



CCDBand-Aid & PixInsight Narrowband Images

By

Bob Franke
(<http://bf-astro.com>)

PixInsight is developed and maintained
By
Pleiades Astrophoto S.L

CCDOPS is developed and maintained
By
Santa Barbara Instrument Group

Working With Narrowband Images

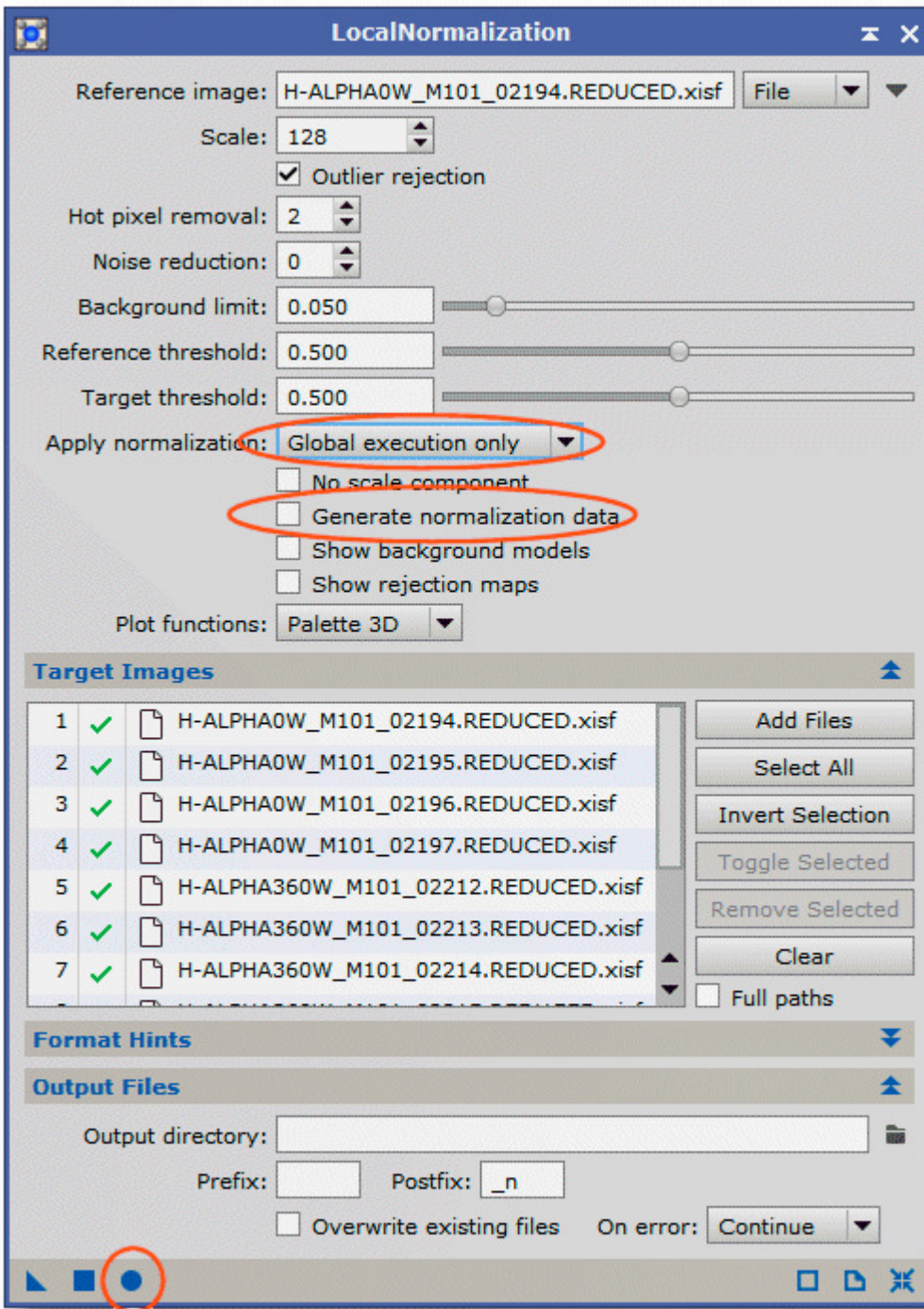
Both CCDBand-Aid and CCDOPS usually fail to properly analyze and correct narrowband (NB) images. Even with 30-minute exposures, NB images are still noisy and difficult to process.

Here are the basic steps for working with narrowband images, followed by detailed instructions for PixInsight users.

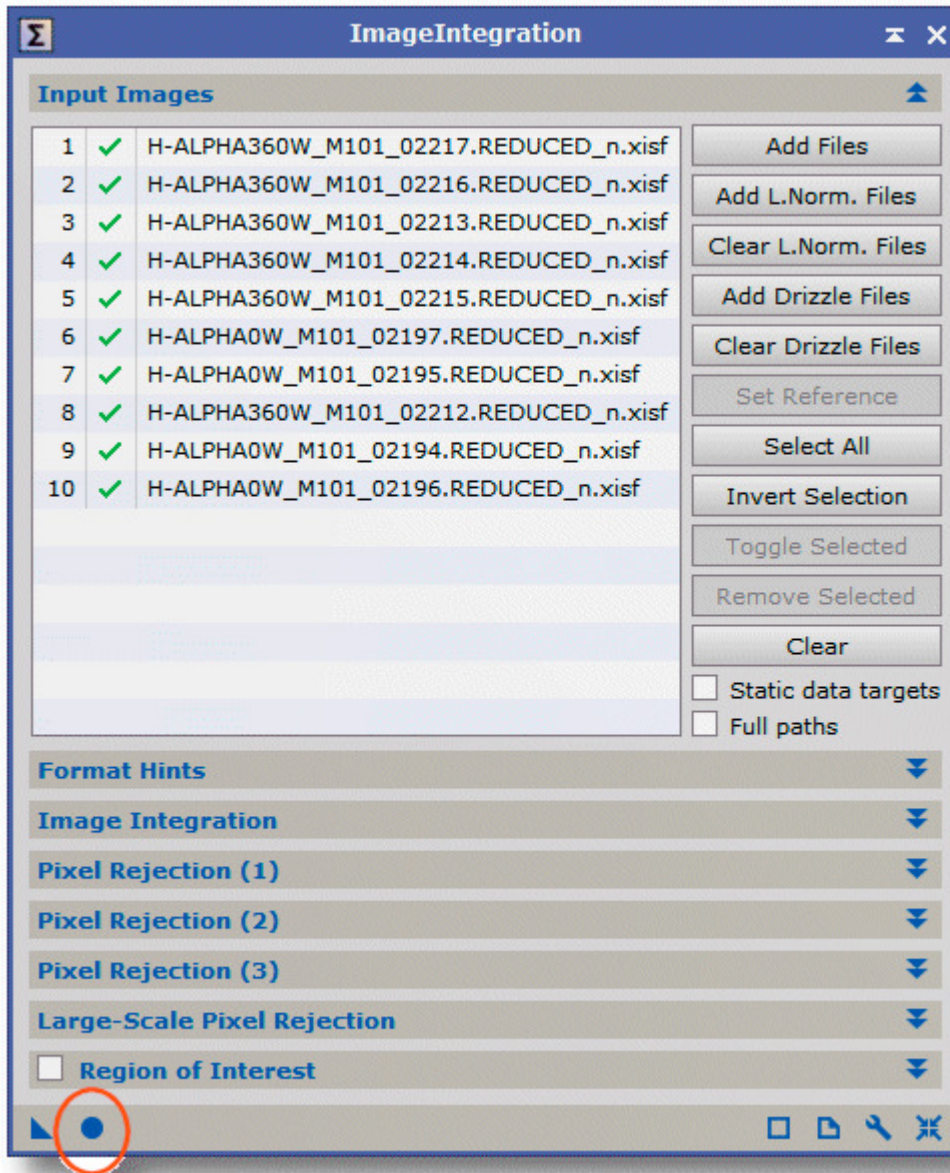
1. Group your sub exposures by temperature and length of exposure. Apply the following steps to each group.
2. Without registering the images, normalize the sub exposures. This creates a set of images with similar background levels.
3. Mean combine the group of exposures and save this and the normalized images as 32-bit floating point FITS.
4. Processes the mean combined image with CCDBand-Aid to get the band pattern amplitude.
5. Use the acquired amplitude to repair the vertical bands in the normalized images.

In PixInsight, open the LocalNormalization dialogue and click the X on the lower right hand corner to select the default settings. For *Applied normalization*, select "Global execution only". Then uncheck *Generate normalization data*. Click *Add Files*, select the images to normalize and Click *Apply Global*. With this example, the images are saved in the same folder with "_n" added as the postfix.

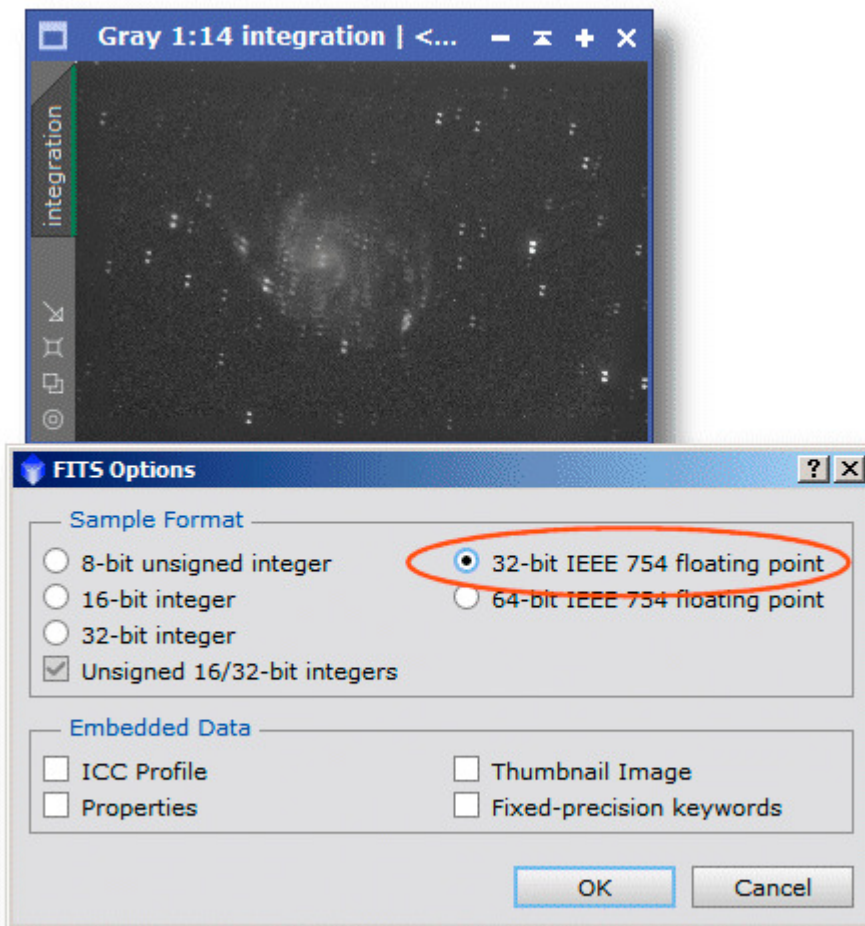
The default settings seem to do a decent job of normalizing the images. Experimentation will no doubt produce better results.



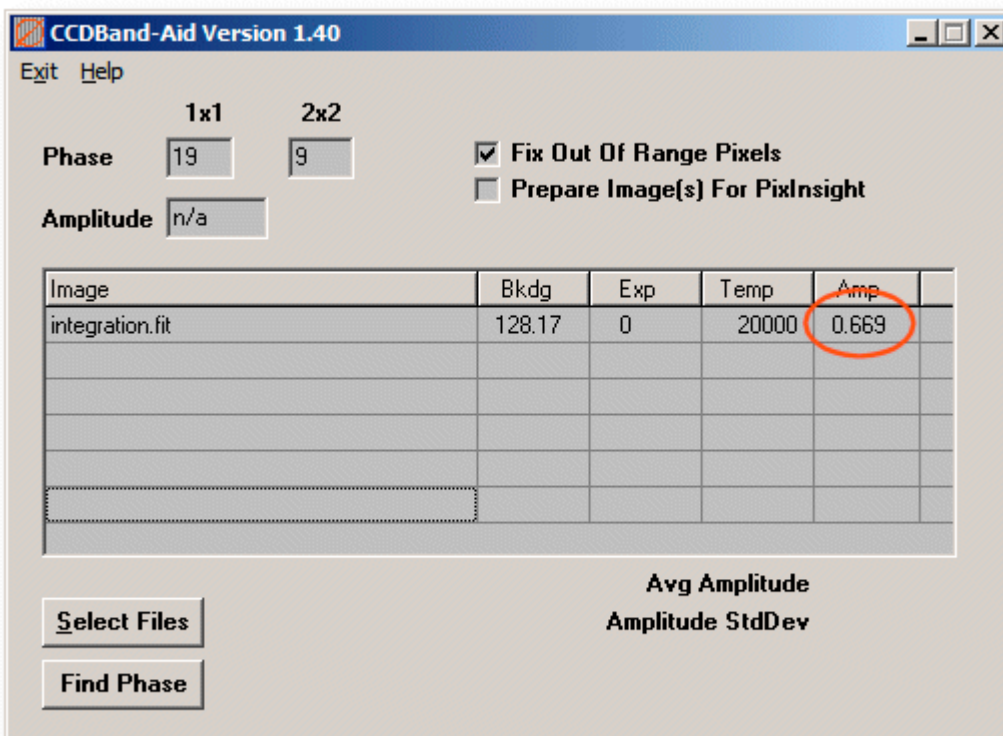
Open the ImageIntegration dialogue and again select the default settings. Click *Add Files* and select all the normalized images. Finally, click *Apply Global* to create the mean combined image. This image has a stronger signal-to-noise ratio, allowing CCDBand-Aid to successfully determine the amplitude of the band pattern.



Save the integrated (mean combined) image, as 32-bit floating point FITS.

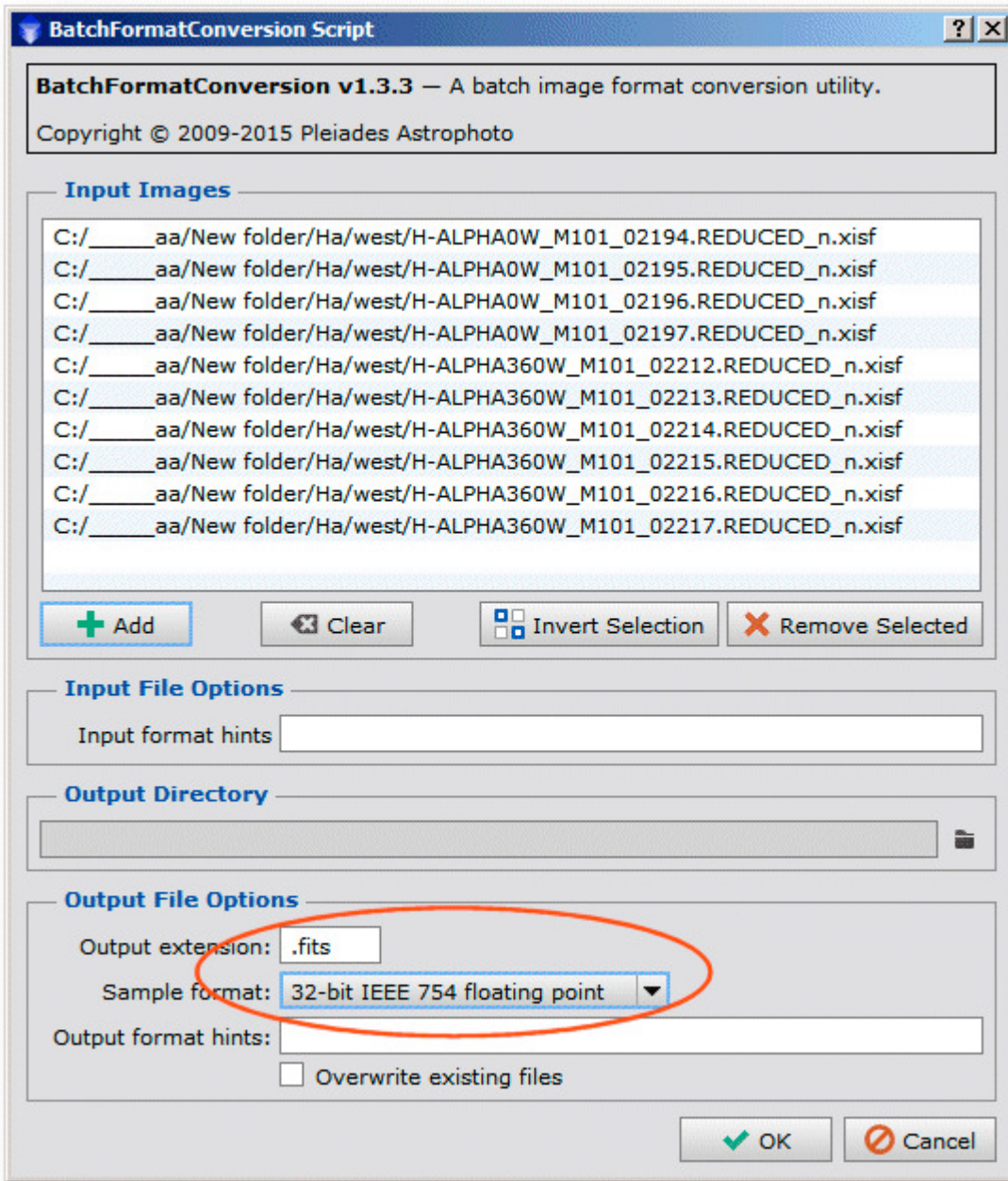


Process the mean combined image with CCDBand-Aid to determine the band pattern amplitude. Do not be concerned with the very high value for the amplitude. CCDBand-Aid internally multiplies PixInsight data by 65535 and then divides by 65535 when the FITS image is saved.

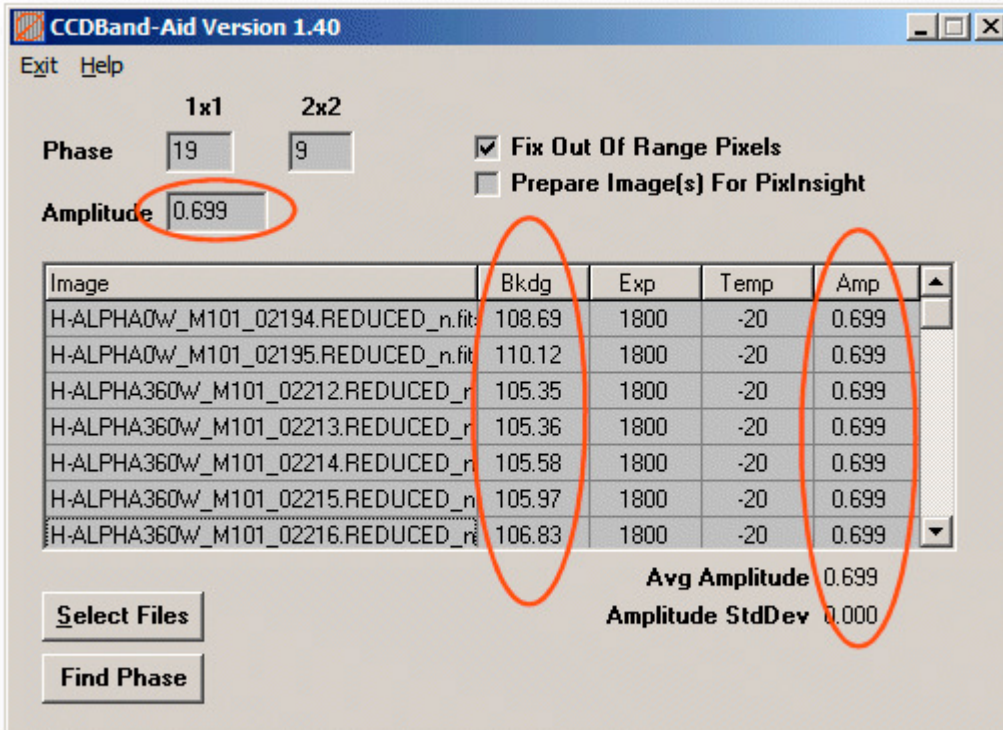


CCDBand-Aid only repairs vertical bar patterns in 32-bit floating point FITS images.

Execute the PixInsight BatchFormatConversion script and add all of the normalized .xisf images. Clear the *Input format hints* option. For the *Output extension* enter ".fits" and for the *Sample format* select 32-bit IEEE 754 floating point. Click OK and now you have a set of images suitable for processing with CCDBand-Aid.



In CCDBand-Aid, enter the previously determined amplitude and select the normalized FITS images. Below, we can see that CCDBand-Aid used the predetermined amplitude with all images. Also, note that the PixInsight default normalization values worked well with these images. The background levels are all very similar. Now you can stack the normalized sub exposures and produce a narrowband result with no vertical bars.



Disclaimers, and Copyright

Copyright © 2012-18 by Bob Franke, All Rights Reserved.

CCDBand-Aid is provided free of charge for all non-commercial use. Permission is given to distribute CCDBand-Aid in its original, unmodified form and only free of charge. The author accepts no responsibility for direct or consequential damage caused by the use of this software: use it at your own risk!

CCDBand-Aid is provided as-is, and although I will attempt to make changes and fixes as they become necessary, I provide no guarantees about its suitability for any purpose whatsoever.

...Bob Franke