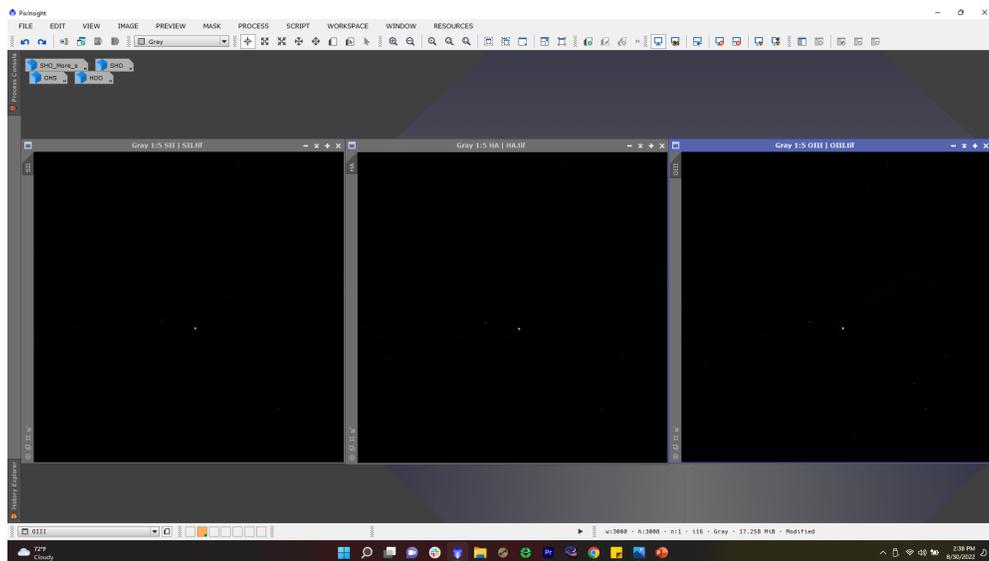




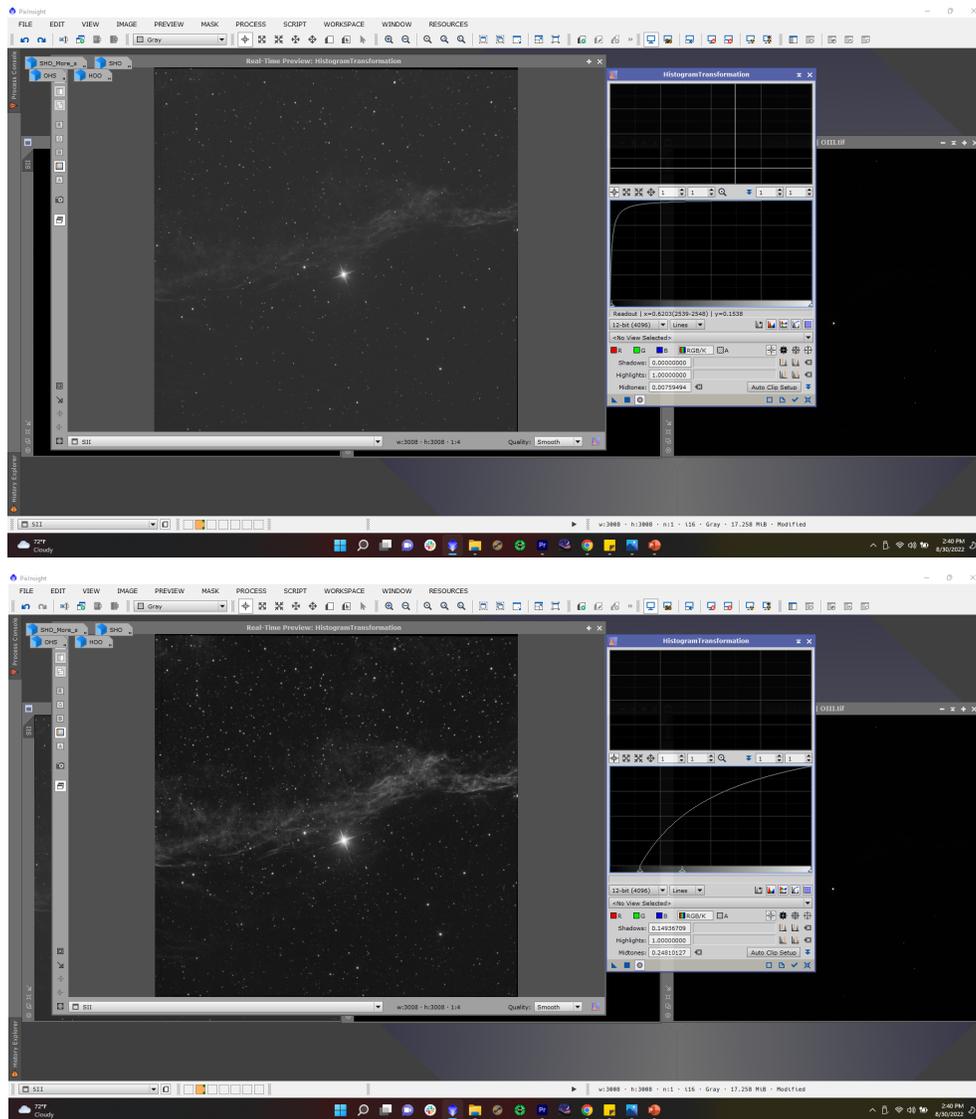
Combining Narrowband Data in PixInsight

We have collected a total of 20+hrs of narrowband and RGB data on the Witch's Broom Nebula! Below is a step-by-step guide to the narrowband combination process we used. We hope this tutorial helps you out!

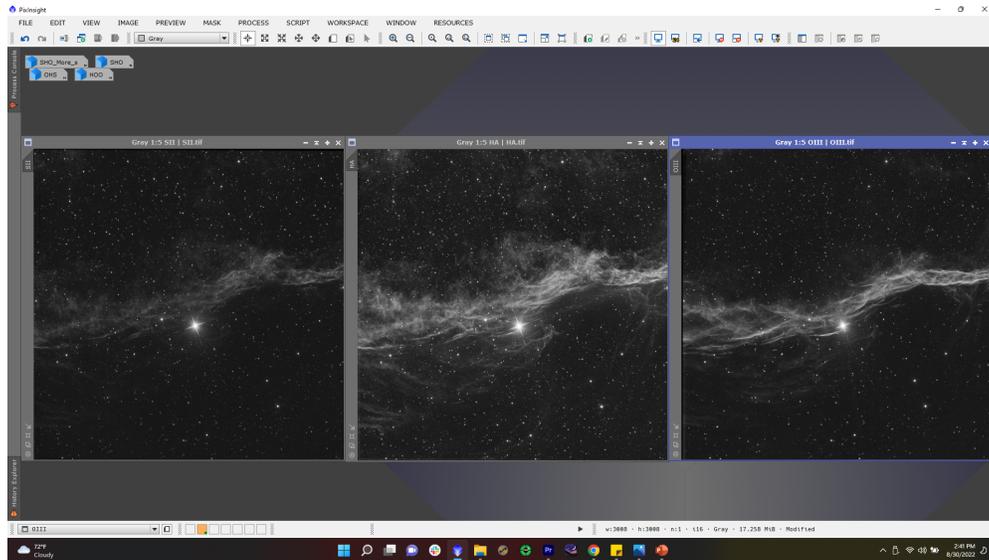
Step 1: Open up your narrowband data sets into PixInsight



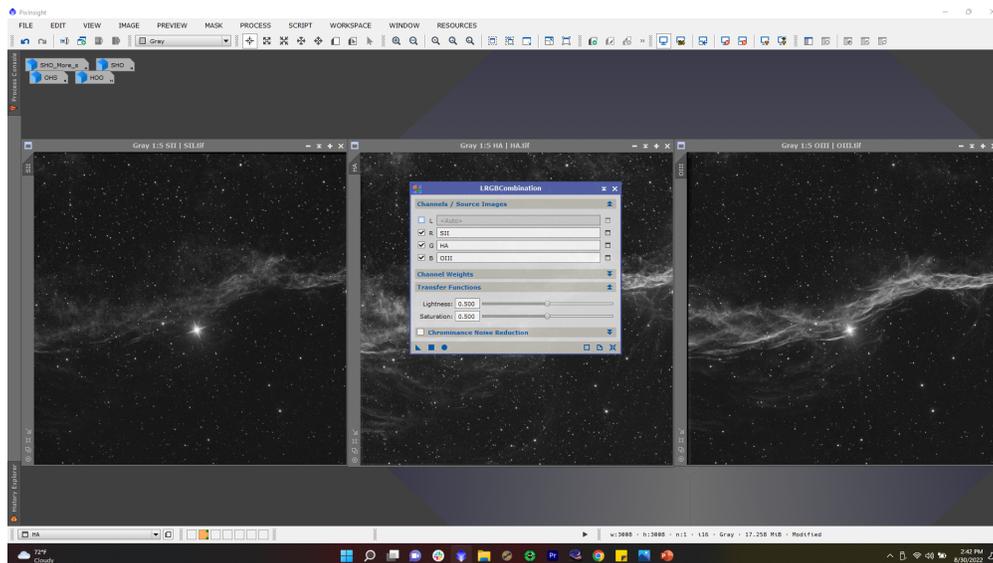
Step 2: Begin by manually stretching your Sii data using Histogram Transformation. Go to Process>Histogram Transformation. I like to slide my midtone slider ALMOST all the way to the left. Apply the stretch (Blue square bottom left). Reset HistogramTransformation (Four arrows bottom right). Bring your midtone slider back up to the left but only 1/4 of the way and then bring your blacks slider down to the right until you achieve a nice dark gray background with smooth signal. There is a delicate dance between the midtones and the darks that takes practice!



Step 3: Do this for your Hydrogen Alpha and Oxygen III data. You can manually stretch each channel more aggressively or less aggressively depending on the color palette you want to achieve. (More on this in a bit). At this point, all three images should be stretched.

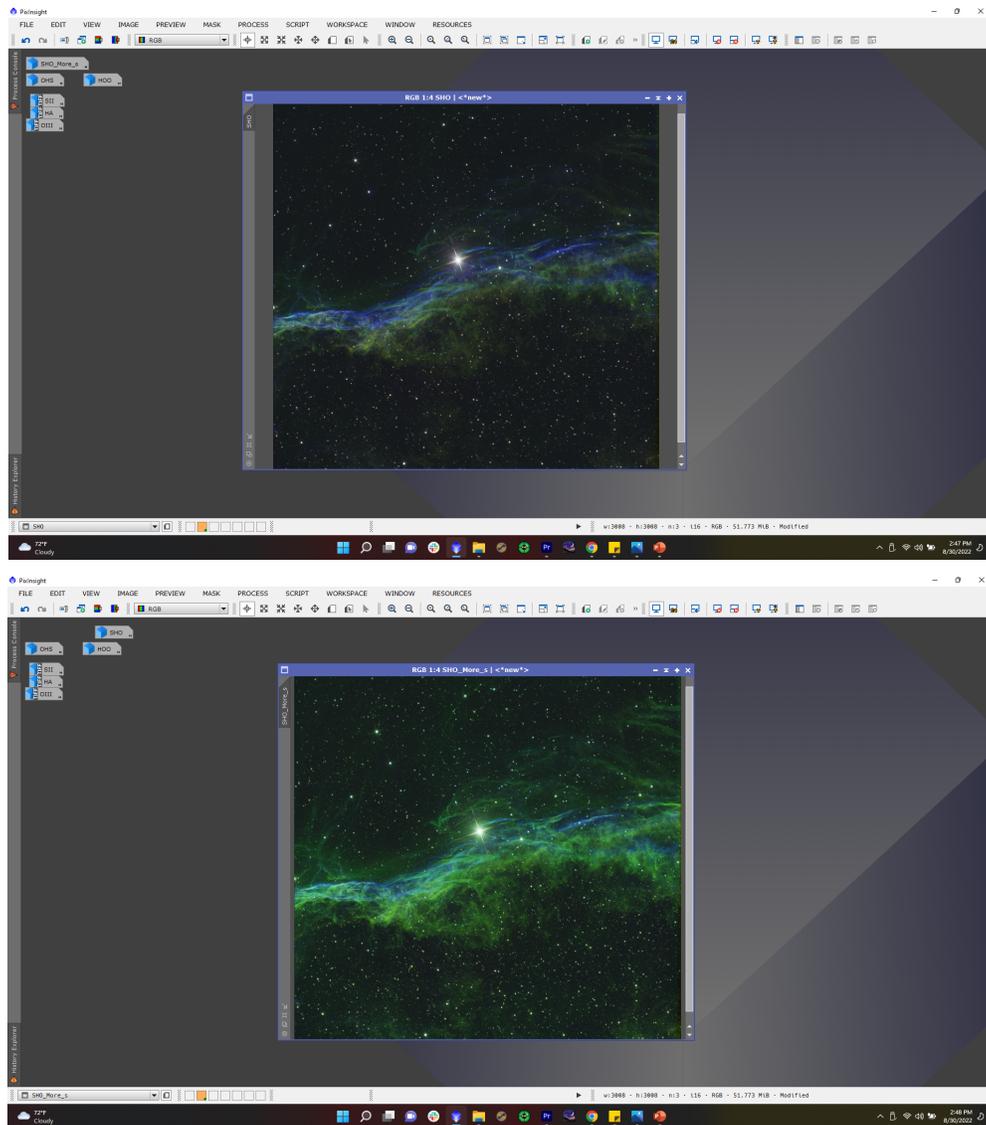


Step 4: Now it's time to combine the channels to create a color image. Go to Process>LRGBCombination. Remove the check next to the (L) and make sure the RGB boxes are all checked. In the dropdown menu select your Sulfur data for (R), your Hydrogen Alpha data for (G), and your Oxygen III data for (B). You can also drag and drop the image into the corresponding color by clicking and dragging the tab to the left of the images themselves. Apply the process.



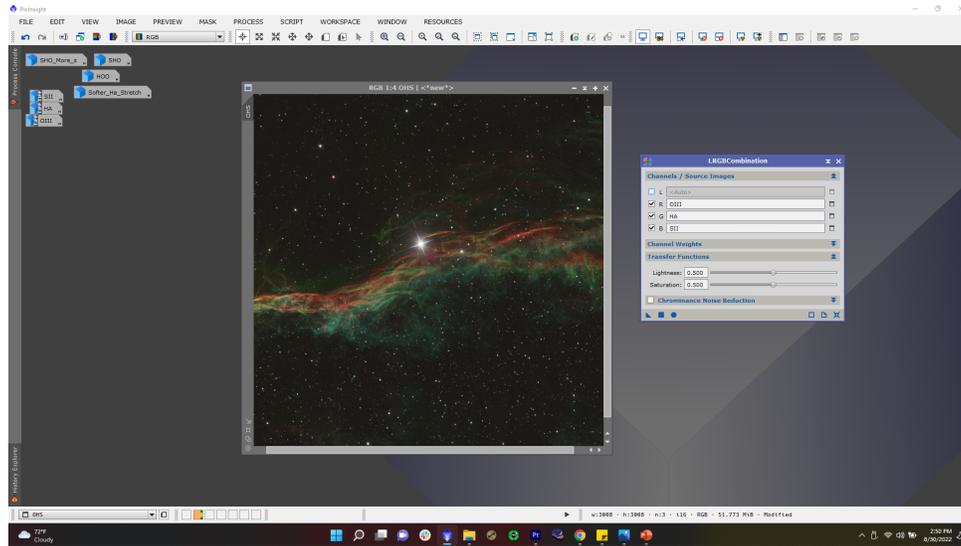
Step 5: Now you should have a greenish-bluish-orange image if you've applied your

channels to the correct colors. This is known as the Hubble Palette. At this point you can go back to your data and stretch them in any way you like which will accentuate the corresponding color when you apply LRGBCombination! If you want to accentuate the greens in your photo, you can more aggressively stretch your Hydrogen Alpha data. If there is TOO much green for your taste, then you can stretch your Hydrogen data less aggressively. Play around with each of your narrowband channels until you achieve a color you like!



Step 6: A cool thing about narrowband imaging is that you do not have to map your

Sulfur to red, hydrogen to green, and your Oxygen to Blue. You can map Oxygen to red, Hydrogen to Green, and Sulfur to Blue and get a pretty cool but alternative result!



Step 6.5 (No Sulfur Data?): If you only collected Hydrogen and Oxygen, in the LRGBCombination Process, you can map Hydrogen to red, and Oxygen to both blue and green. This will achieve a more natural look and may represent the “true color” of this nebula!

