center (RA, Dec): (211.145, 73.335)  
Center (RA, hms): 14<sup>h</sup> 04<sup>m</sup> 34.765<sup>s</sup>  
Center (Dec, dms): +73° 20' 04.631"  
Size: 2.26 x 1.54 deg  
Radius: 1.366 deg  
Pixel scale: 1.96 arcsec/pixel  
Orientation: Up is -176.8 degrees  
E of N  
WCS file: [wcs.fits](#)  
New FITS image: [new-image.fits](#)  
Reference stars nearby (RA,Dec table): [rdls.fits](#)  
Stars detected in your images (x,y table): [axy.fits](#)  
Correspondences between image and reference stars (table): [corr.fits](#)  
Legacy Surveys sky browser: [browse the sky](#)  
KMZ (Google Sky): [image.kmz](#)  
World Wide [view in](#)  
Telescope: [WorldWideTelescope](#)

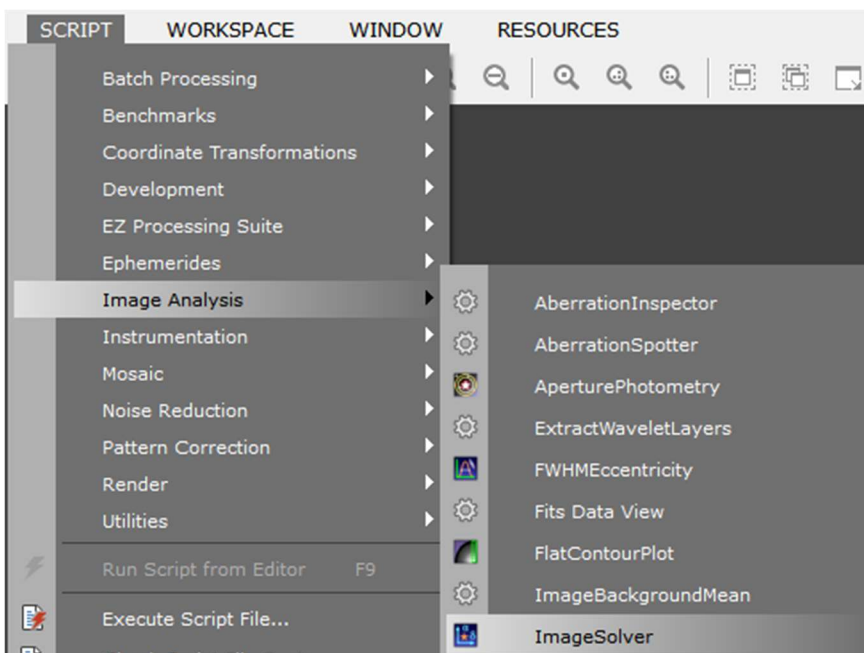
**Nearby Images** ([View All](#))

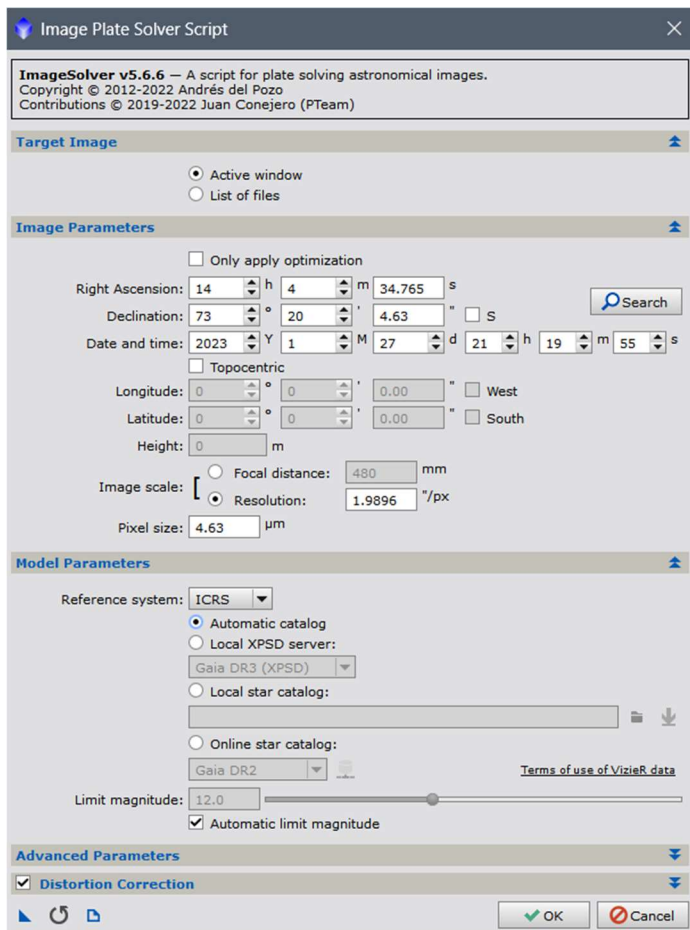


**Comments**

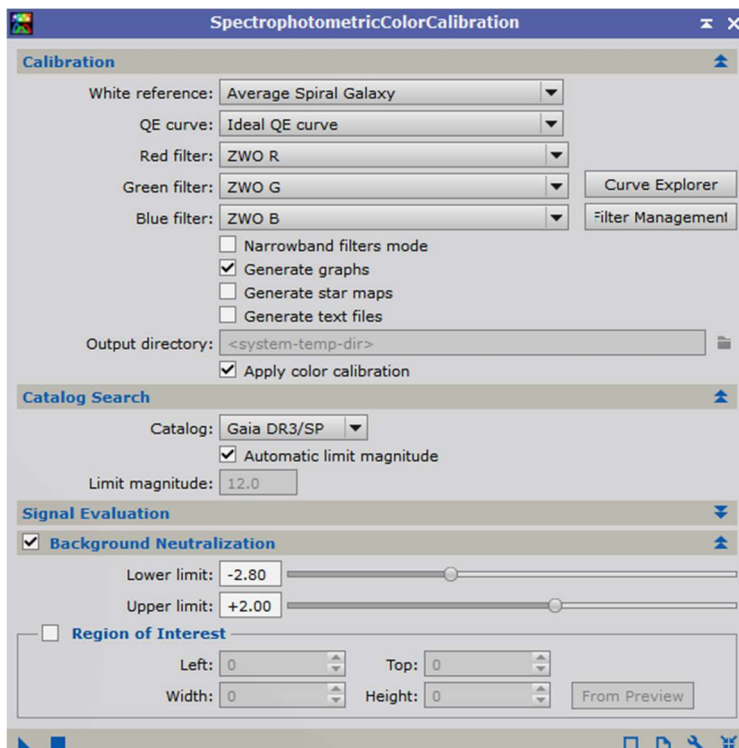
No comments.

These sky coordinates can now be used in PixInsight. For this the script 'ImageSolver' is opened and the coordinates are entered accordingly.

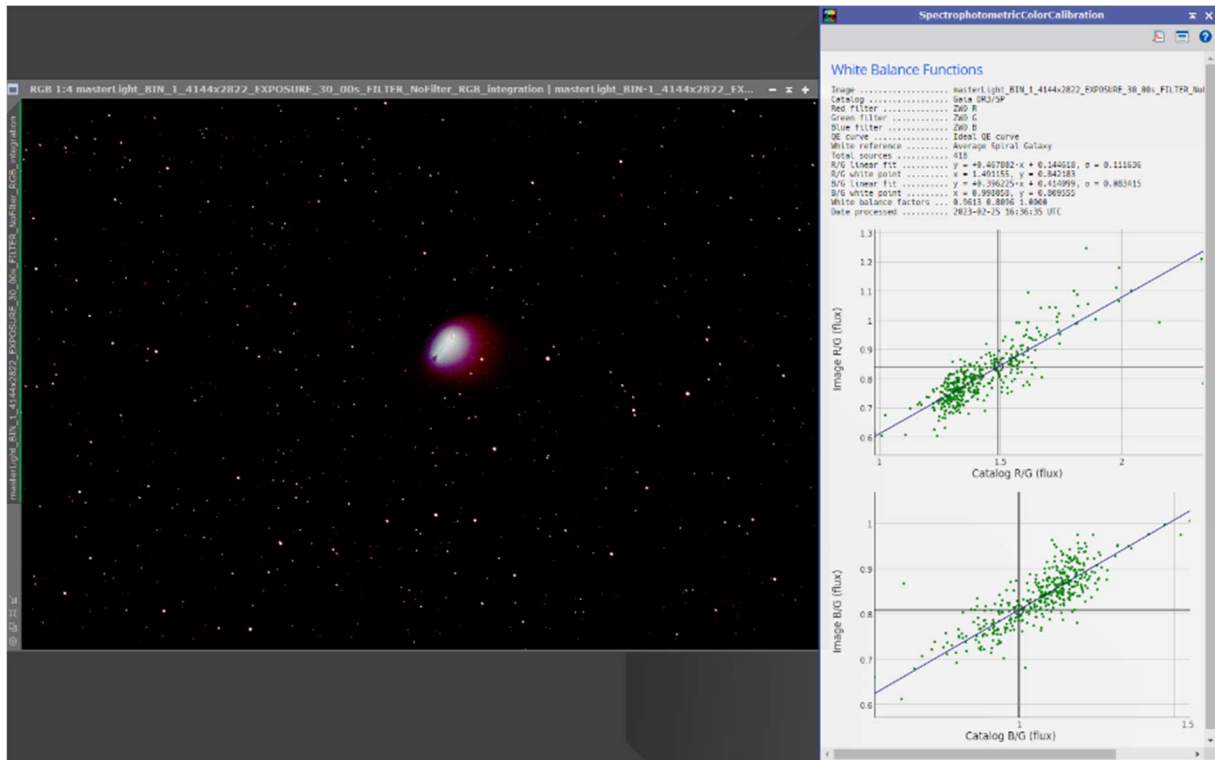




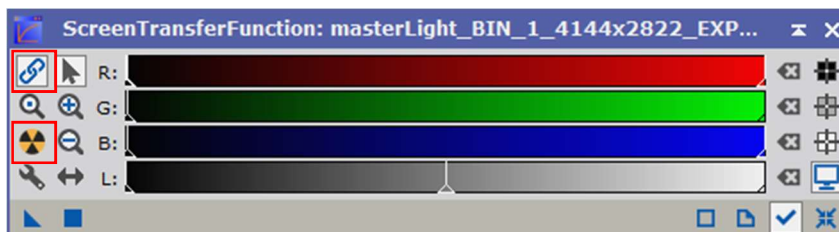
After confirming with 'OK', the color calibration of the stars can now be performed using the 'SpectroPhotometricColorCalibration' process.

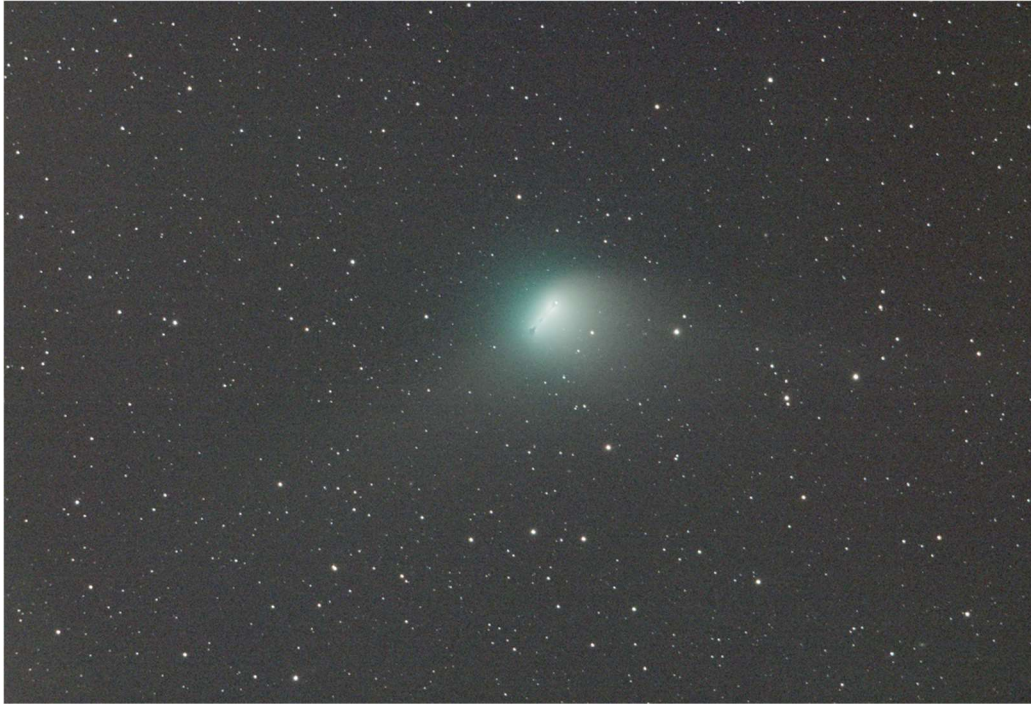


The process is started by dragging the triangle onto the image. The colors are calibrated and the star colors are adjusted using the latest Gaia measurement data. The result is an image with such a graph.



To display the image correctly, the 'ScreenTransferFunction' is used again. Since the colors are now calibrated, this time the chain symbol is activated and then the autostretch function is performed again via the atom symbol.

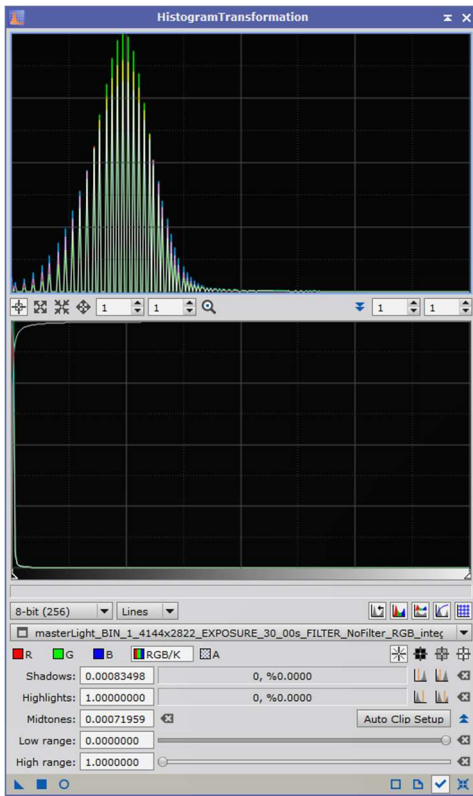




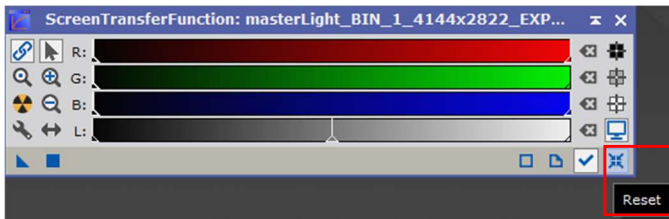
To extract the stars, the image is now stretched. This can be done in three ways.

For the first way the process 'HistogramTransformation' is used. For this, the triangle of the 'ScreenTransferFunction' is dragged into the bar below the 'HistogramTransformation'.

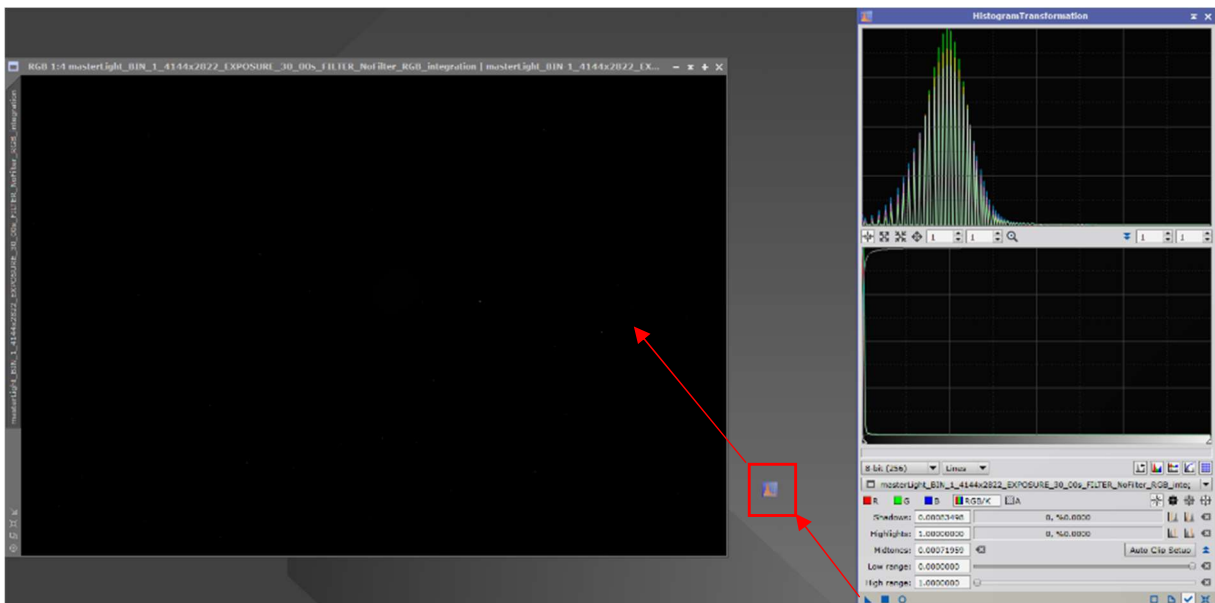




Afterwards the 'ScreenTransferFunction' is reset.



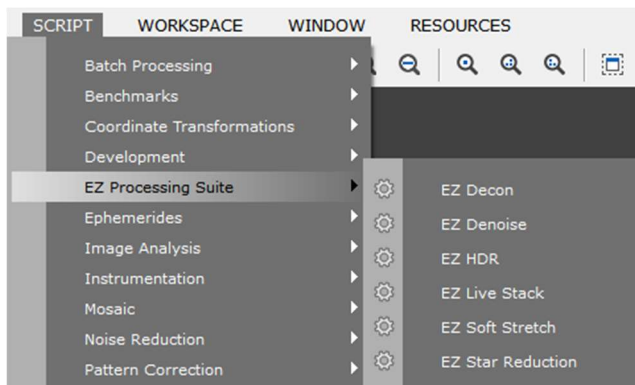
Then the triangle of the 'HistogramTransformation' is dragged onto the image.



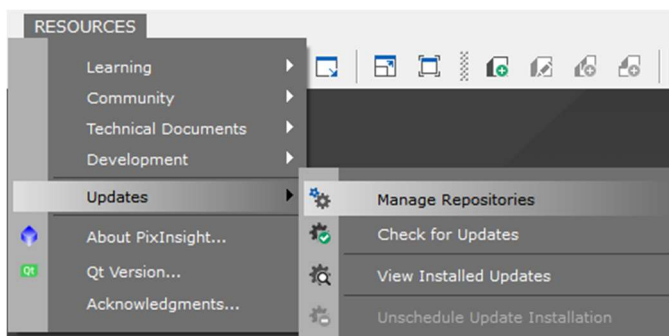


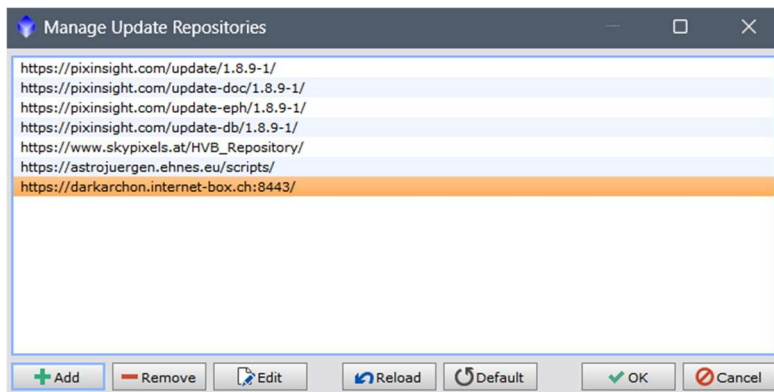


In the second possible way, a prefabricated script from EZ Processing Suite is used.



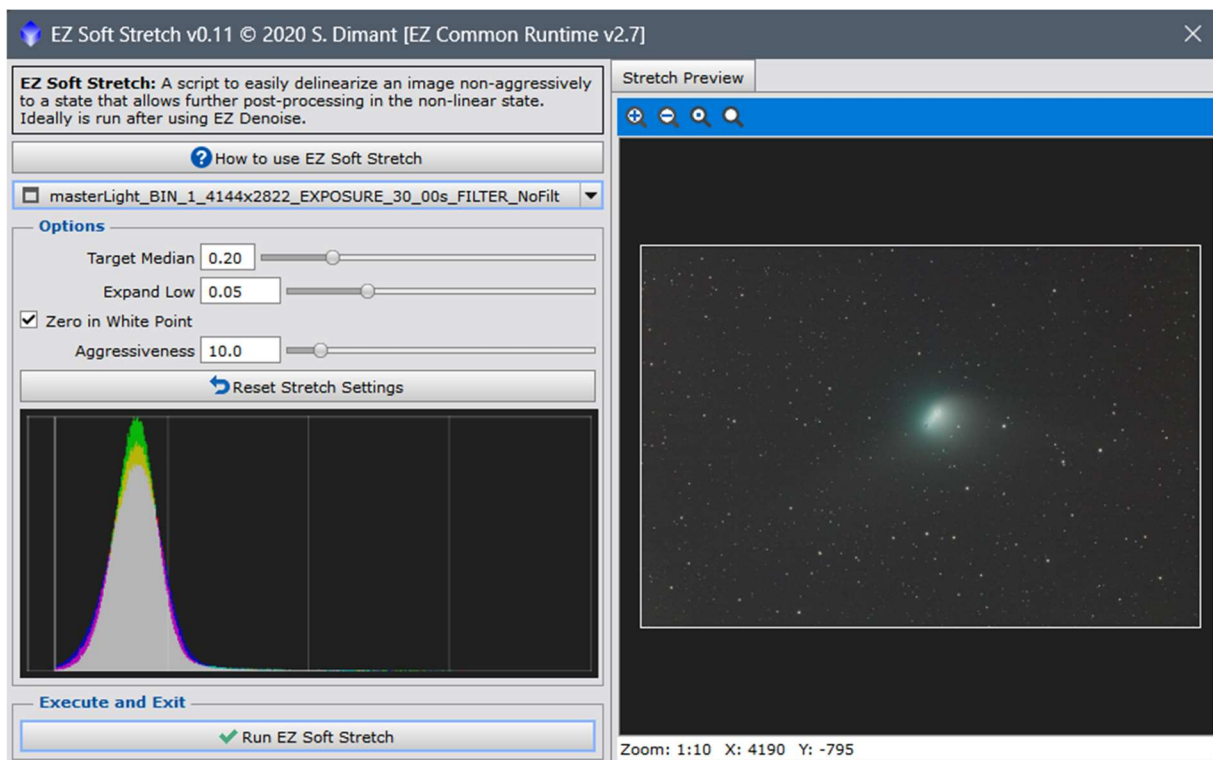
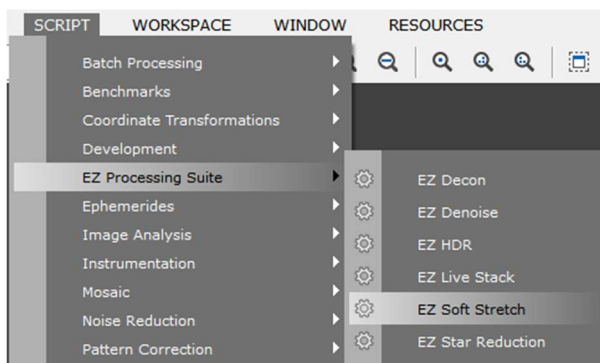
To include this in PixInsight, the following link „<https://darkarchon.internet-box.ch:8443/>“ must be added under 'Resources - Updates - Manage Repositories'.



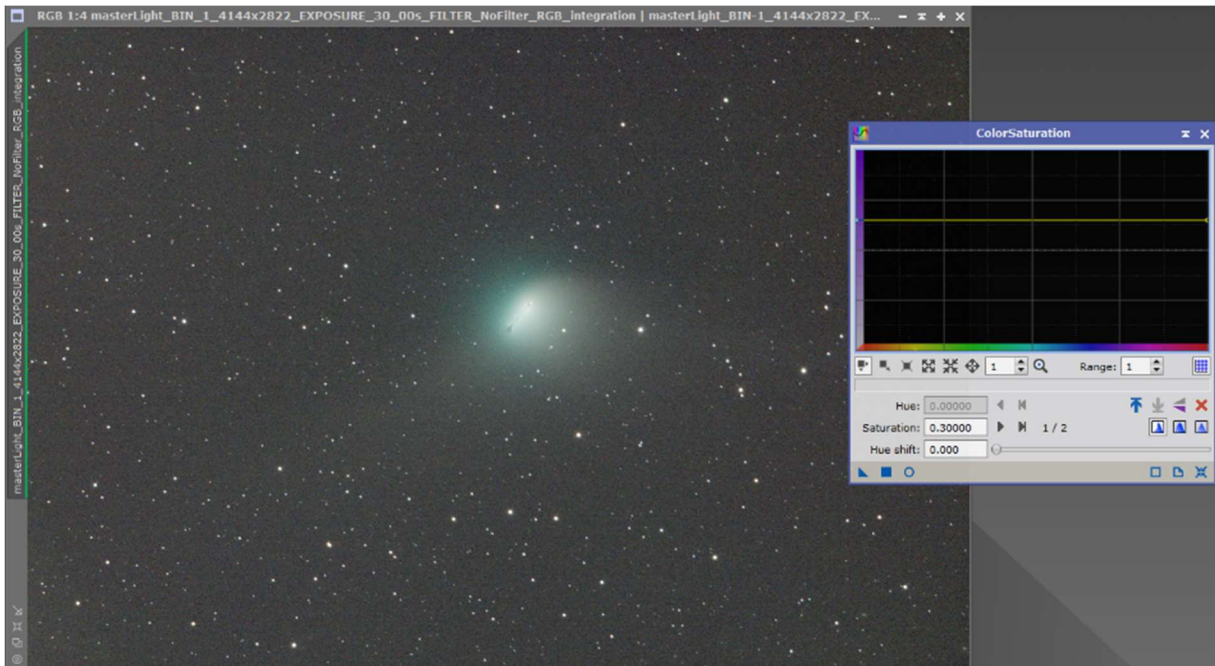


Then select "Check for Updates" in the same menu tree. It may be that PixInsight must be restarted before the script can be used.

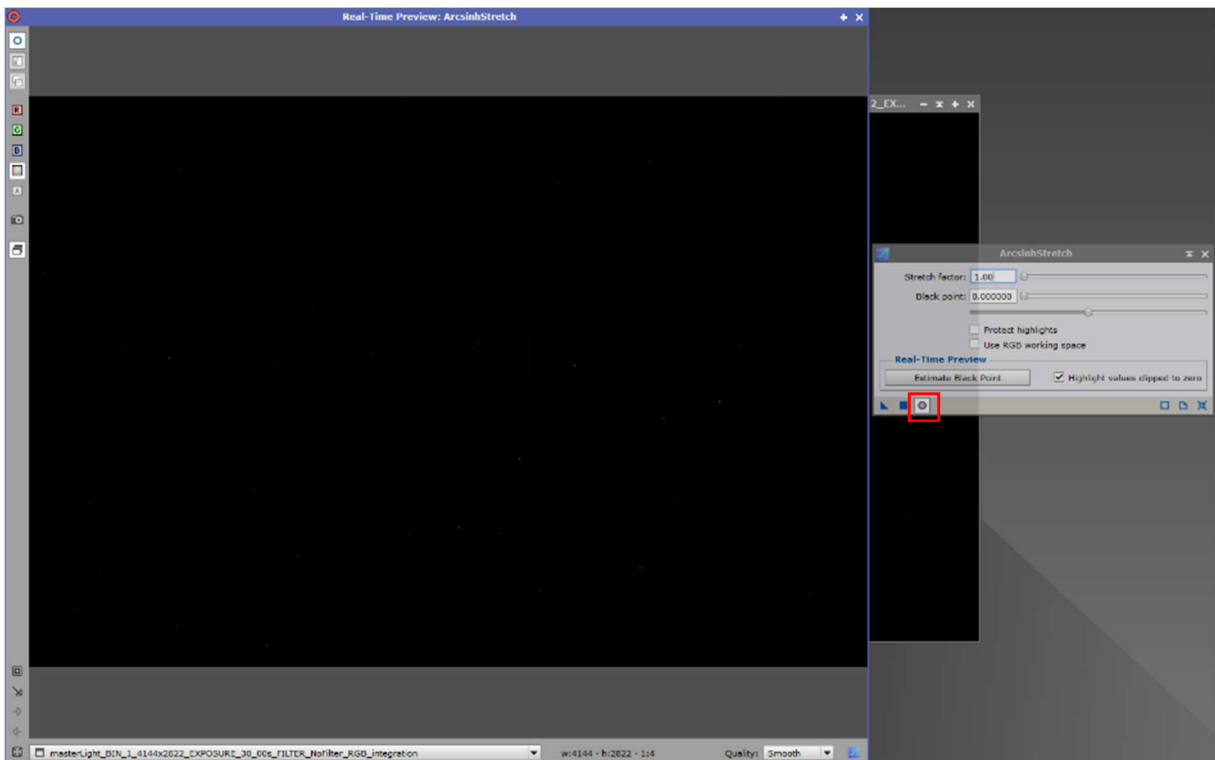
Once the script is installed, EZ Soft Stretch can be selected and applied to the image.



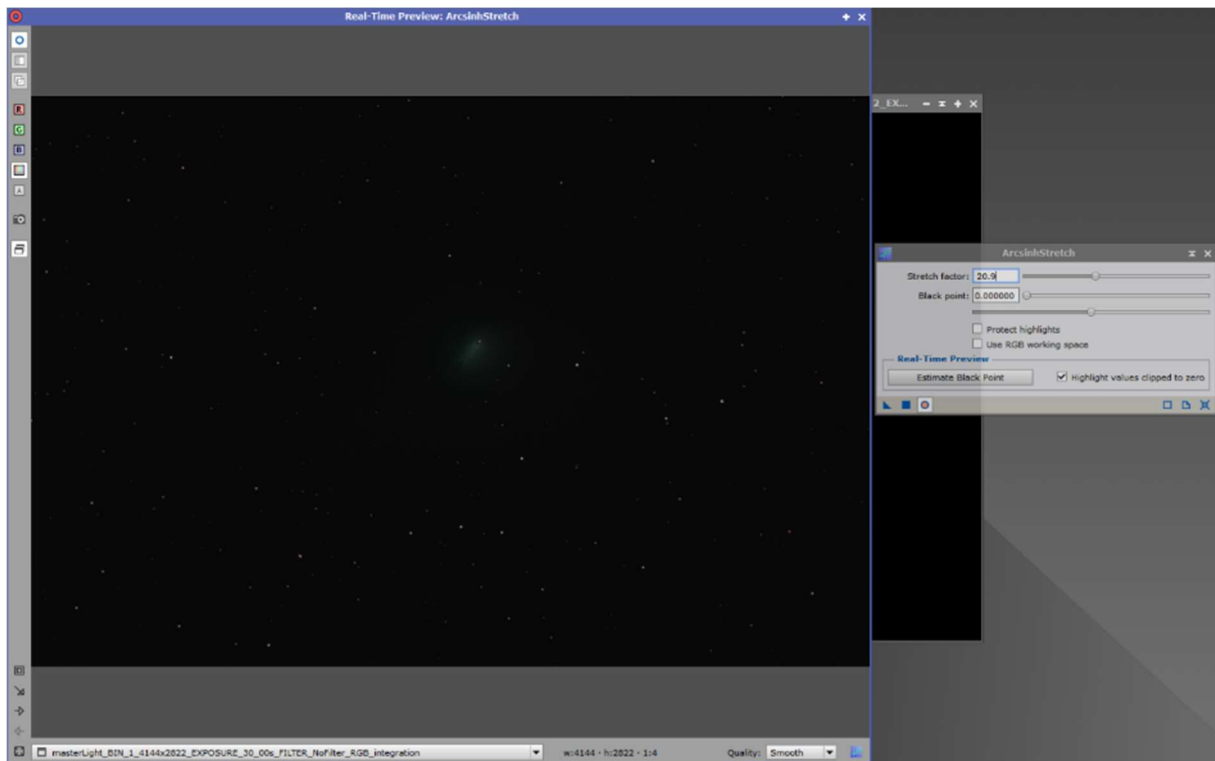
The third way involves manual stretching. Here, the stars can be slightly saturated via the 'ColorSaturation' process, which is also possible in the other two ways.



Afterwards the autostretch function of the 'ScreenTransferFunction' is deactivated again and the process 'ArcSinStretch' is started. A preview image is displayed via the lower circle.

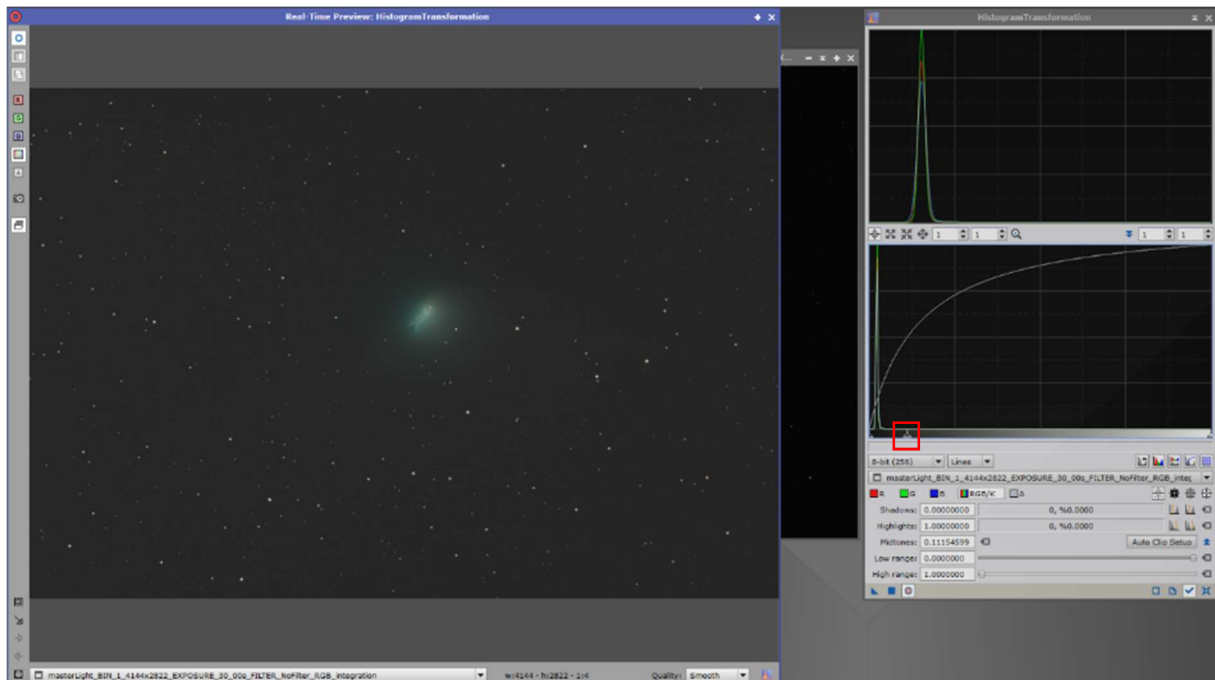


The 'Stretch factor' is used to stretch the stars so that the colors do not look too unnatural.

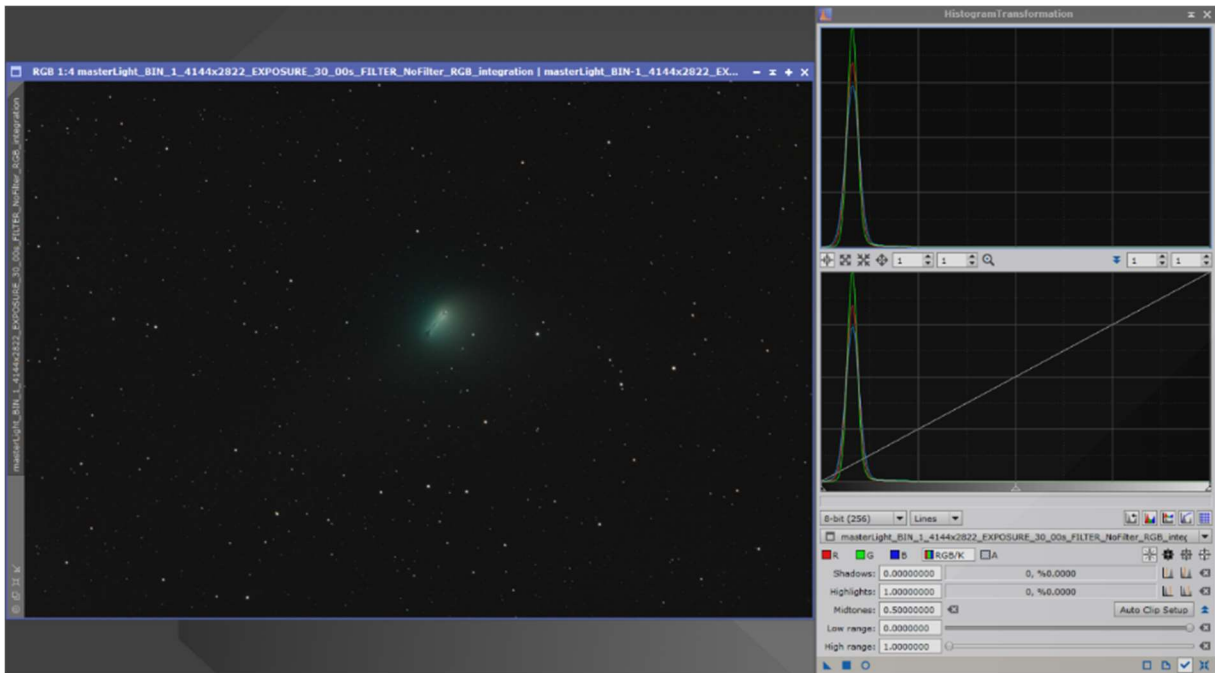


The triangle is used to apply the settings from the preview image to the image. The remaining stretching is done with the 'HistogramTransformation'.

Move the middle slider to the left until an acceptable result can be seen.

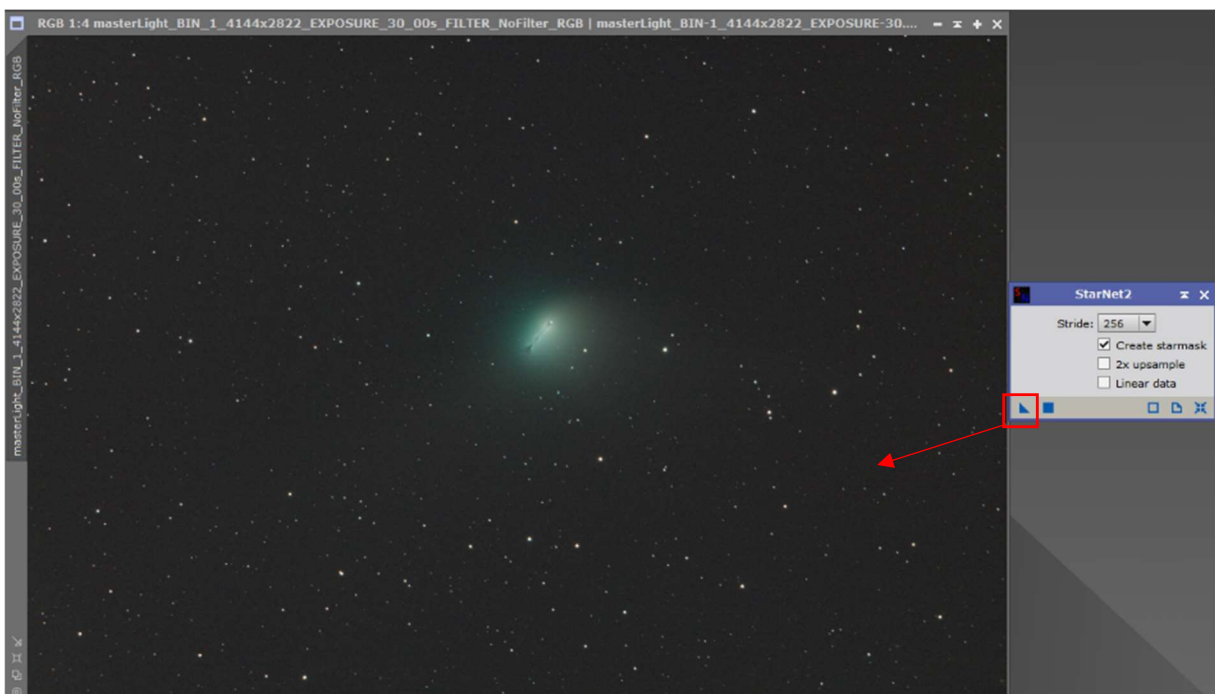




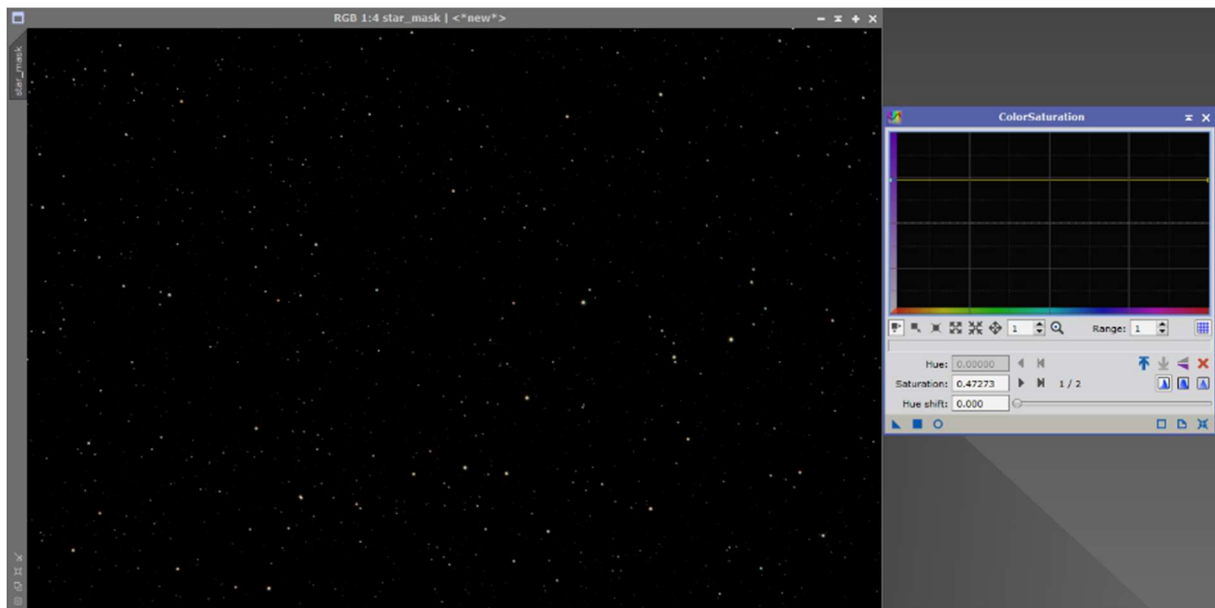


Once the image has been stretched via one of the three paths, the stars can be extracted with the help of the process 'StarNet2'. If the process 'StarNet2' is not yet installed, this can be done with the help of these instructions: <https://www.galactic-hunter.com/post/starnet2>

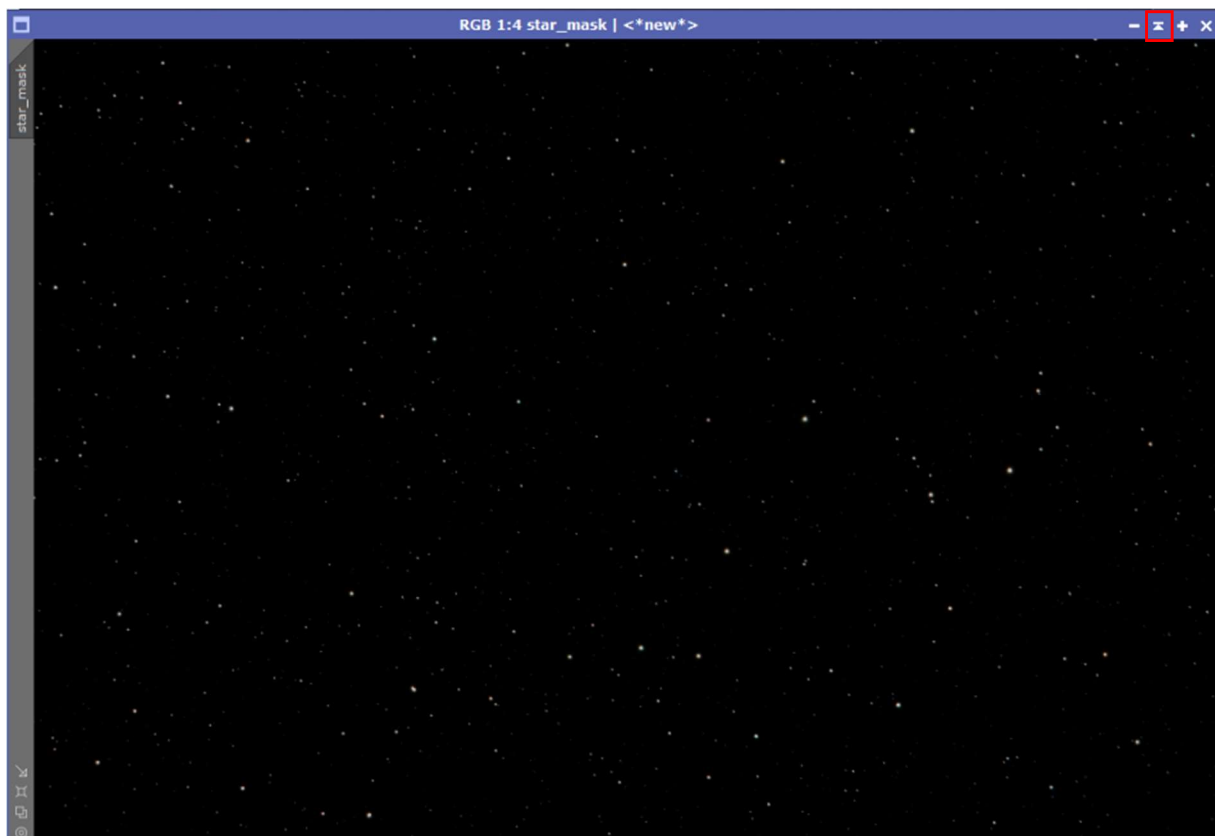
After starting the process, the blue triangle can be dragged onto the image and the stars will be extracted in an extra image.



The star colors can be saturated with the 'Saturation' process.



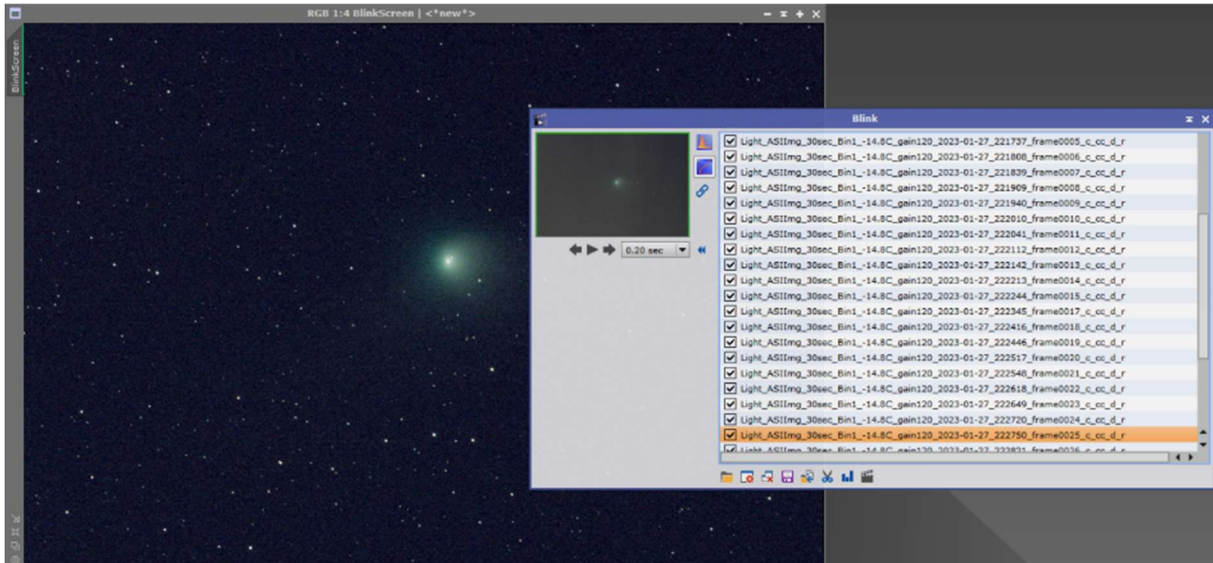
The extracted stars can be reduced for the time being with the icon in the upper right corner, and the background image can be closed.



The goal is now to extract the comet from the individual images and to produce a sum image from this comet only, in order to reunite it with the stars afterwards.

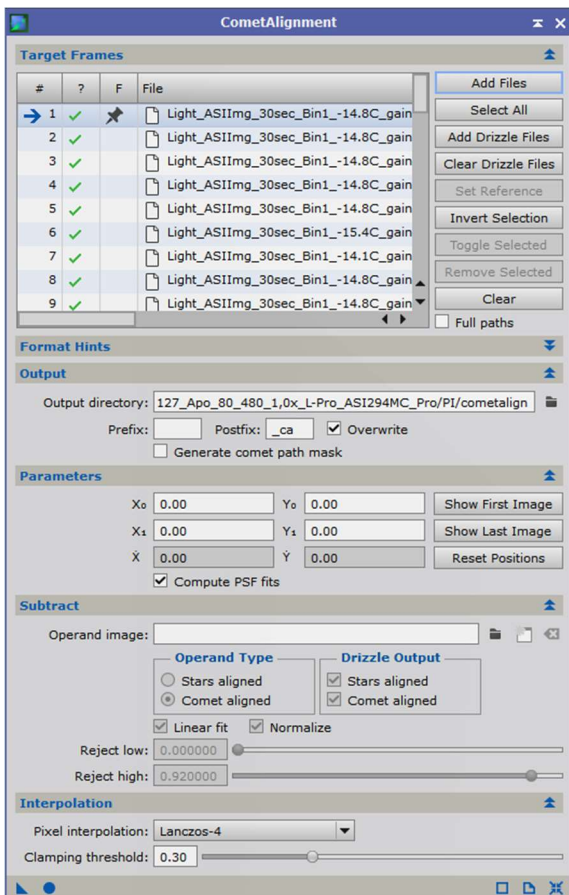
In the stacking process, all images were aligned to each other at the stars of the respective frames, causing the comet to slowly "wander" through the image.

This can be illustrated with the process 'Blink'.



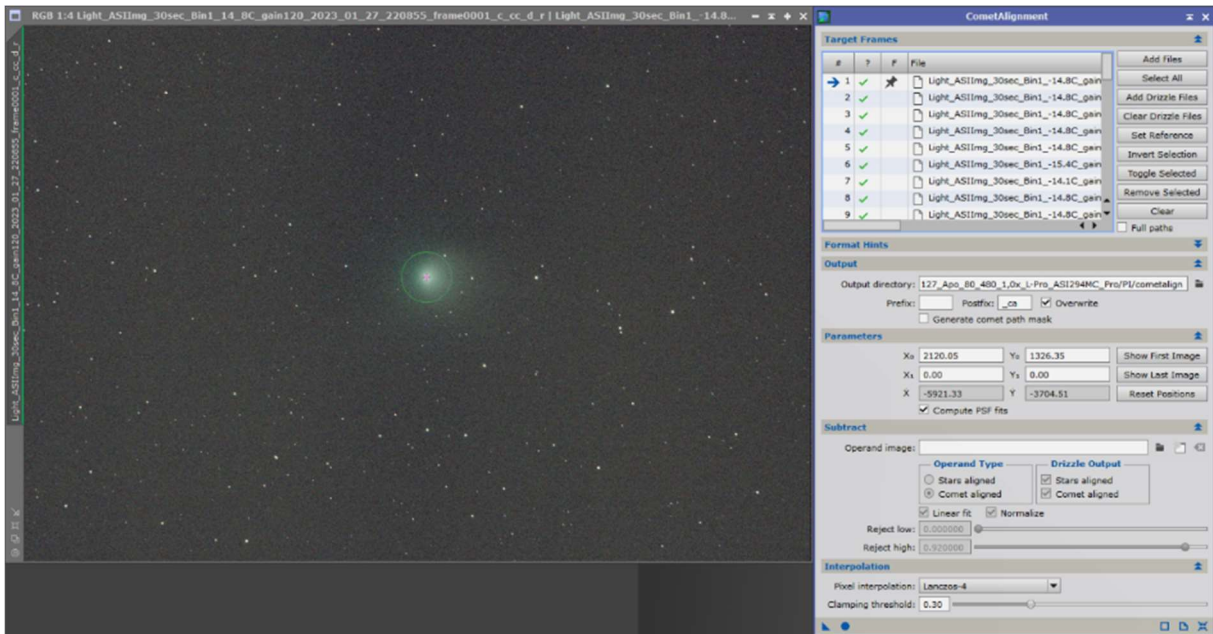
For this purpose, the registered images with the extension '\_r' are opened from the working folder 'registered' and played via the play button.

To align the images to the comet, the 'CometAlignment' process is opened, the images from the 'registered' folder are inserted via 'Add Files', and an output folder is specified.

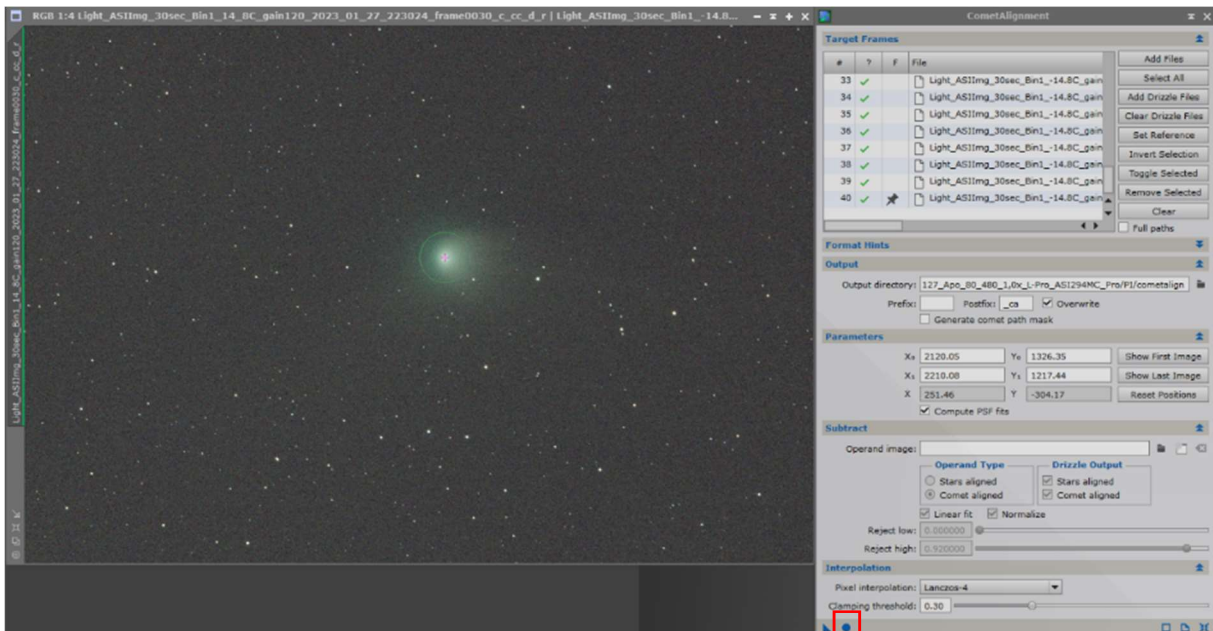


Now the start and end point of the comet's motion must be defined.

To do this, select the first image and click on 'Show First Image'. The image opens on which the comet is marked with the mouse. (Use the autostretch function of the 'ScreenTransferFunction' to make the comet visible).

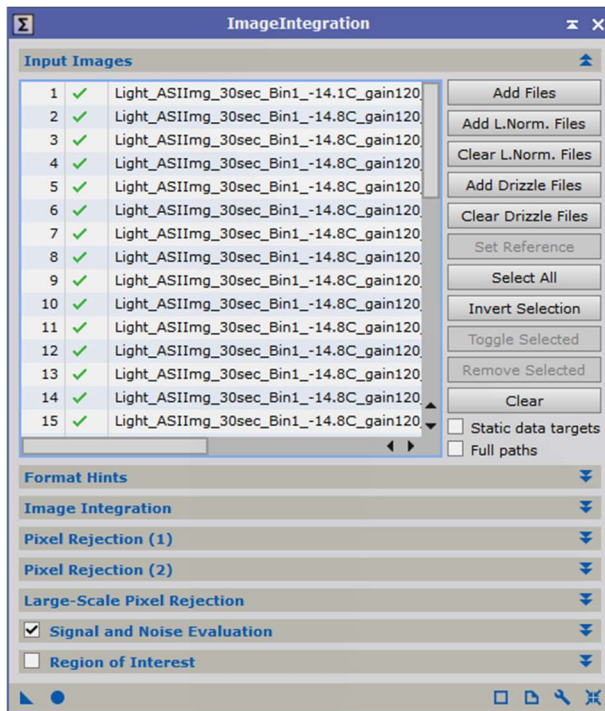


The same is done with the last position point. The last image is marked and then clicked on 'Show Last Image'. With the mouse the position of the comet is marked again. (Use the autostretch function of the 'ScreenTransferFunction' to make the comet visible).





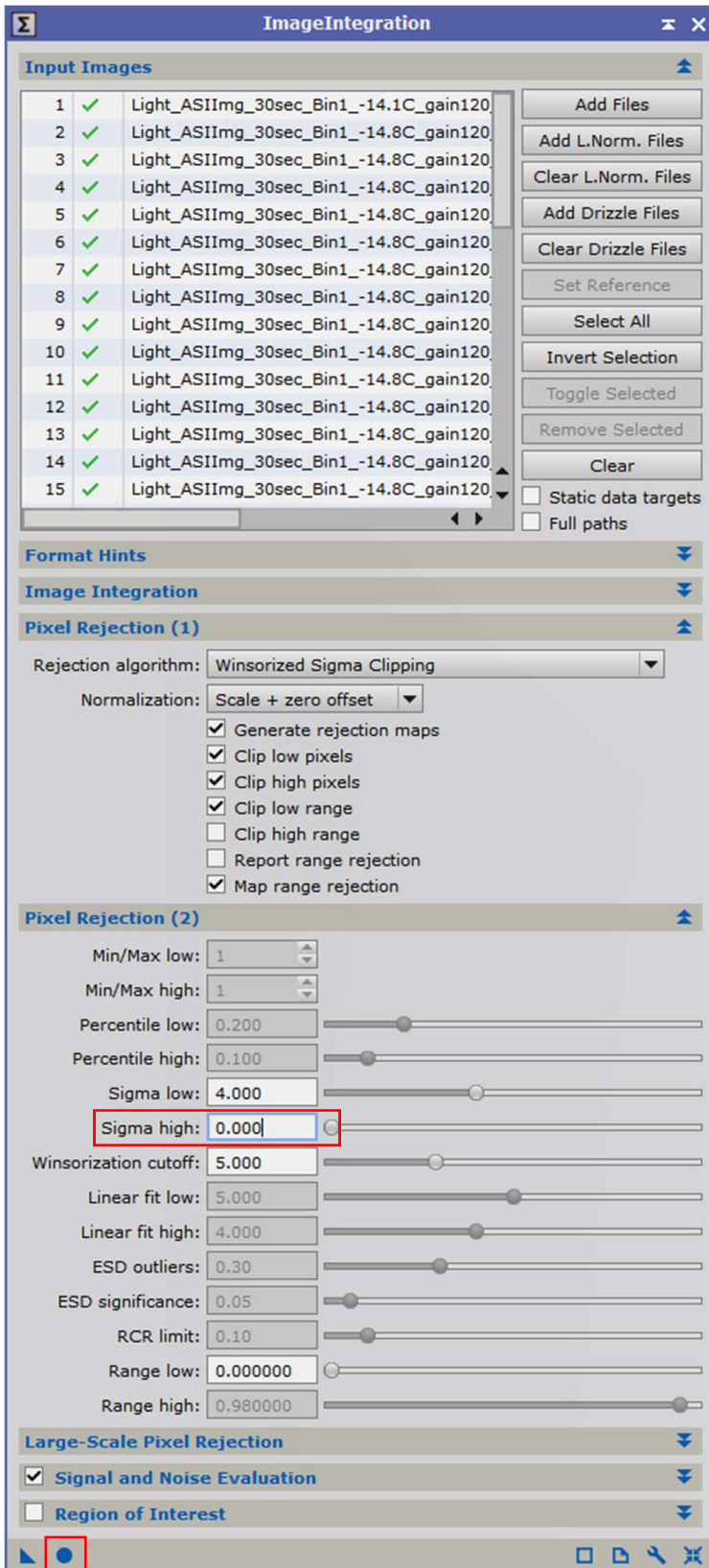
The remaining settings can be left as they are, and clicking on the round circle starts the process. Now all images are registered on the comets and they can be united afterwards. To do this, the 'ImageIntegration' process is opened and the registered images from the previously created working folder of the CometAlignment are inserted.



In this process, the stars are now to be extracted at the same time, since they leave long traces in the images just aligned with the comet.

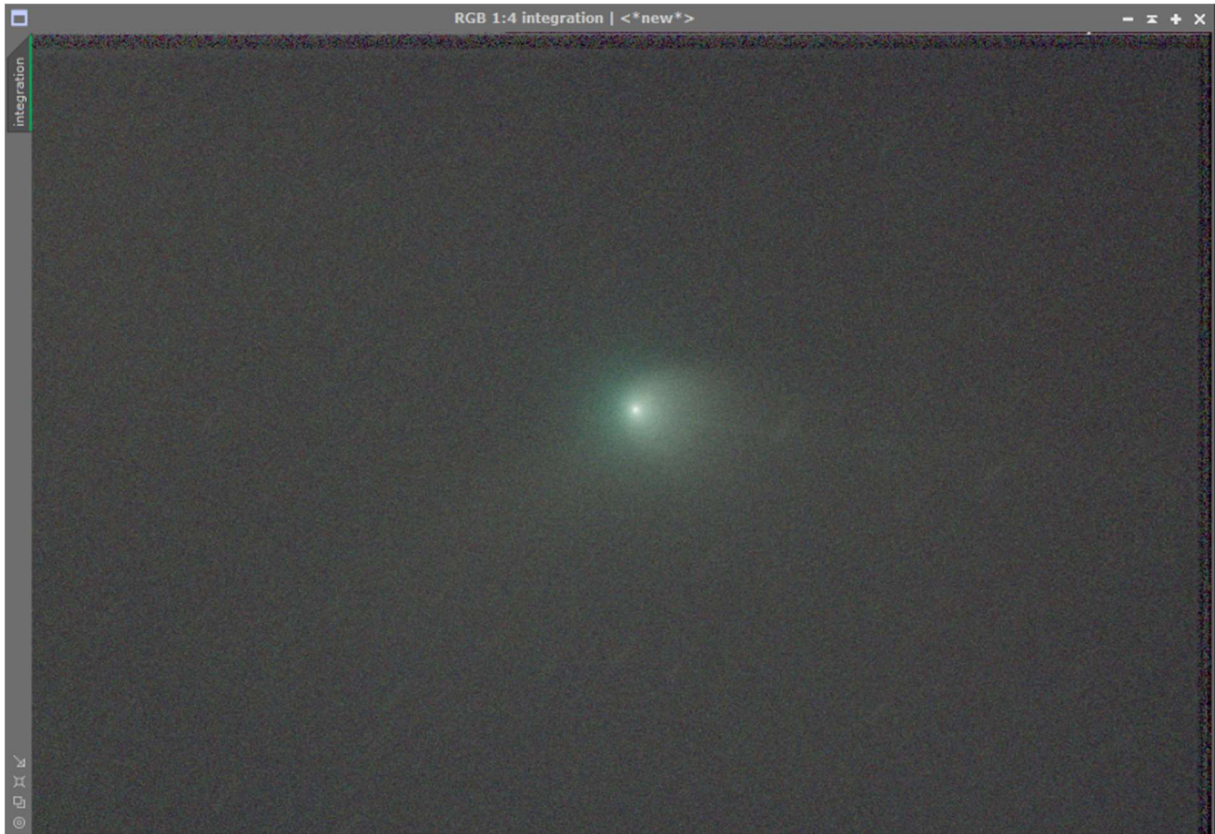


For this purpose, the 'Winsorized Sigma Clipping' algorithm is selected in the 'Pixel Rejection (1)' section, and the 'Sigma high' value is lowered to zero in the 'Pixel Rejection (2)' section.

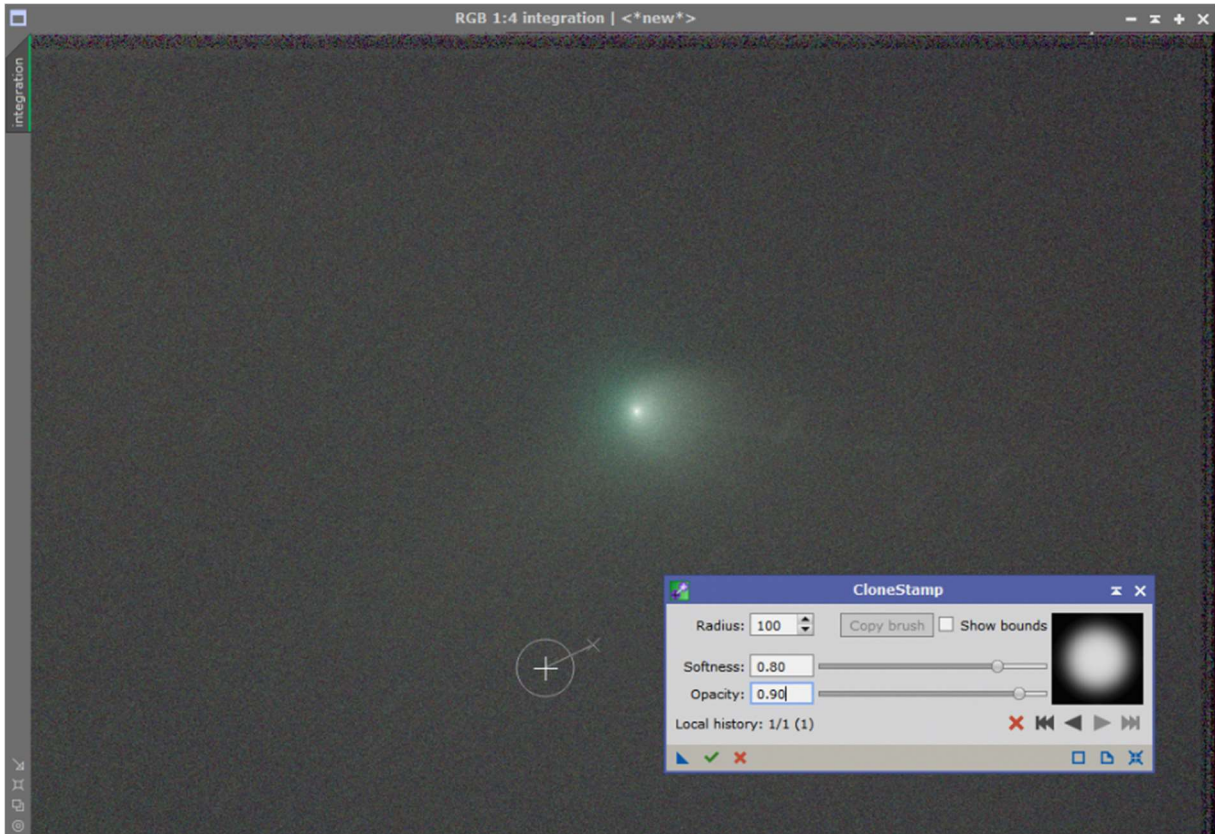


The other settings can be kept like this, and clicking on the round circle will start the process.

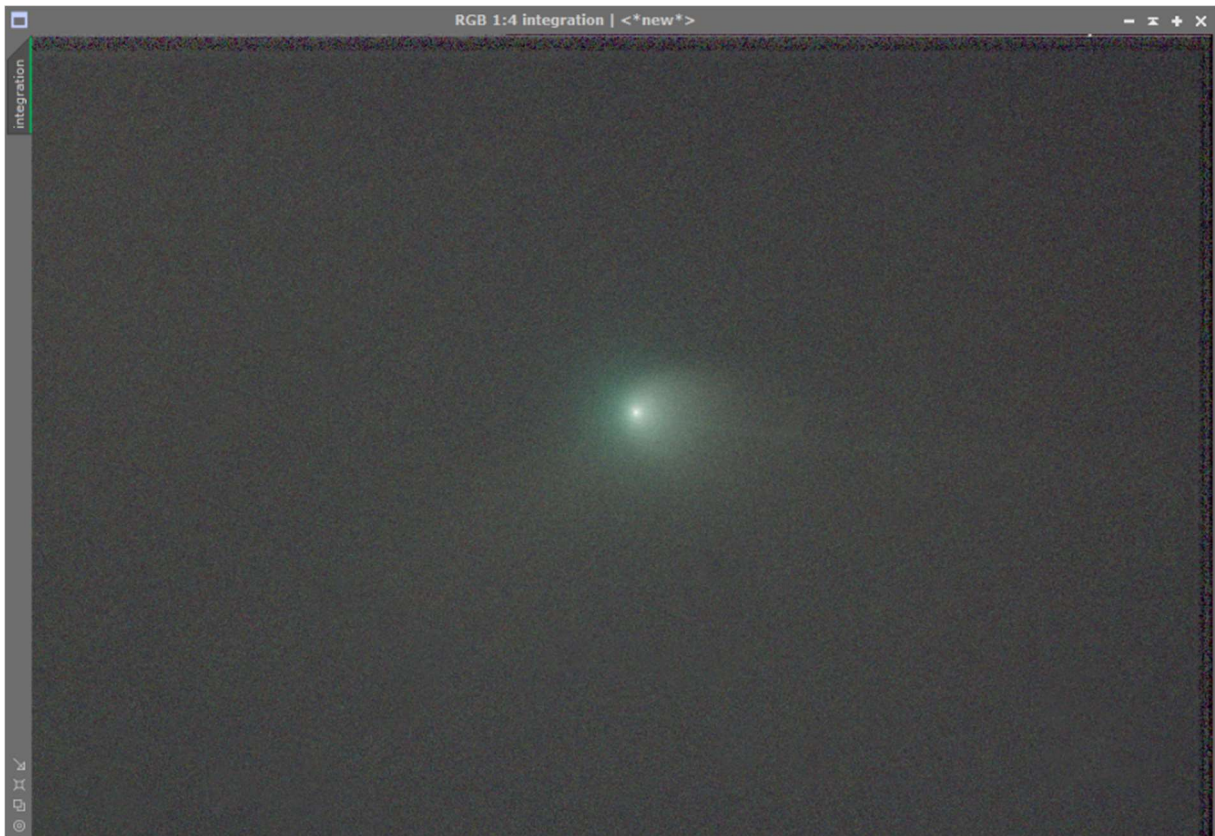




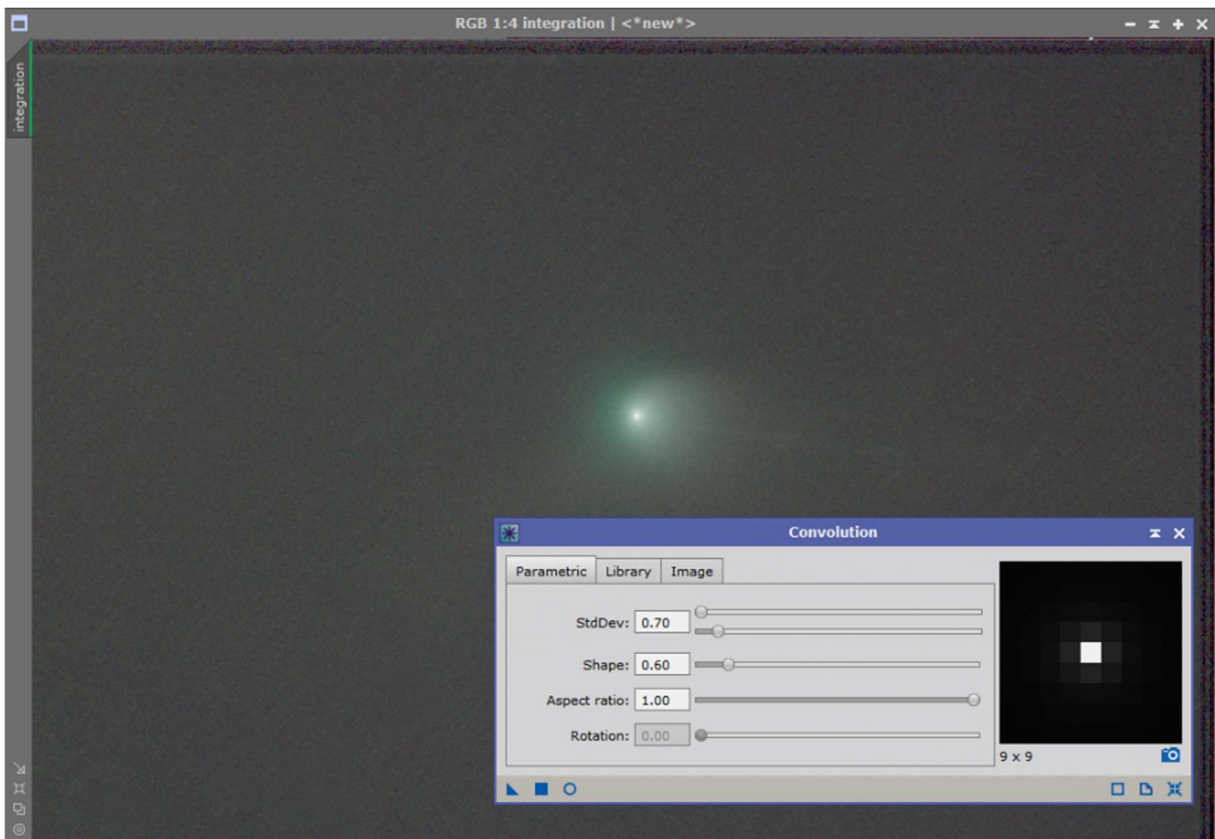
In the resulting image you can still see a few artifacts of the star trails. These can be corrected with the 'CloneStamp' process and a blur setting. (For this you can also switch to another editing program like Photoshop or GIMP).





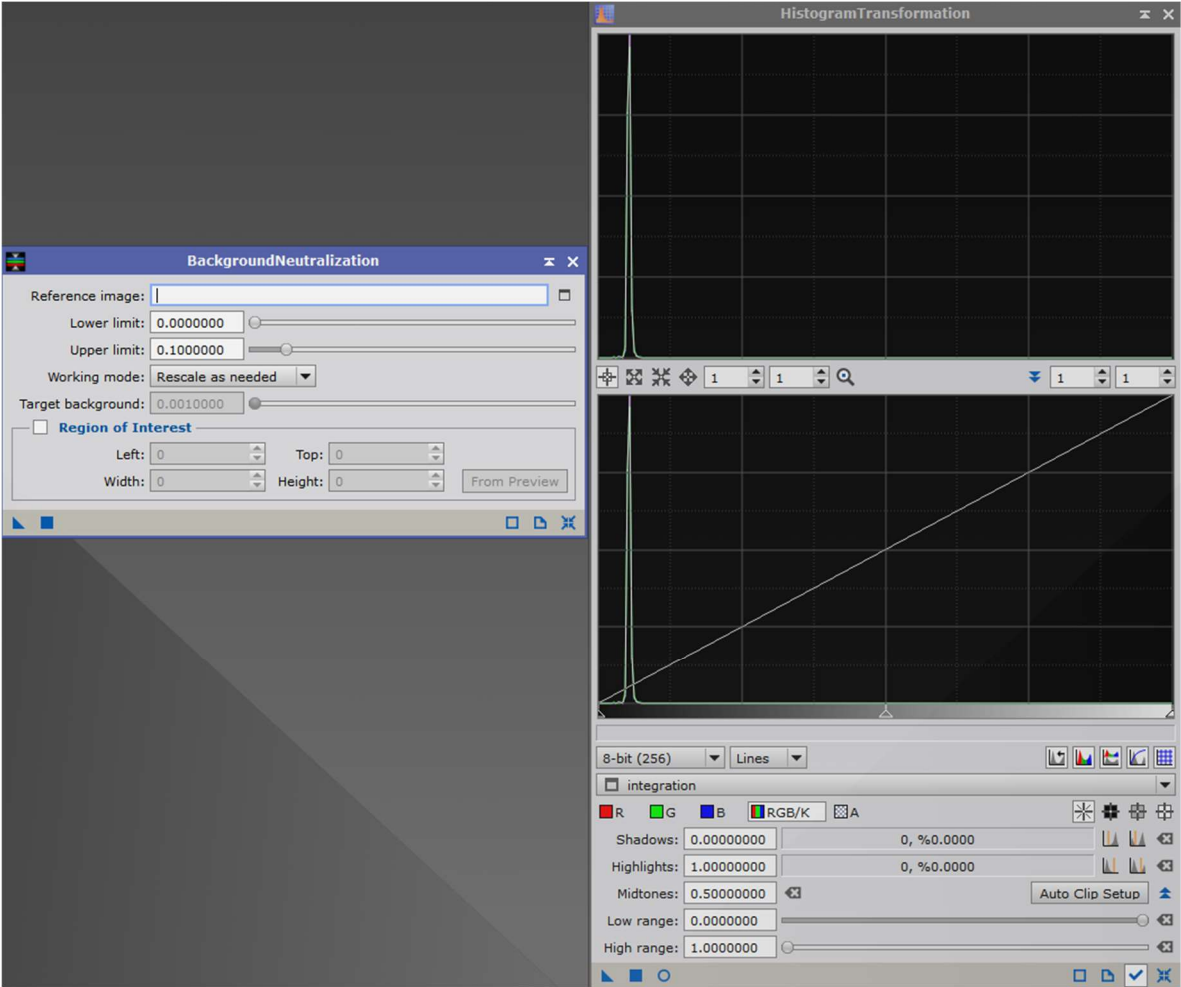
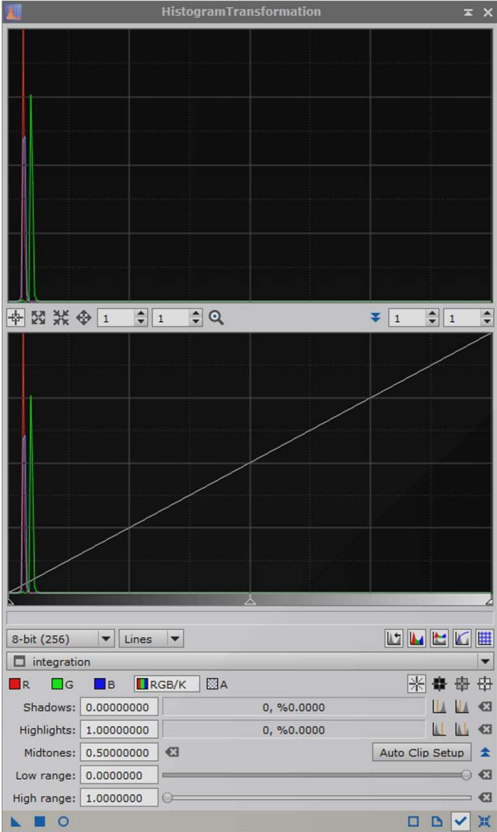


With the process 'Convolution' the background can still be softened very slightly.

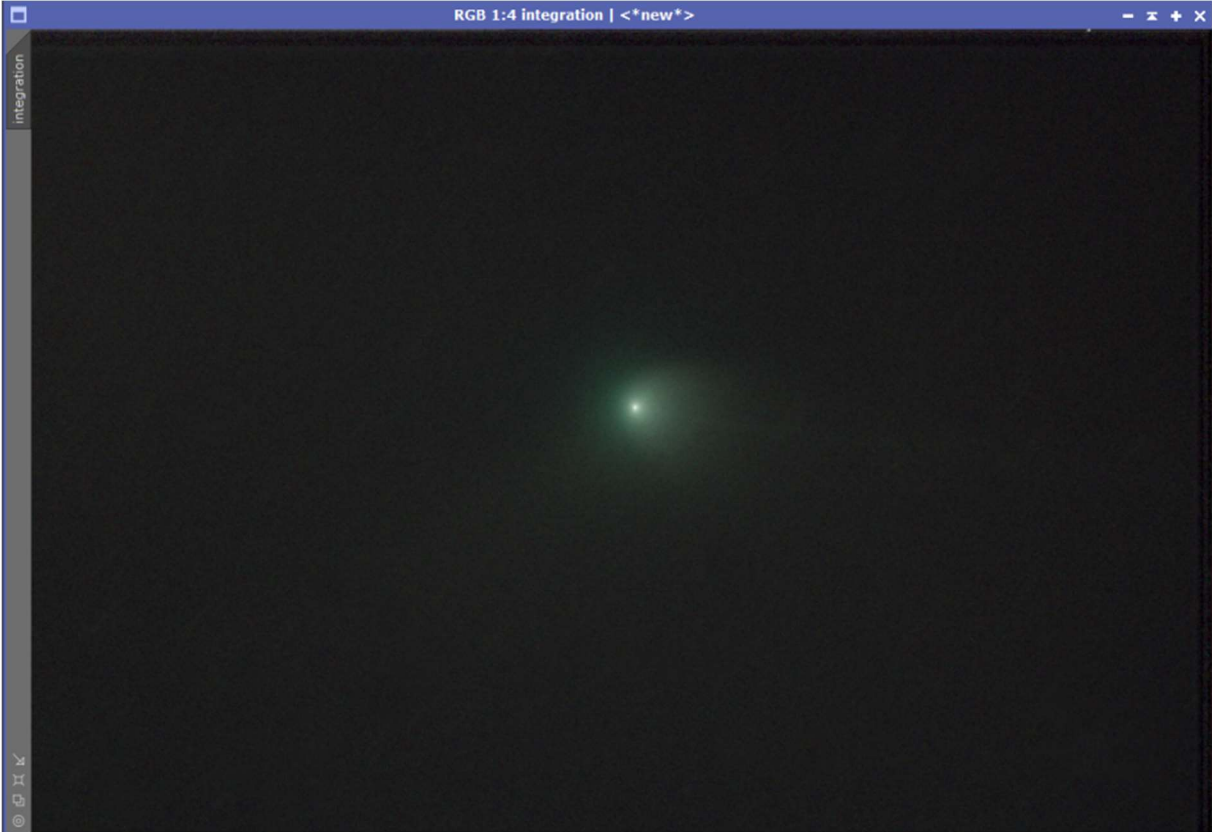




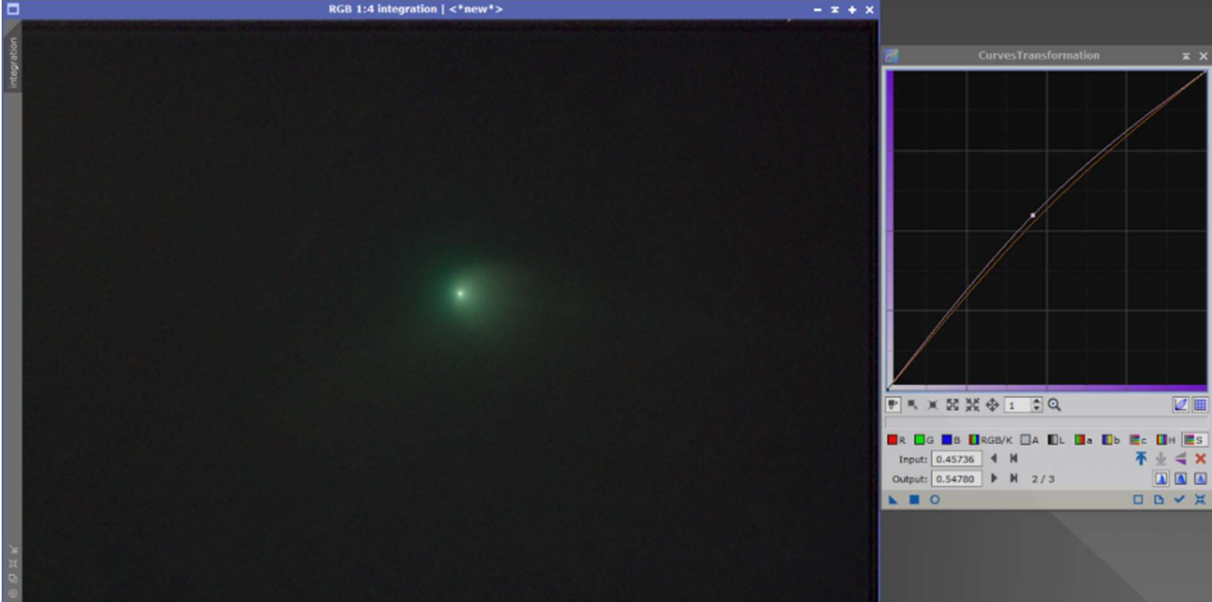
The colors can now be calibrated via the 'BackgroundNeutralization' process.



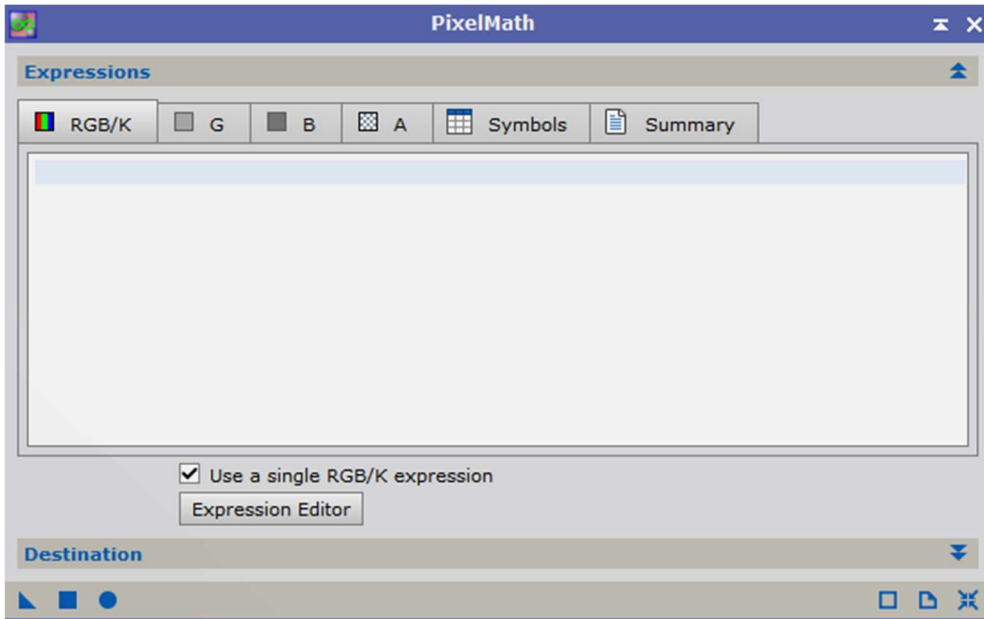
The image is then stretched using the 'HistogramTransformation'.



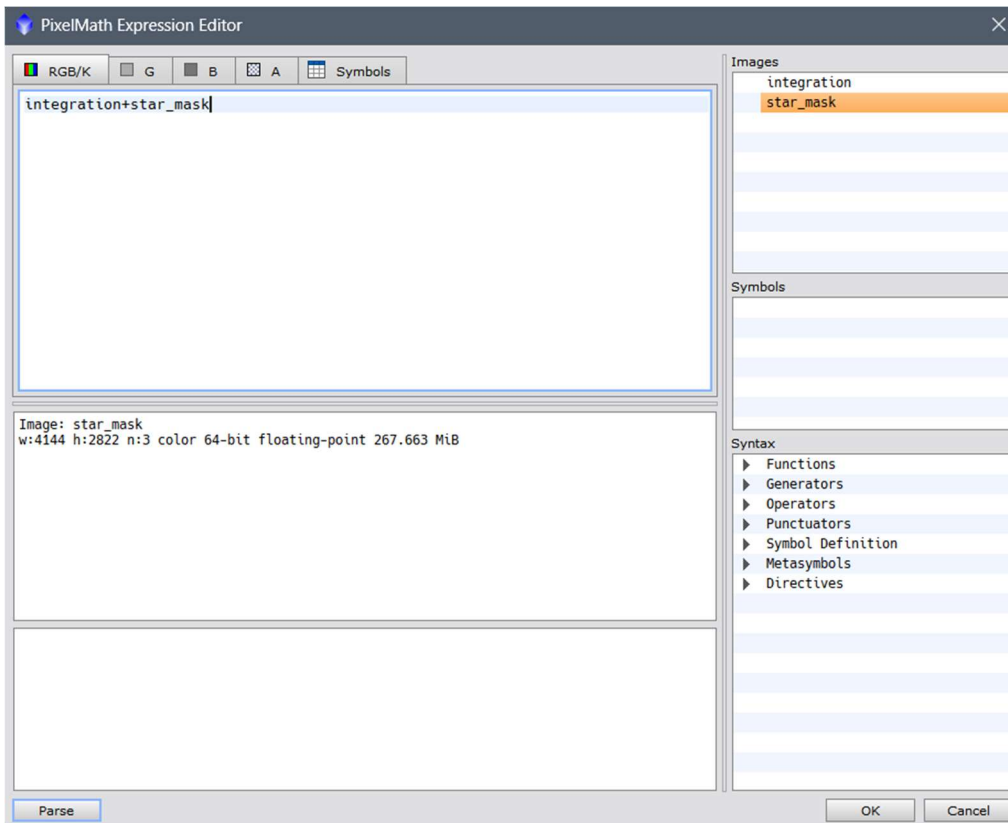
With the help of the 'CurvesTransformation' the colors can be saturated a bit more.



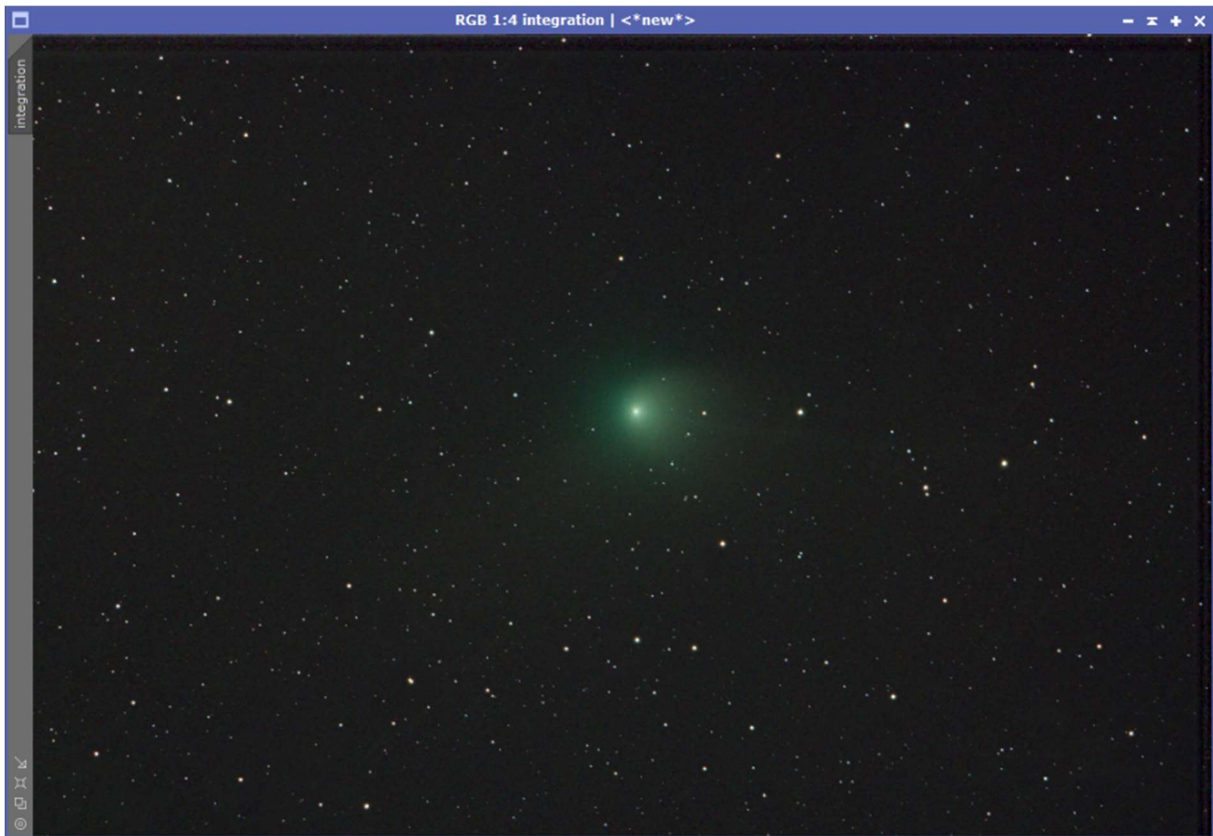
Now the process 'PixelMath' is called to merge the comet image with the star image.



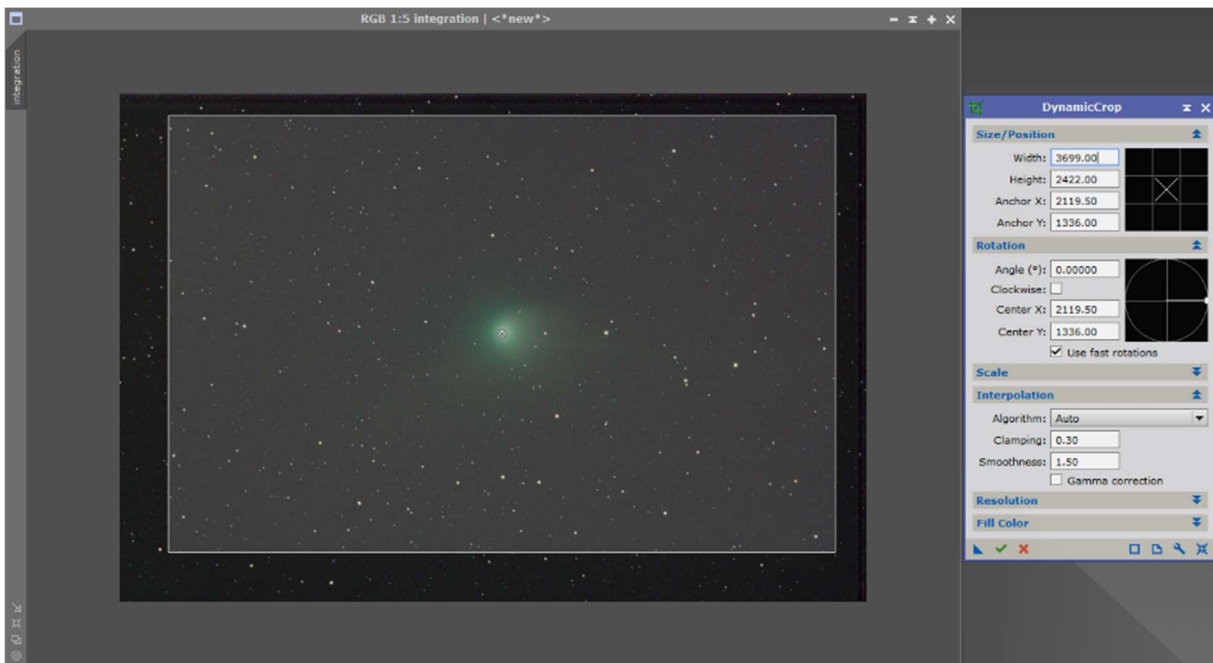
Clicking on the 'Expression Editor' button opens the editing window, in which the two images can be merged by double-clicking on them and adding the plus sign.



Confirm with 'Ok', and then drag the blue triangle onto the comet image.



Using the 'DynamicCrop' process, the edges can still be cropped accordingly.





The resulting image can now be further colored and/or denoised depending on the quality.

