Using Layered Masked Stretching

Ever notice that there are always images for which you just can't find the right stretch to bring out the detail in some parts without making other parts a pile of noise? Well here is a technique that can help. It's called a layered, masked stretch (LMS).

The general idea, in order to bring out the full detail in your image, is that you want to provide different stretches to different parts of the image. If you look at the image below of NGC7822/Ced214 you will note that the gas pillars lack contrast and that noise is starting to limit what can be done with the fainter areas.

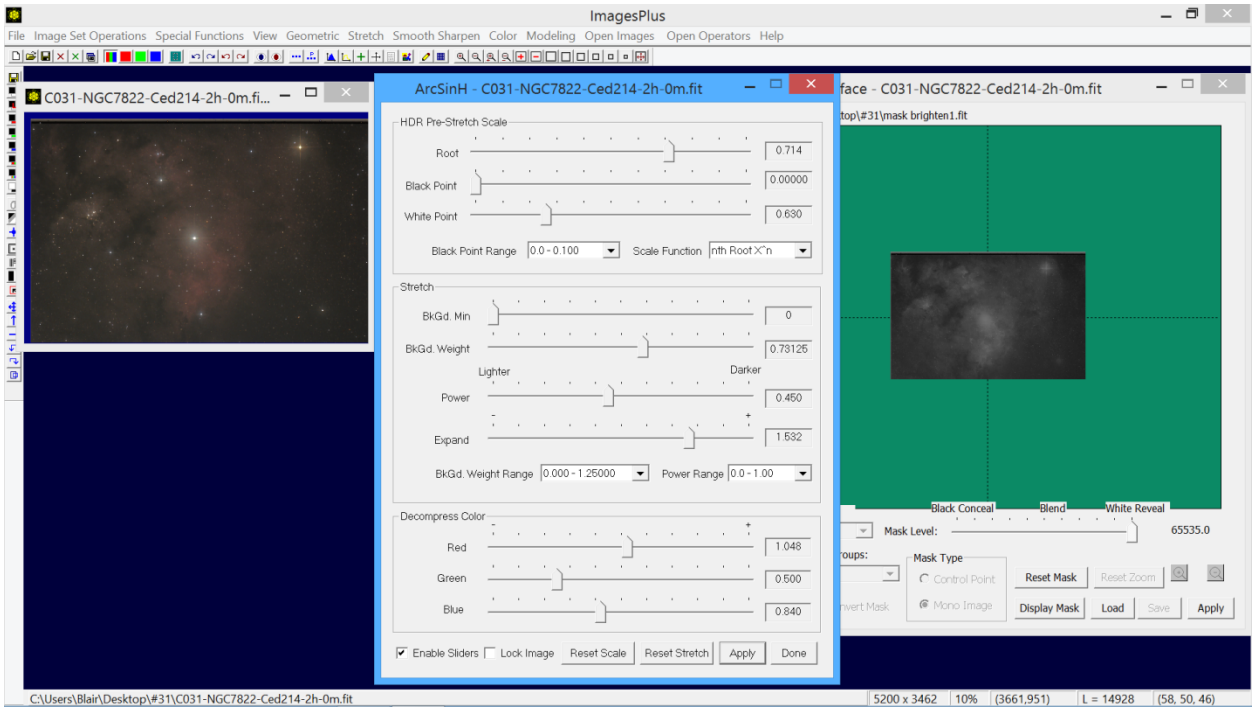


Because the exposure was not long enough, despite being two hours in duration, there is no single stretch that gives a pleasing rendition of this scene. The image above was produced with an arcsinh stretch done in Images Plus.

The solution to this problem is to provide two different stretches, one for the dim outer areas and another to the bright pillar areas of the image. We will start by making a mask out of the above image and removing all the stars using the feature mask tool of Images Plus. The mask is then contrast enhanced and the dimmer areas noised reduced. Finally the custom luminance mask tool and a bit of cloning were used to produce the completed mask shown below.



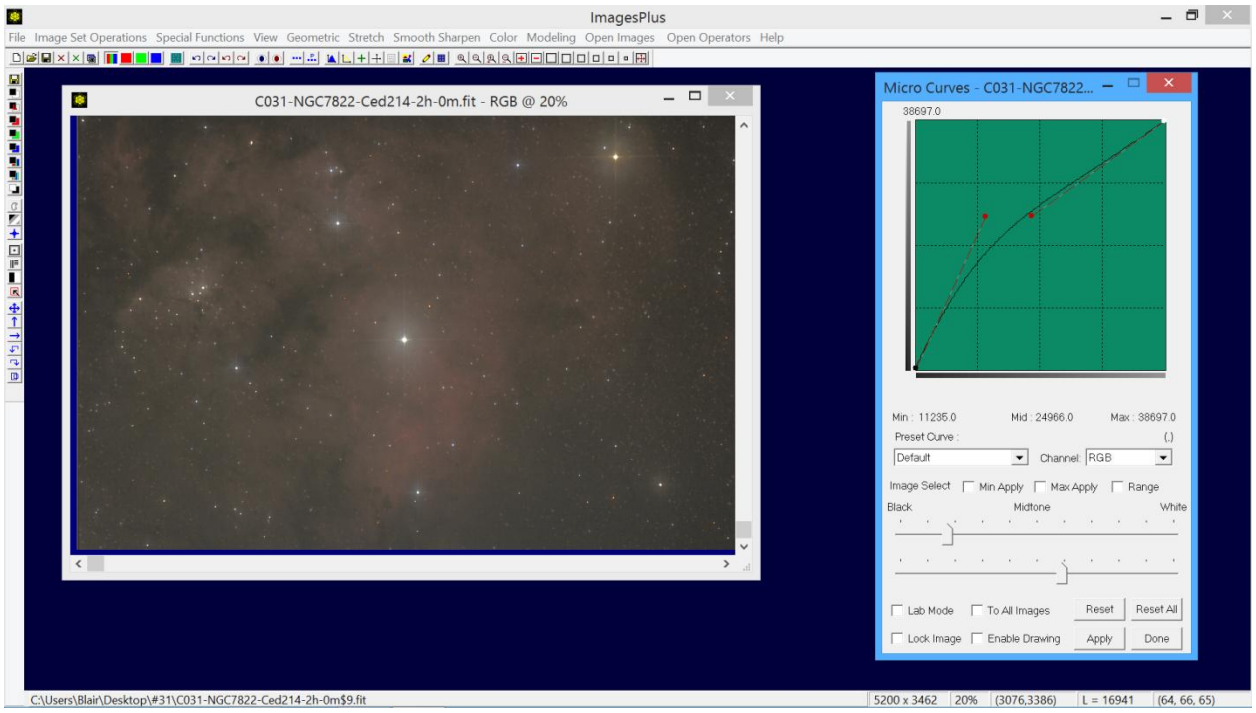
This mask is now used to do a masked stretch of the original image producing the starting point for the rest of the processing.



The masked stretch helps to impart some detail to the image and reduces the boost of the noise in some of the fainter areas of the image. This does, however come at a price. The resulting image is faint and low in saturation. The colour issue can be fixed with a simple saturation boost using the colour decompress sliders in the arcsinh stretch dialog to produce the image below.

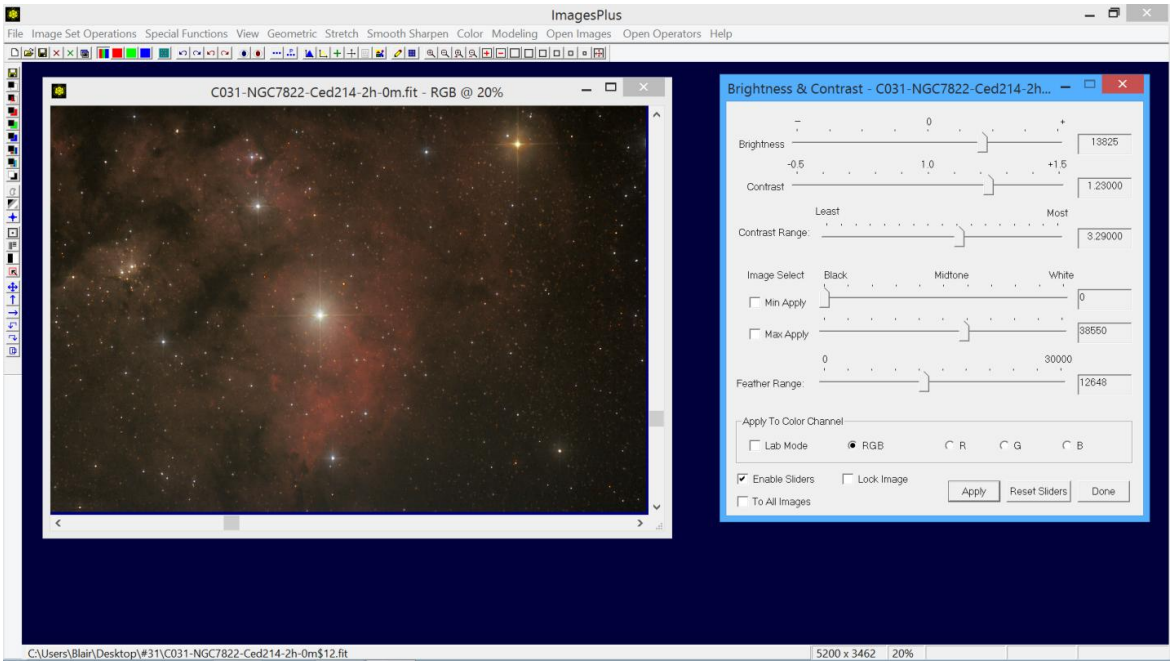


Now is where the LMS technique is applied. The above image is stretched using a simple curve adjustment to brighten up the faint areas of the nebula as shown in the following screen grab.



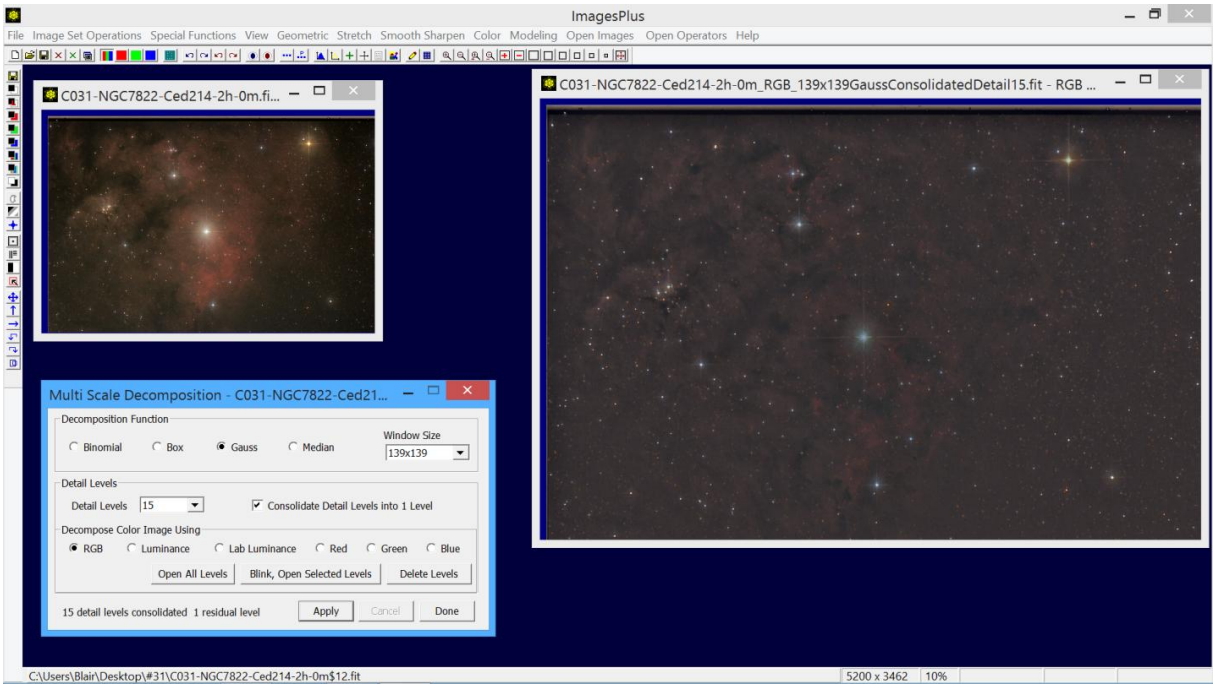
Now we have lots of faint gas, but the detail in the pillars is lost. This becomes one of the images we will use in the final LMS combine.

Returning to the masked stretched image, let's do a little work to boost the contrast and brightness of the pillars. First we'll use the brightness and contrast tool to bump up the contrast.

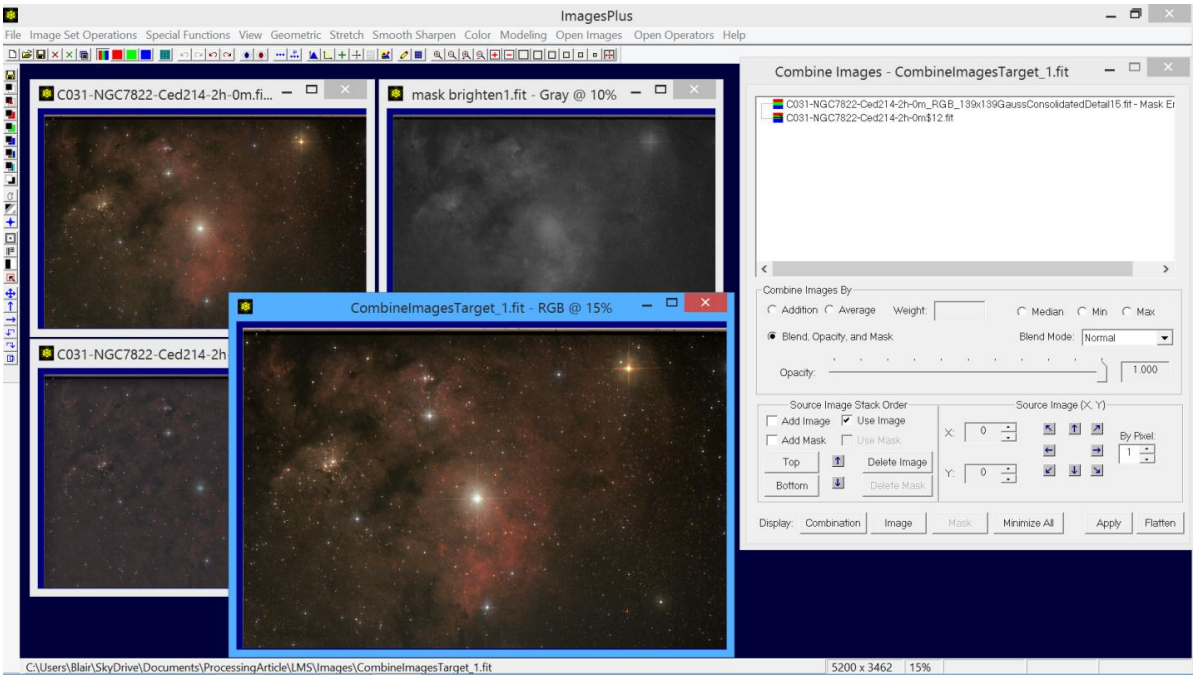


Use your favorite method to sharpen the image. Don't worry about increasing the noise in the dim parts as the LMS combine will fill this in from the less stretched image. Here I'll use the multiscale

decomposition tool to get a detail layer that can be combined with the contrast enhanced version to sharpen things up a bit.

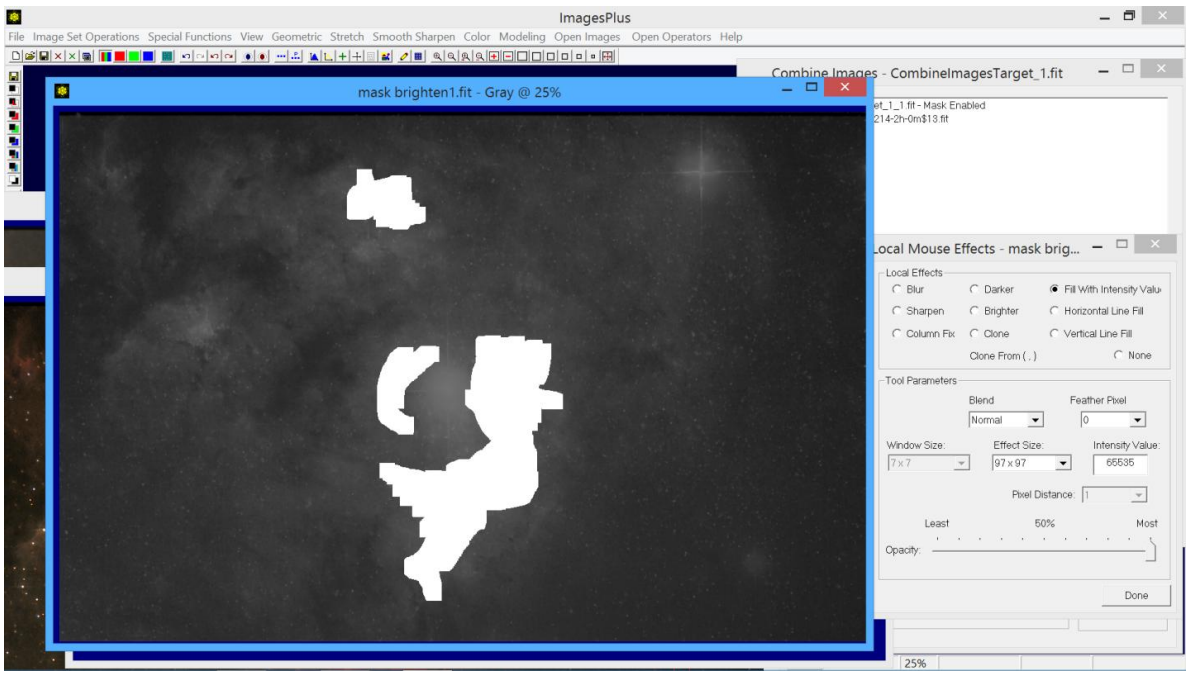


Next the detail layer is combined with the image using the same mask that we used in the original masked stretch.

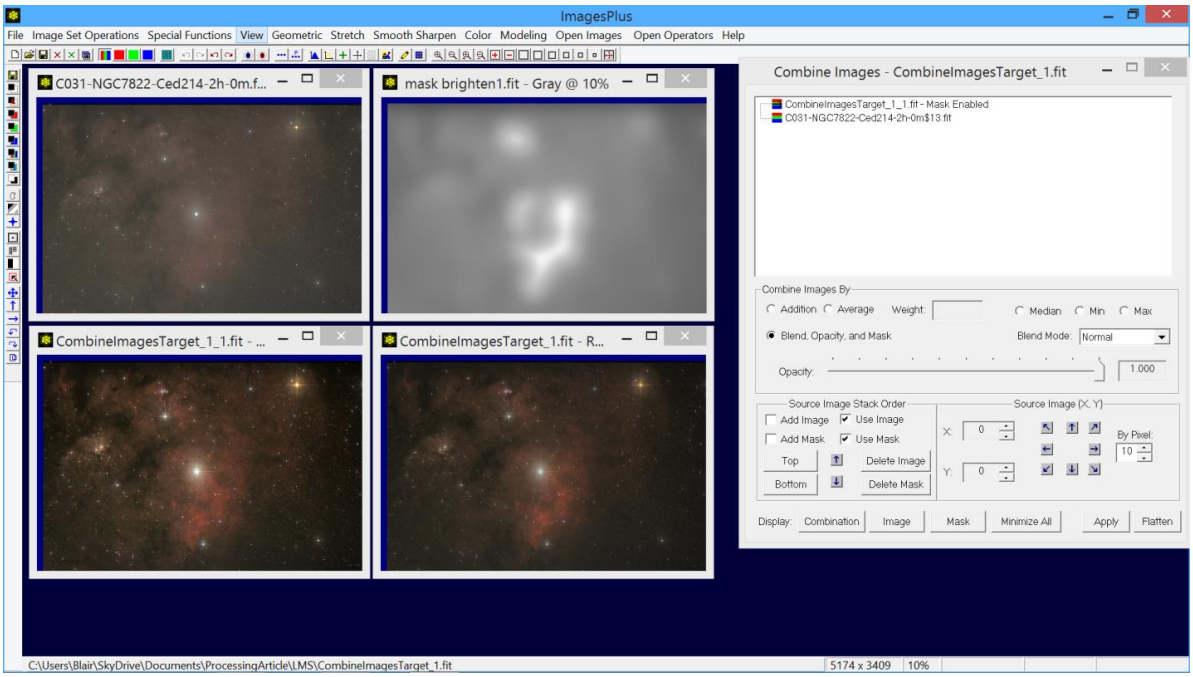


This produces an image that is a little high in contrast, but has lots of pillar detail. The noise in the fainter parts leaves some to be desired, but we will take care of that with the final LMS combine.

Returning to the original mask that was used for the masked stretch, paint white over the pillar areas as shown below.



To prevent any lines in the final image use a large radius Gaussian to blur things producing the mask for the LMS combine. Here I've used a 311 pixel Gaussian applied three times. Finally the mask is applied to the high contrast layer in the stack as shown below.



This produces an image with lots of pillar detail and low noise in the fainter areas. After a little tweak to the green channel we have the final enhanced image.



Compare this to the image at the start of this paper to see the difference, lots of pillar detail and much lower noise due to the masked combination of the two images with different stretches.