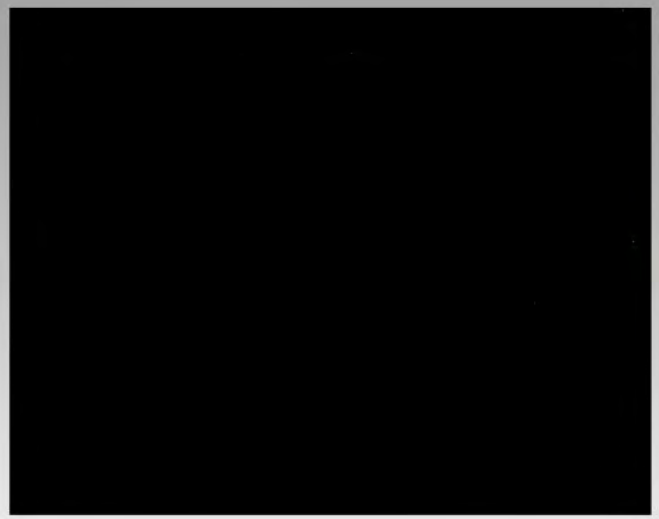
Narrowband
From Scope to screen



Sara Wager

CEDIC 2017

Narrowband – From scope to screen

Planning
Target
Filters
Equipment

How to find a target / Location / Composition
Narrowband or broadband
Focal length

Data Capture
Conditions
Software
On the go ……

Moon / Light Pollution / Wind / Seeing
Exposure length / Focus / Guiding
Checking exposure integrity

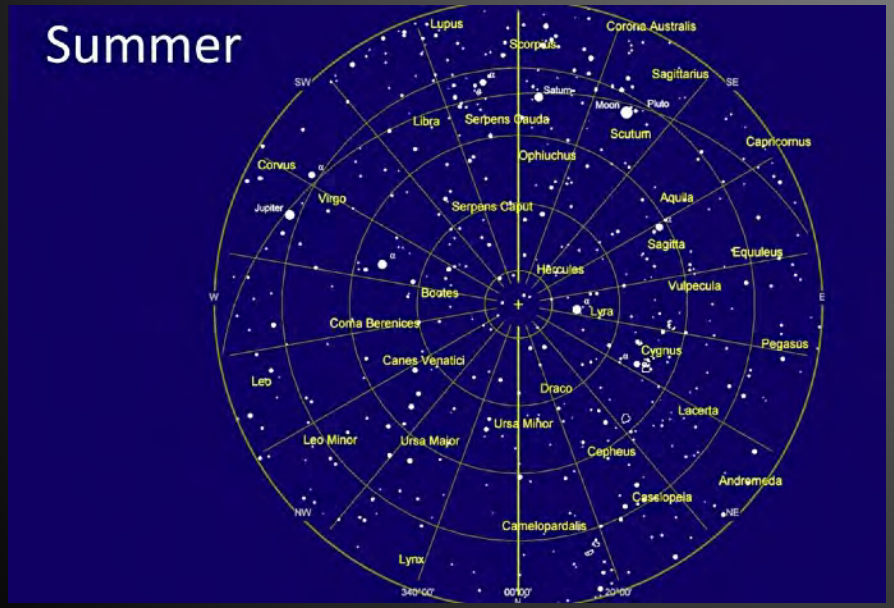
Processing
Calibration
Stacking
Photoshop fun ……..

Flats / Darks / Bias
Increasing signal
Creating the colour image / colour tweaks

Planning

How to find a target

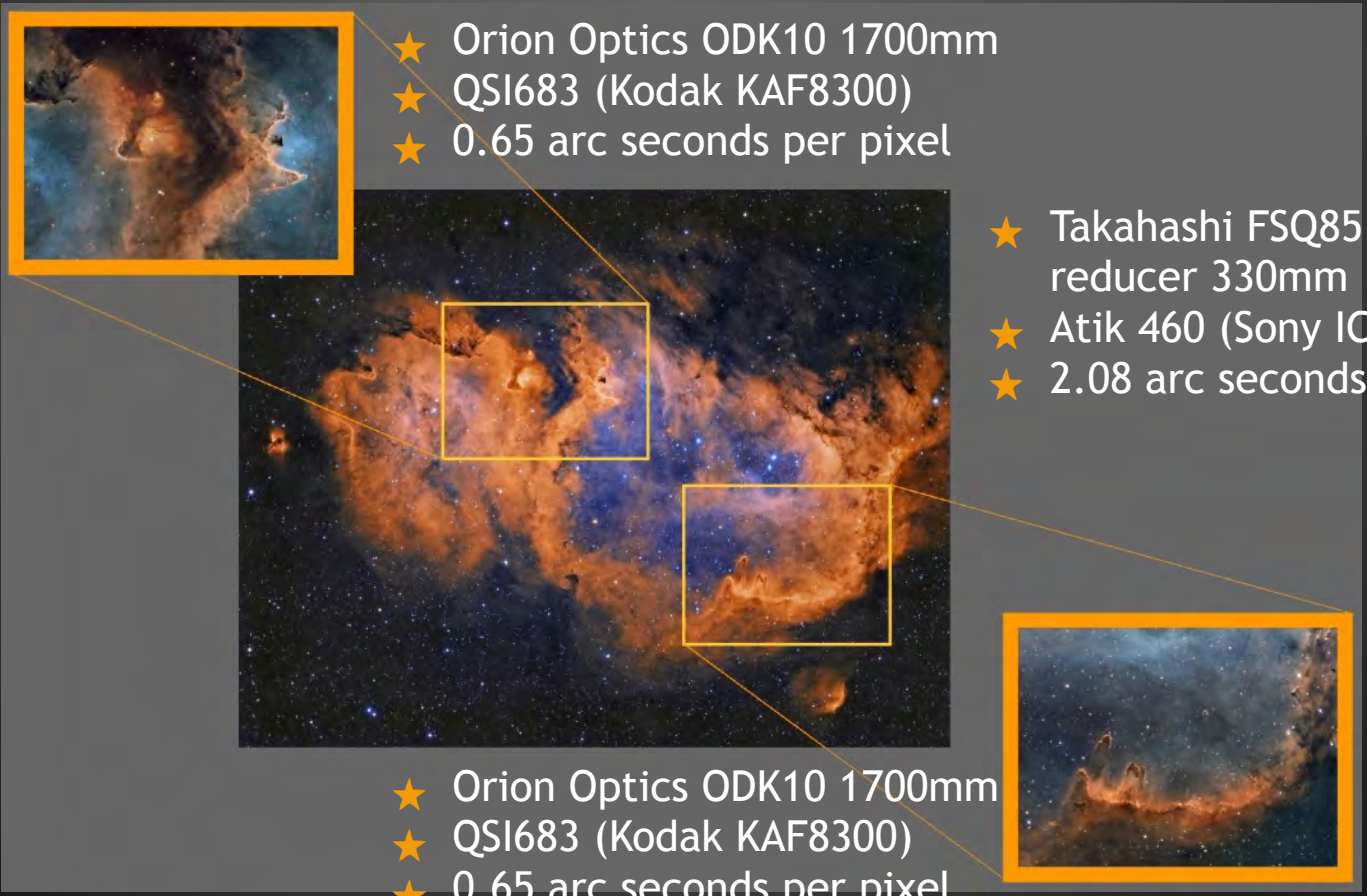
- Why we need to think about what we are going to image and when.
- What focal length suits the target – Telescope and camera sensor combination



Planning

Focal length and image resolution

- The impact of different equipment on a target



Planning

Composition of your image

- Look around your image – Is there anything worth while nearby?
- Don’t always put your main focus in the middle
- Consider balance

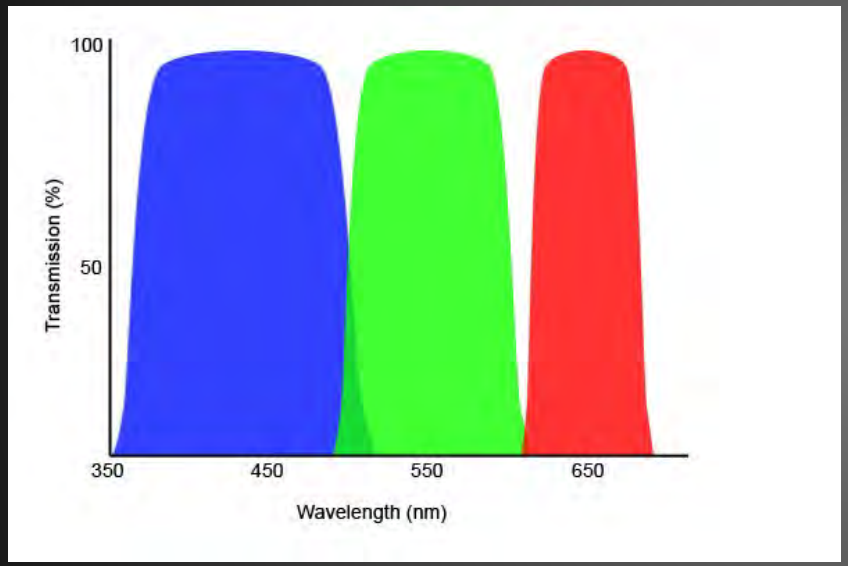
NGC 4565

IC5146

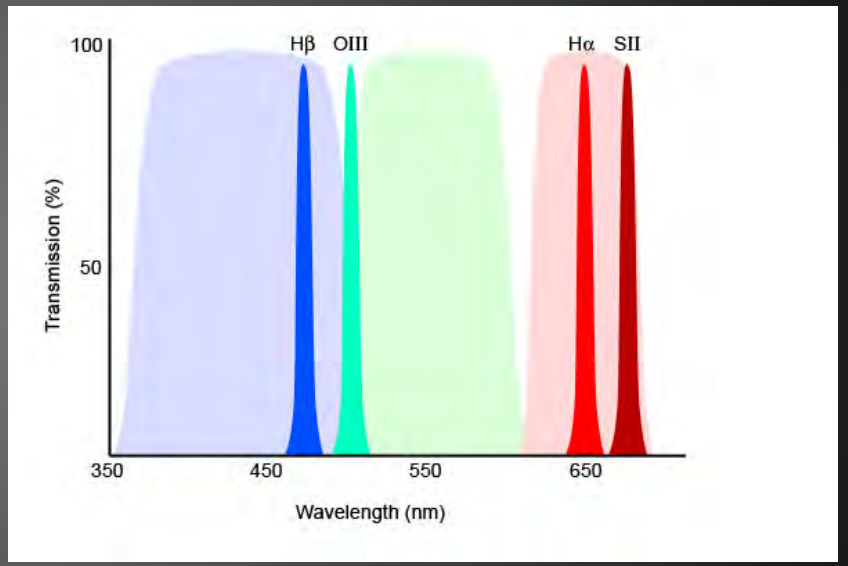
Planning

Filters

RGB



Narrowband



- What filters to use for what targets?
- What are the benefits of different filters?
- How does this impact on target selection?

Planning

A visual filter difference

HaRGB

HOO

Data Capture

Conditions

Moon → Imagine how much a bright moon can wash out detail and stop you capturing the faint stuff

Light pollution → Your exposures times as well as overall detail will be affected

Filters can help with LP

Wind → Your mount needs to be rock solid when taking exposures – The wind can play havoc with this

Seeing → Haze and humidity can affect your data by decreasing the seeing, affecting guiding and quality

Data Capture

Exposure length

- Contrast
- Noise
- Ease of processing

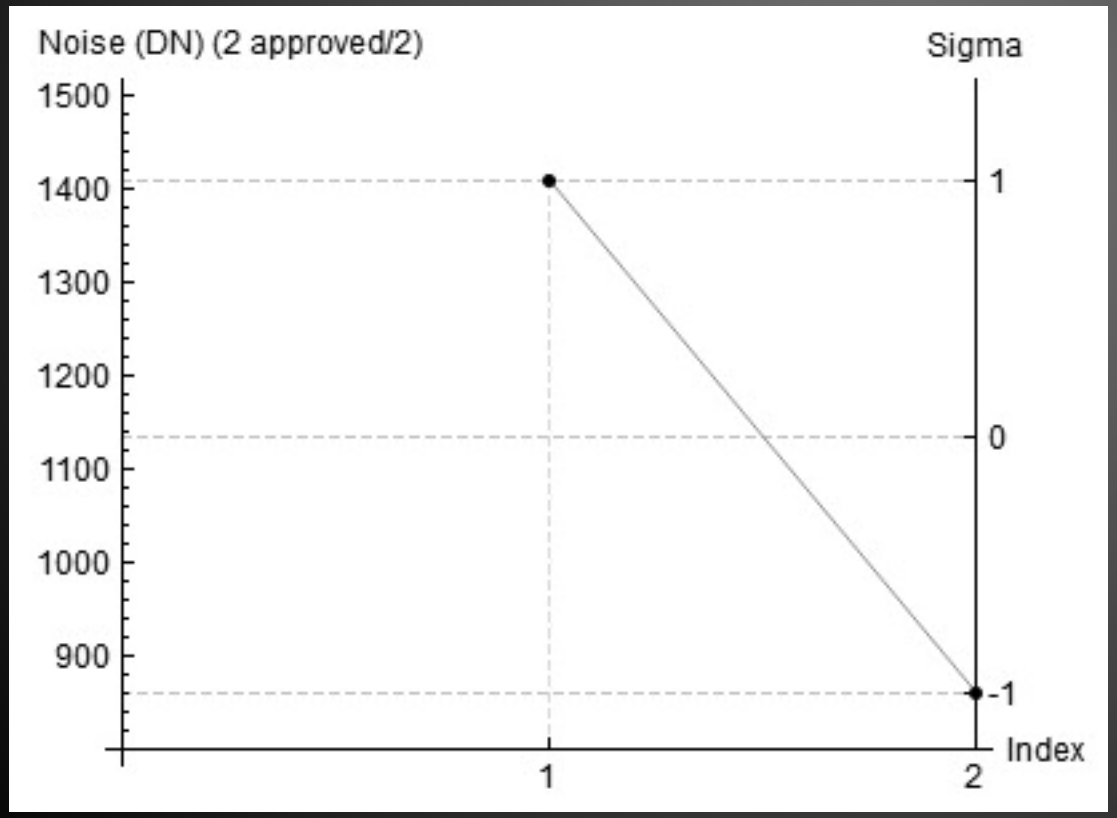
4 hrs – 24x10mins

4 hrs – 8x30mins

Data Capture

Noise

10min subs 1)
30min subs 2)

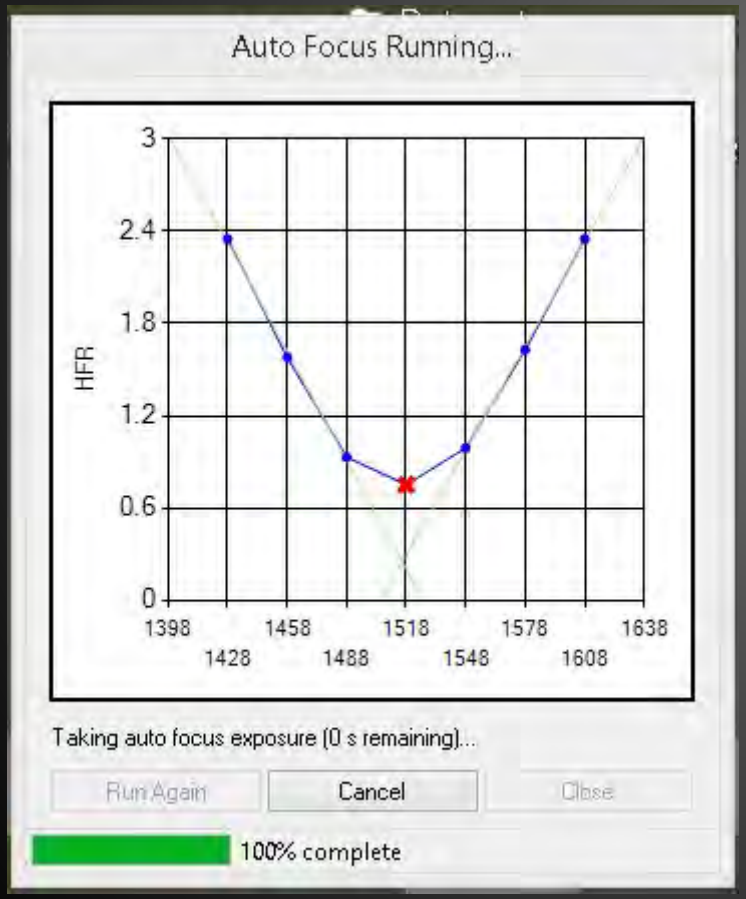


10min subs

30min subs

Data Capture

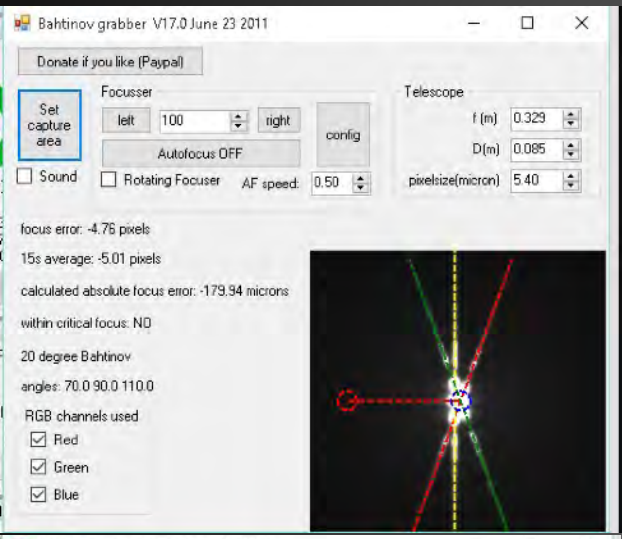
Focus

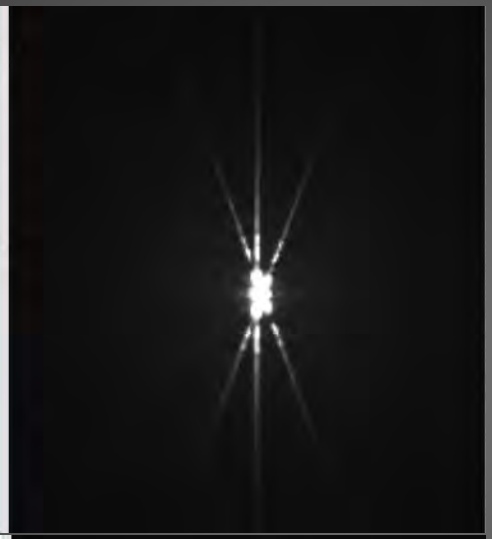


- The V curve of automatic focus
- A Bahtinov mask image
- FWHM (Full width half minimum)

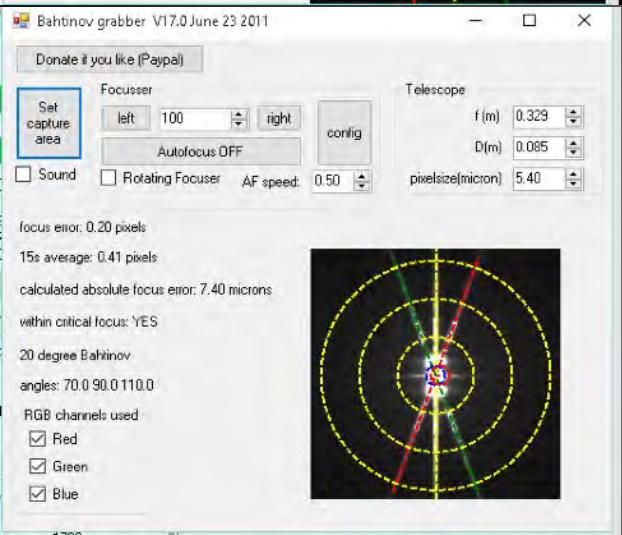
Data Capture

Focus





Out of focus



In focus

- ★ Bahtinov Grabber
- ★ Tells you when you are in critical focus
- ★ Manual focus and Bahtinov mask

Data Capture

Guiding

- Off Axis guider or separate guide scope

What are we aiming for

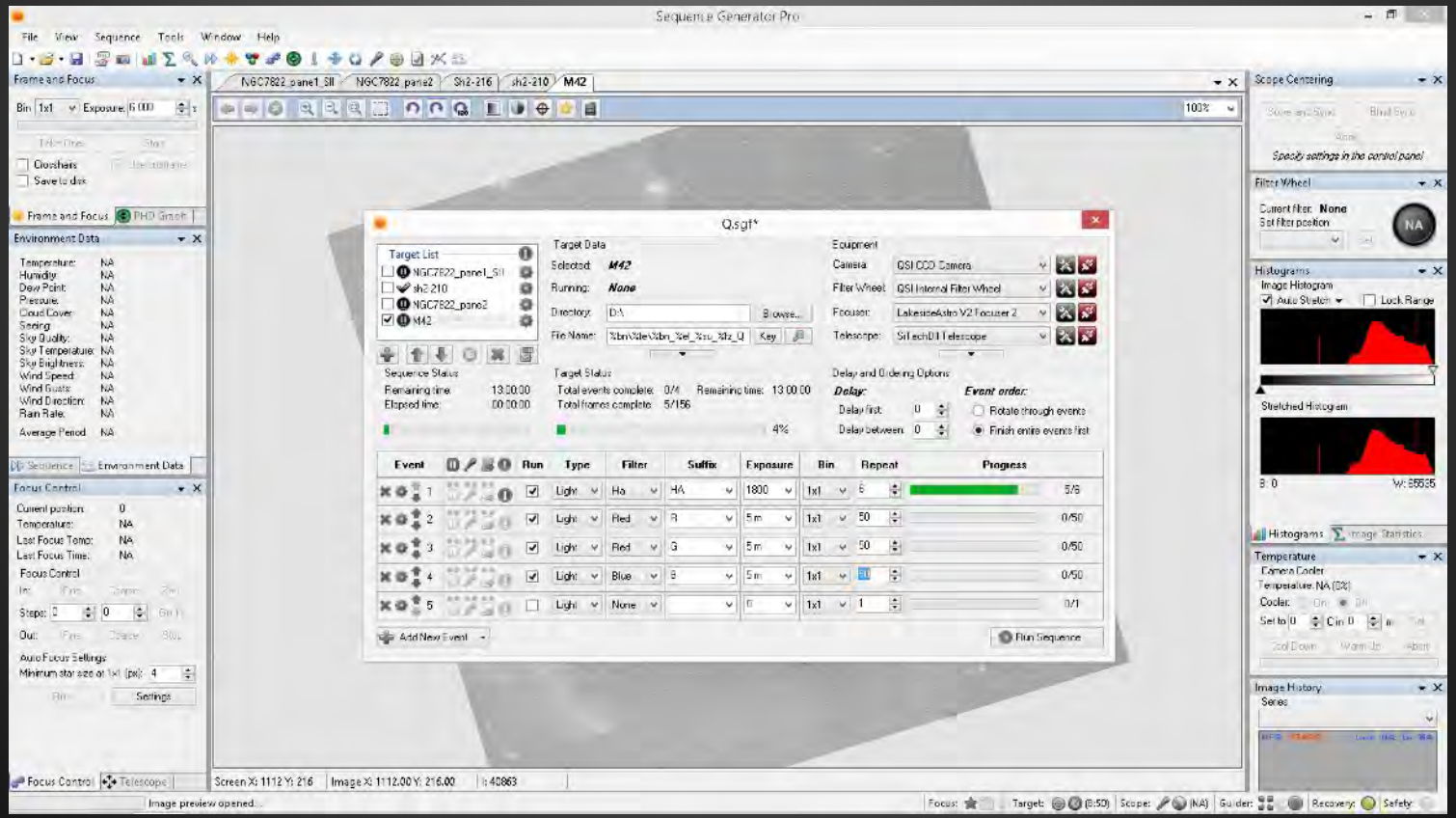
An overall guiding figure (RMS) of less than either

- The seeing
- The image resolution of the imaging scope

Data Capture

Software

- Sequence Generator Pro



Data Capture

Checking exposure integrity

Why

To ensure that each exposure is

- Well focused
- Well guided
- If a mosaic – That they fit together

When

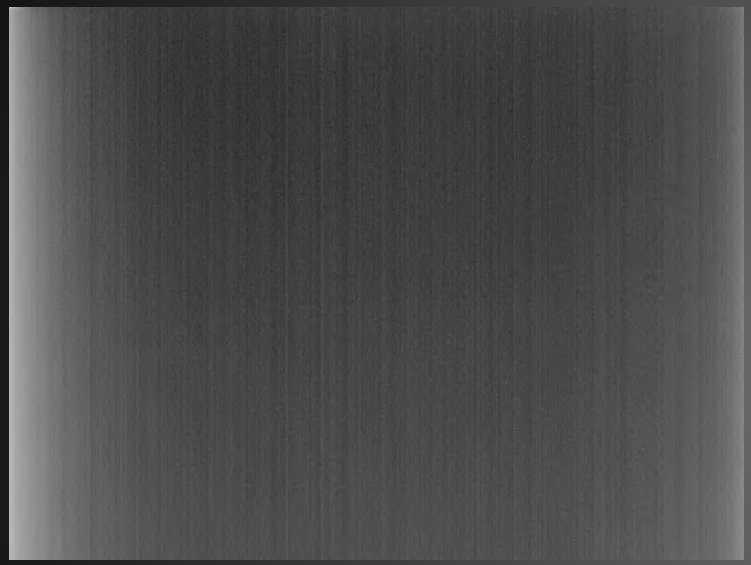
At the end of every session then you can add extra exposures into your run if needed

How

- Data capture software (image checking)
- Pixinsight (blink) or sub frame selector script

Processing

Calibration



Bias

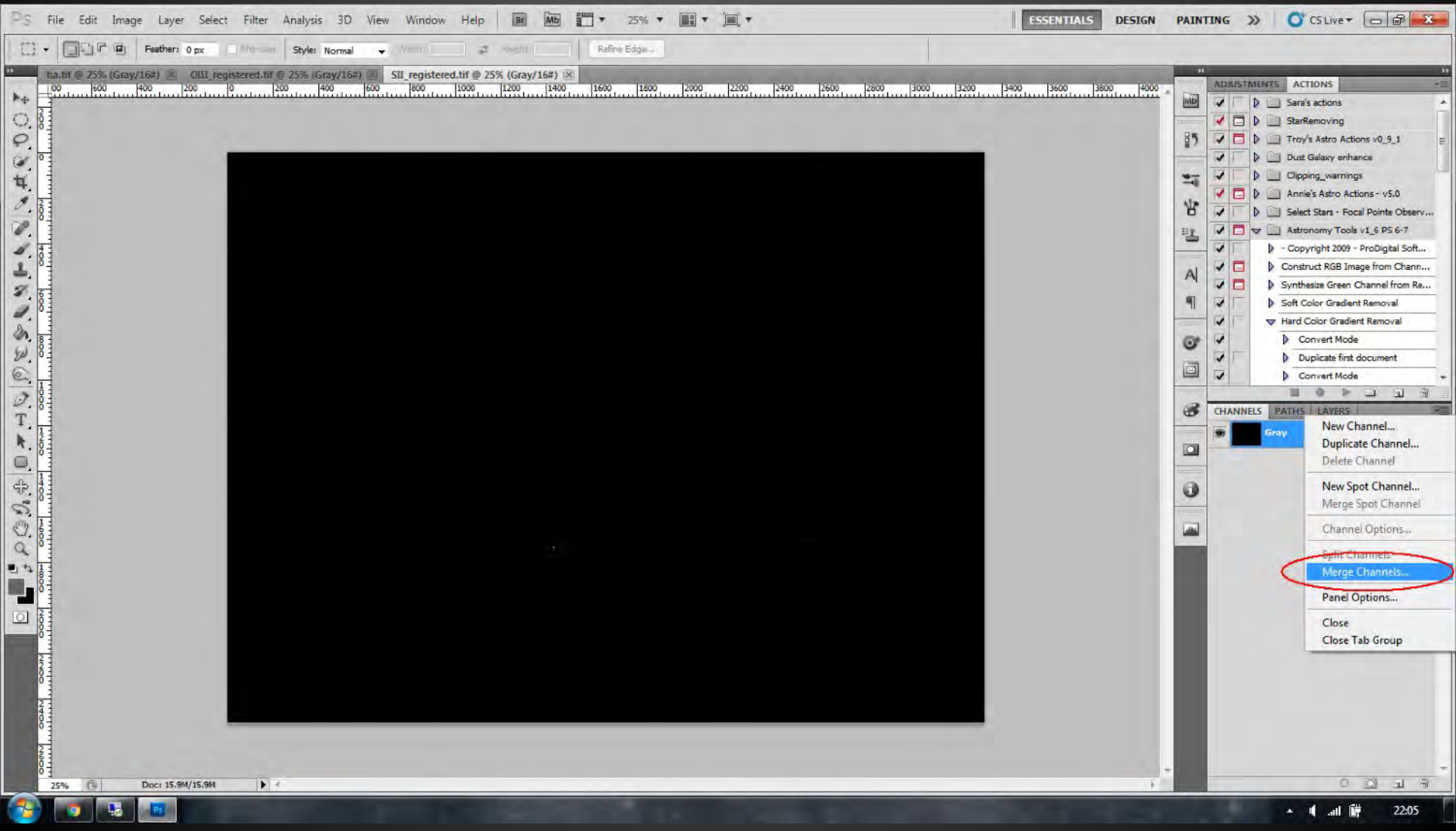
Flat

Dark

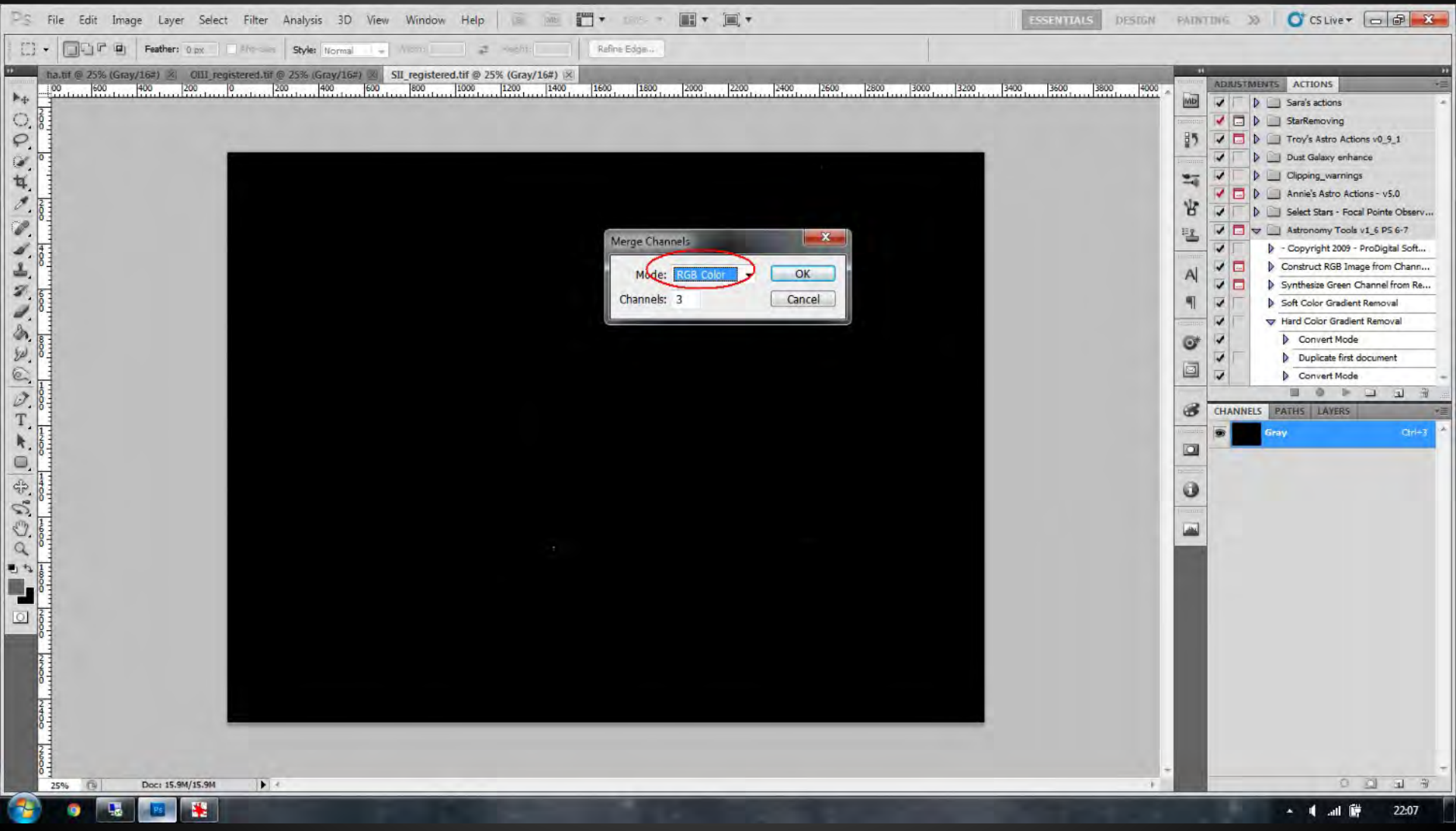
Processing

Stacking

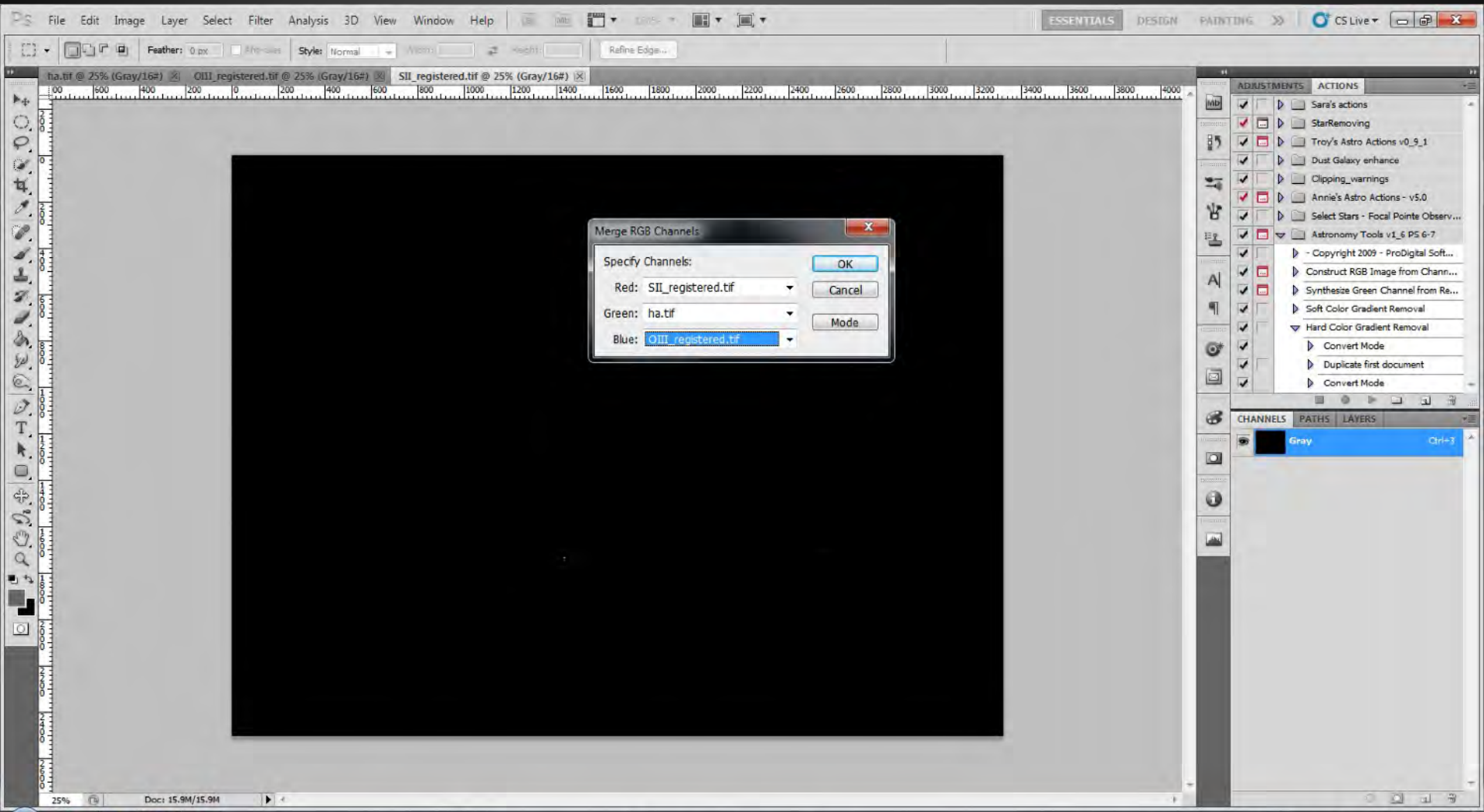
Processing
Merging channels



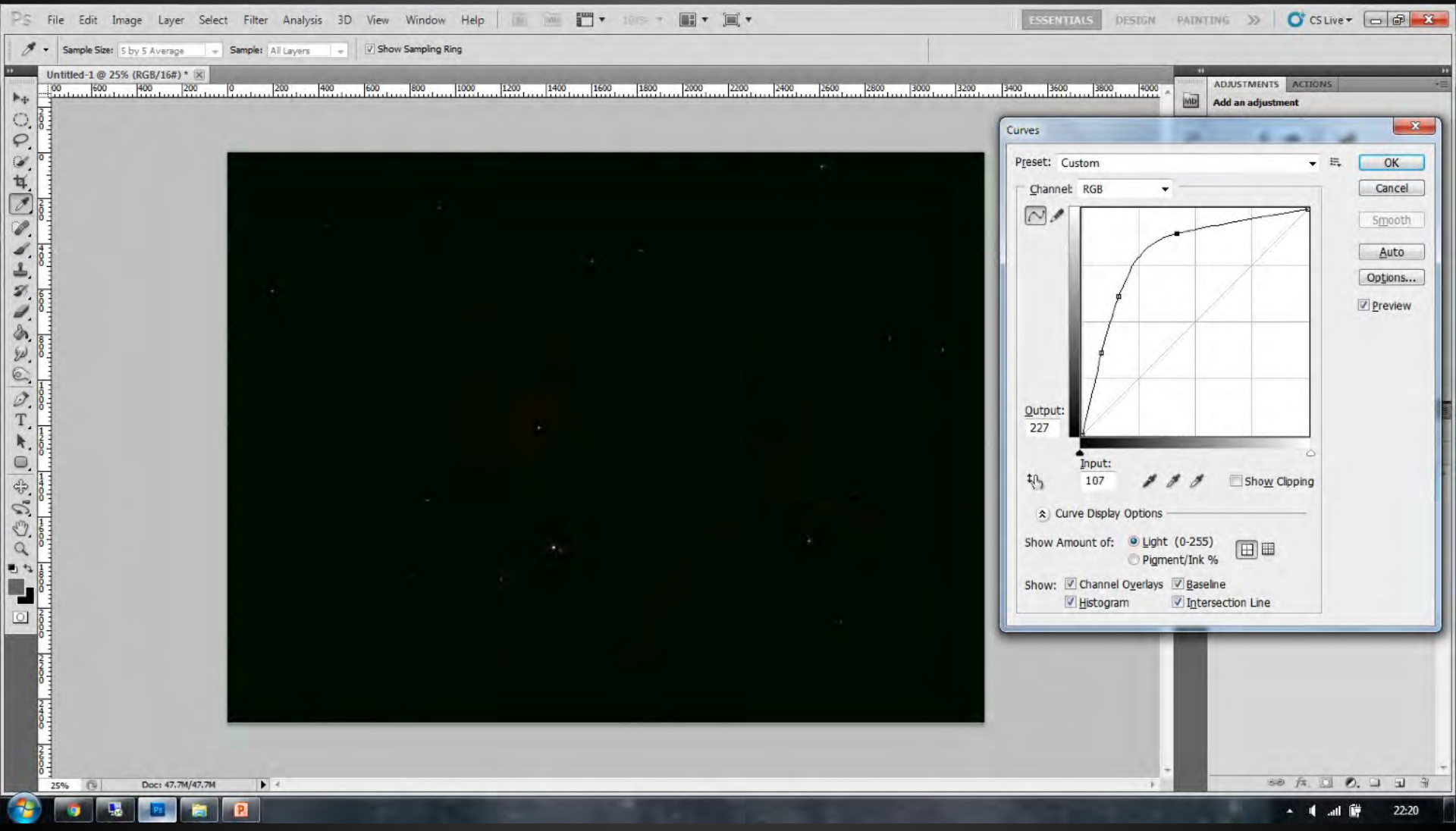
Processing
Merging channels



Processing
Merging channels

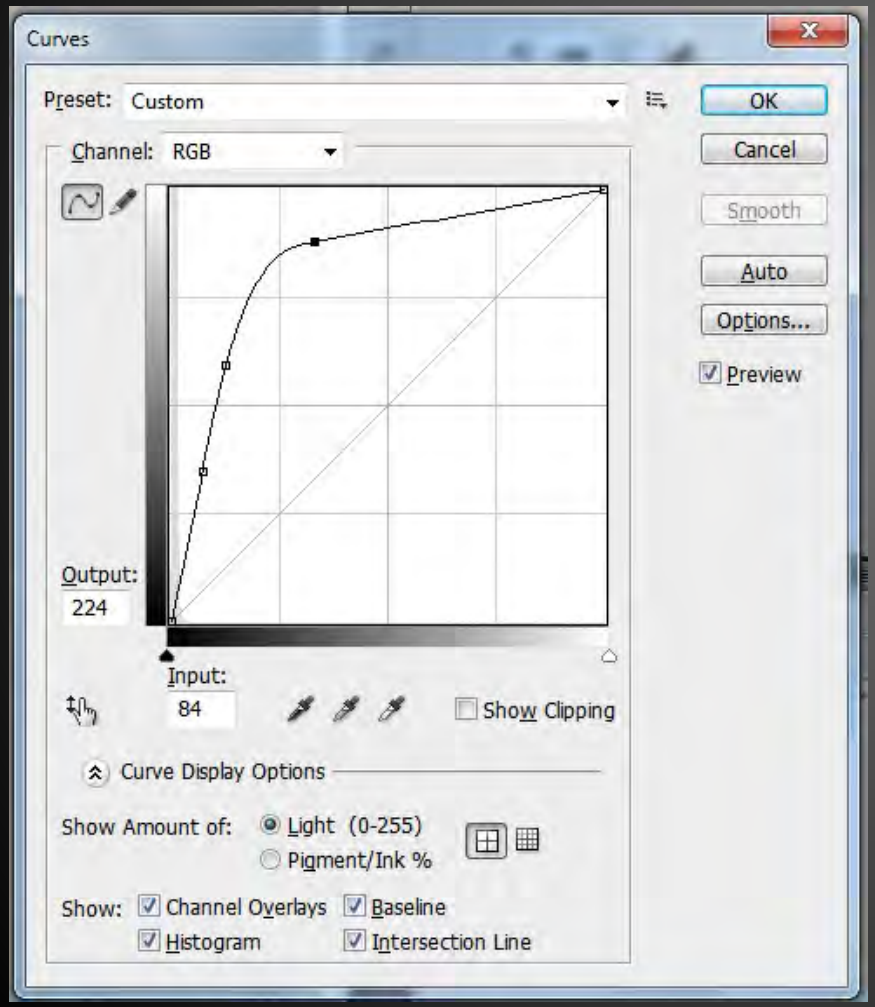


Processing
Curves

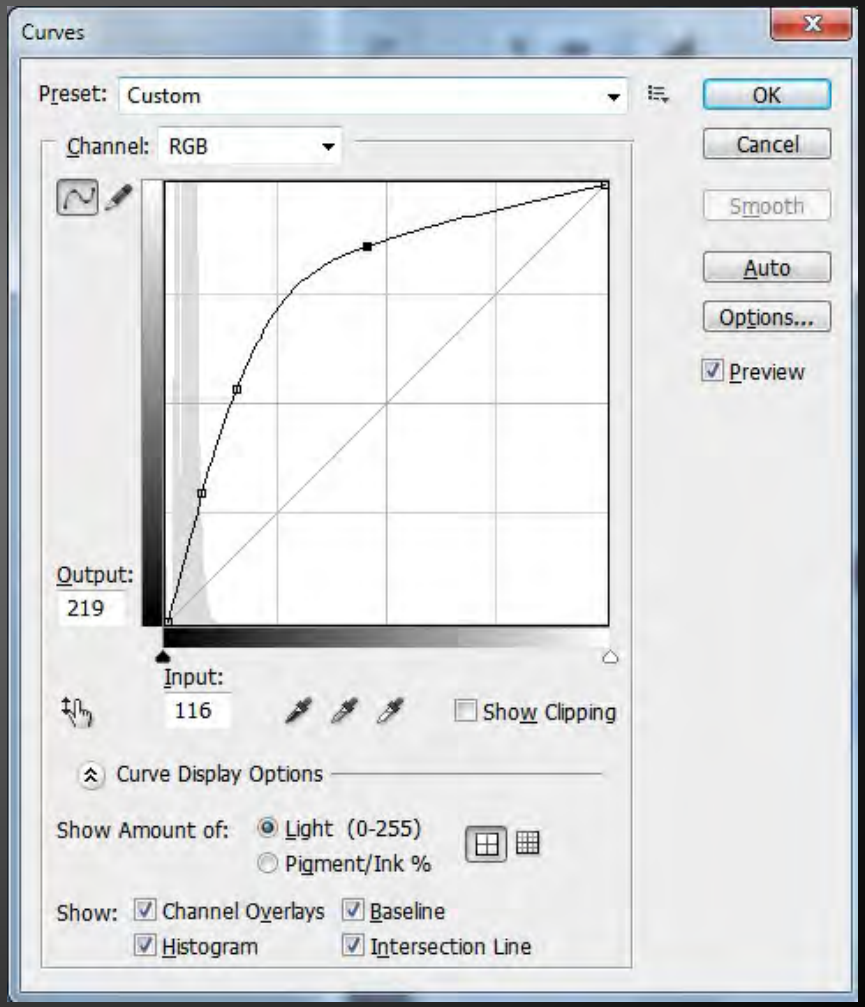


Processing
Curves

Curve 2



Curve 3



Processing
Curves

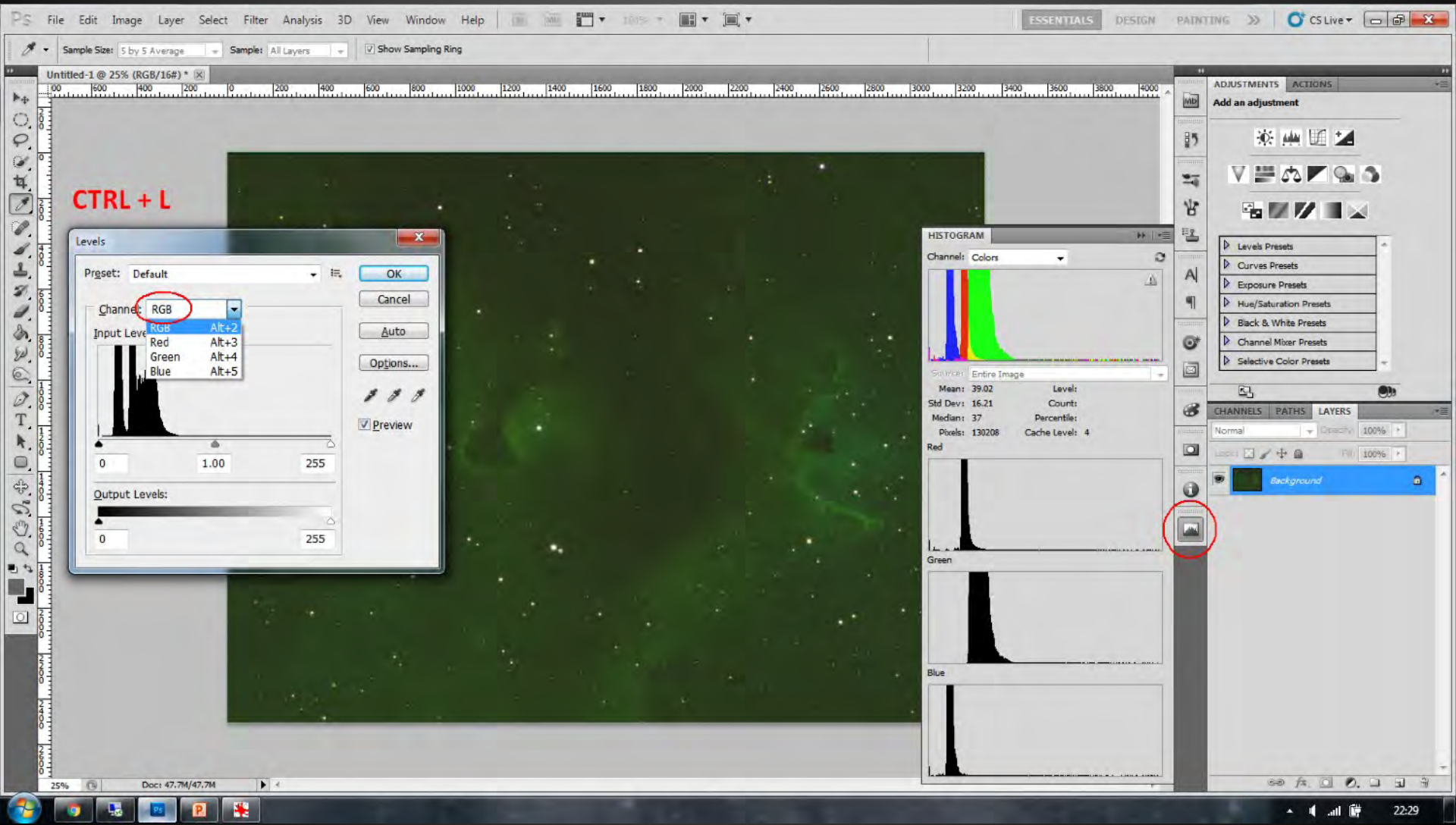
Next steps

Levels to balance the colours

Selective Colour tool

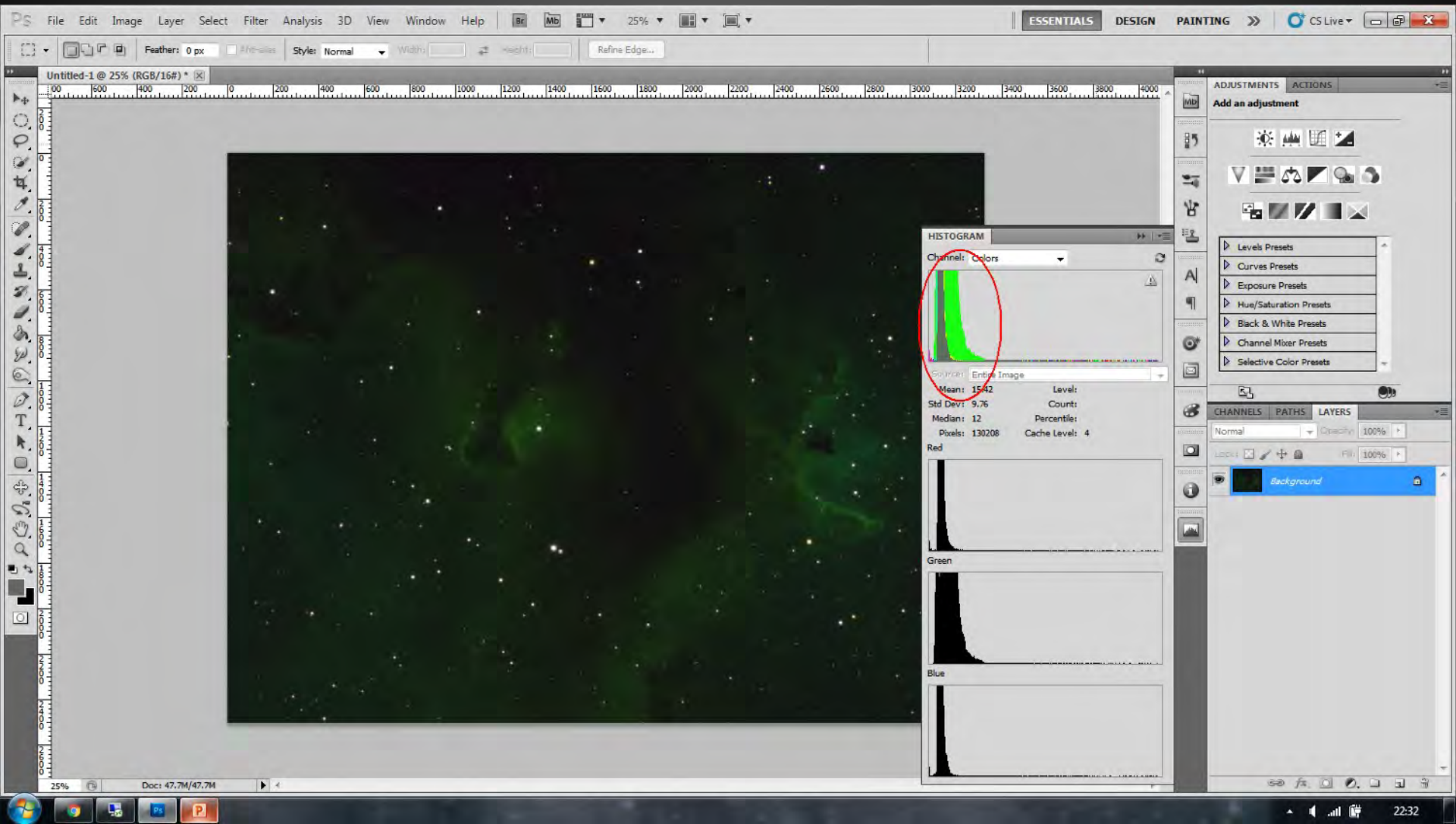
Processing

Levels to balance the colours



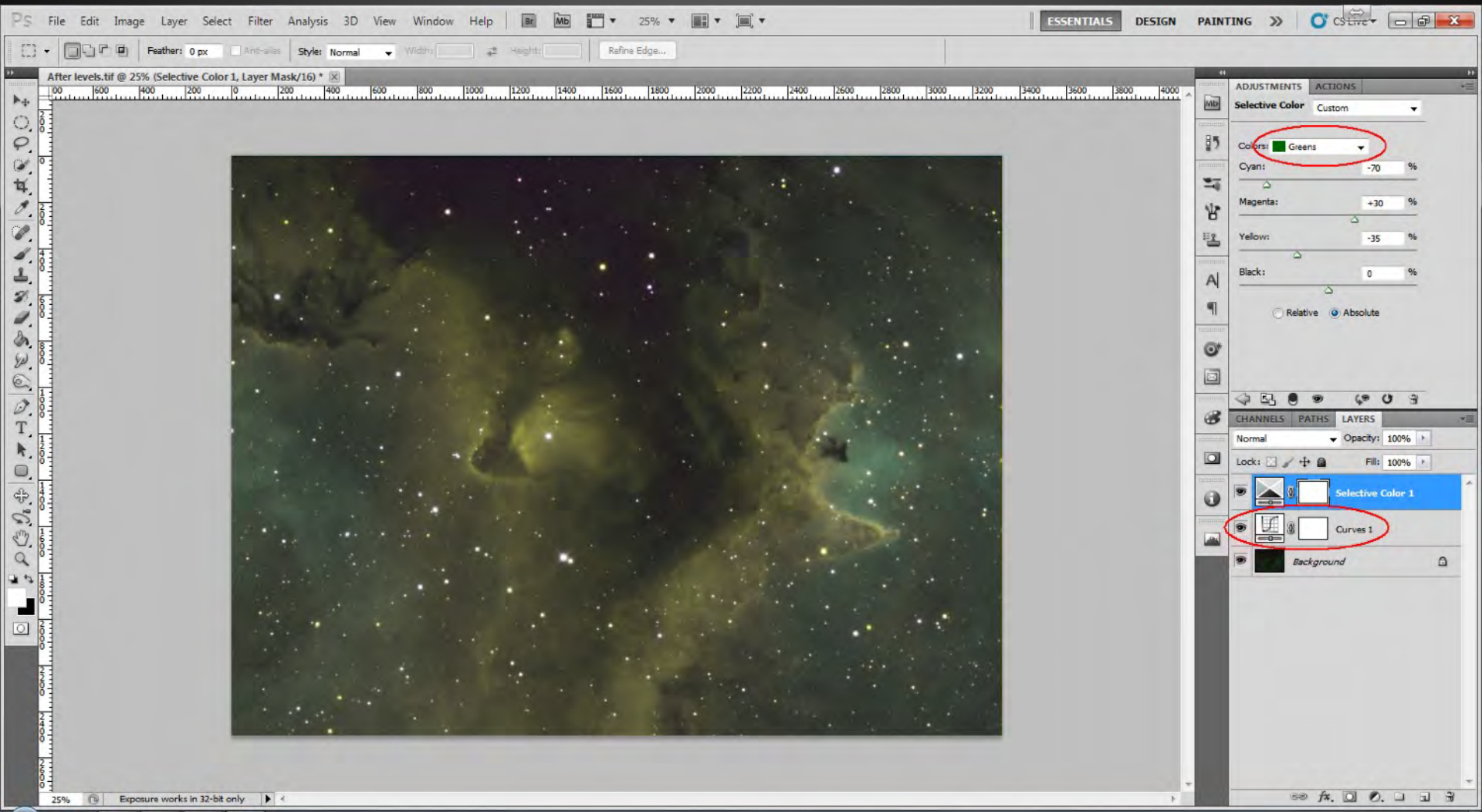
Processing

Levels to balance the colours

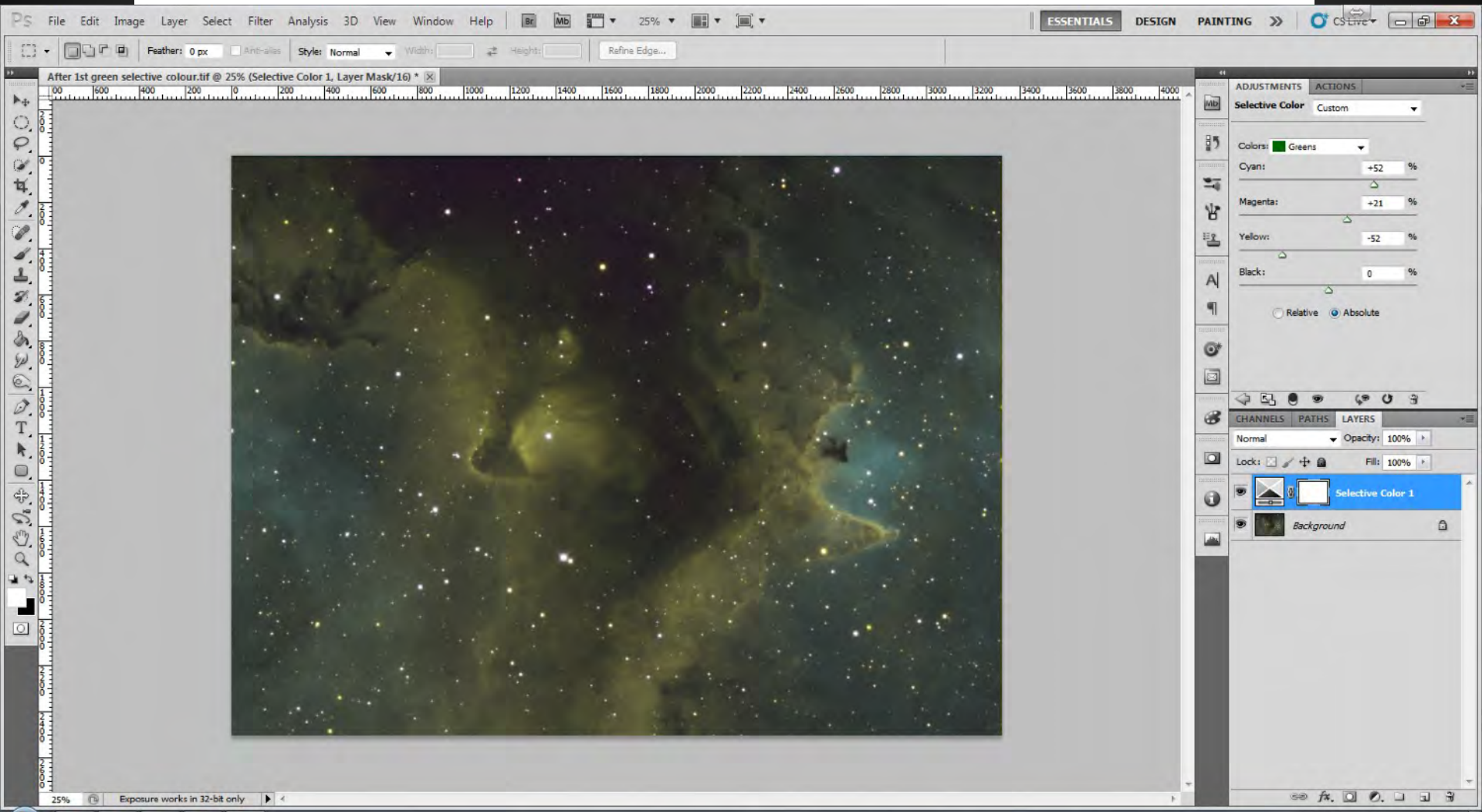


Curves – A simple curve to see what you are doing

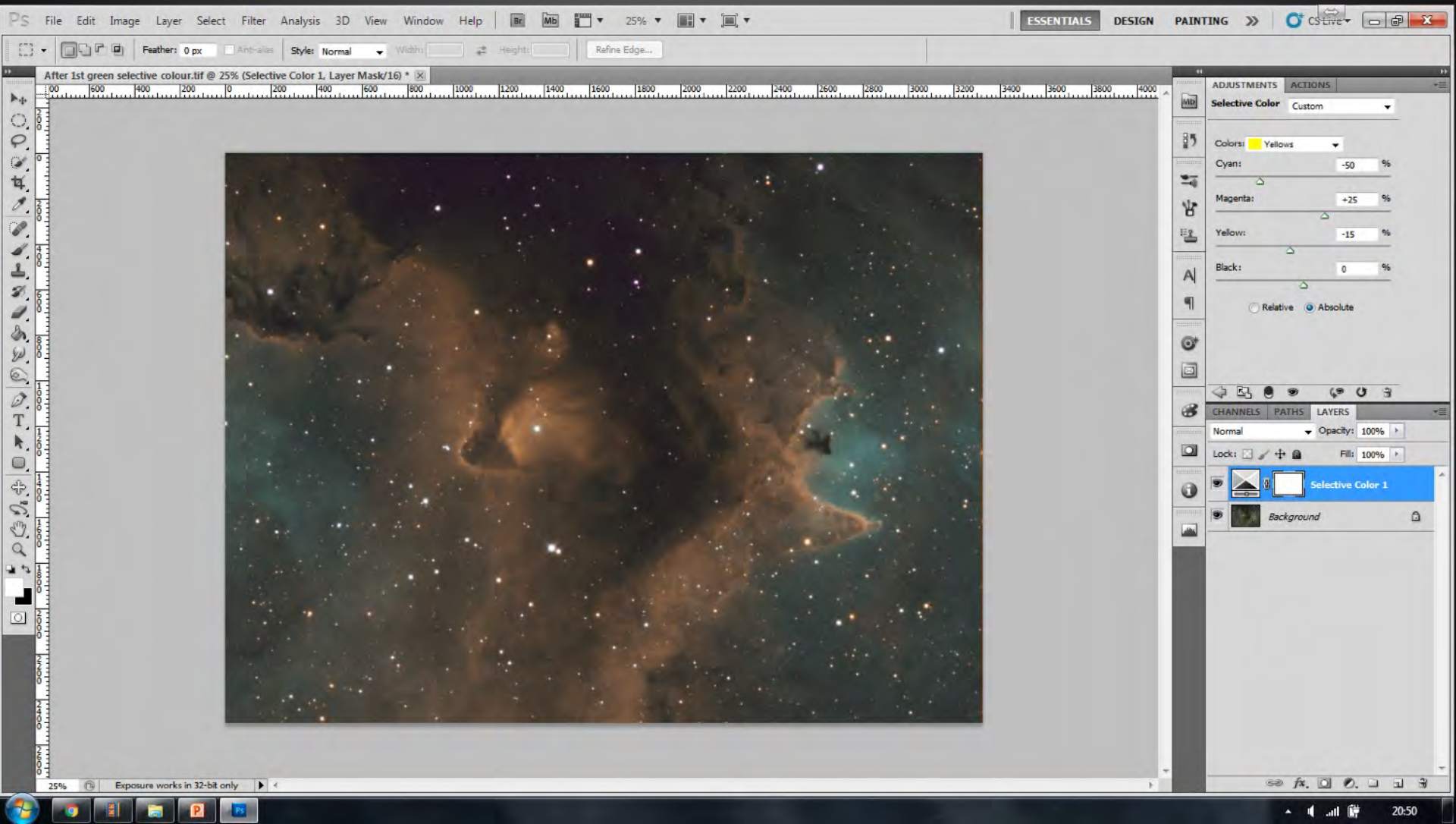
Green Selective colour – First process to change the greens to yellow without destroying the blue



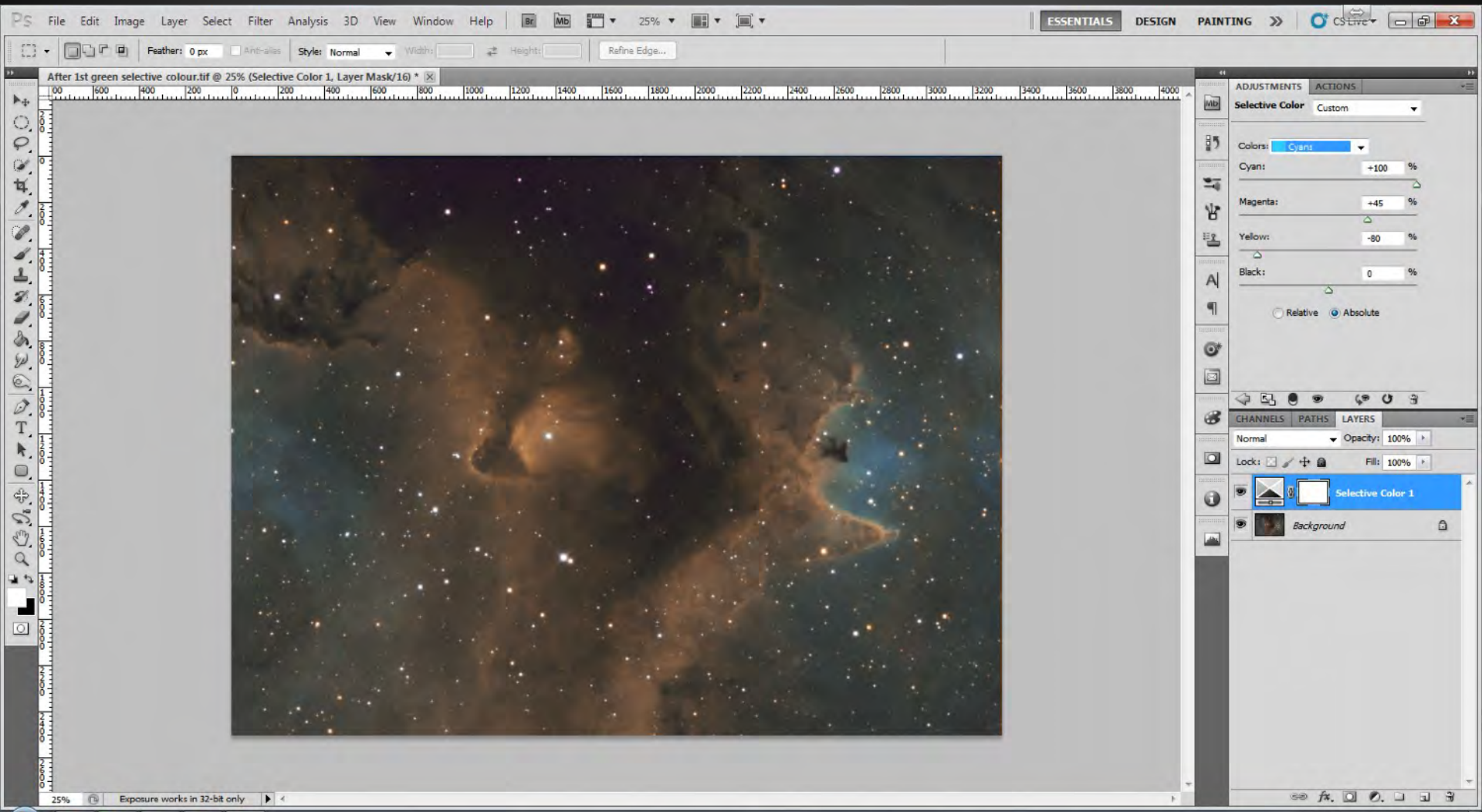
Green Selective colour – In danger of loosing the blue – Lets consider green again…. Keeping the outer areas blue so that we can work with it later



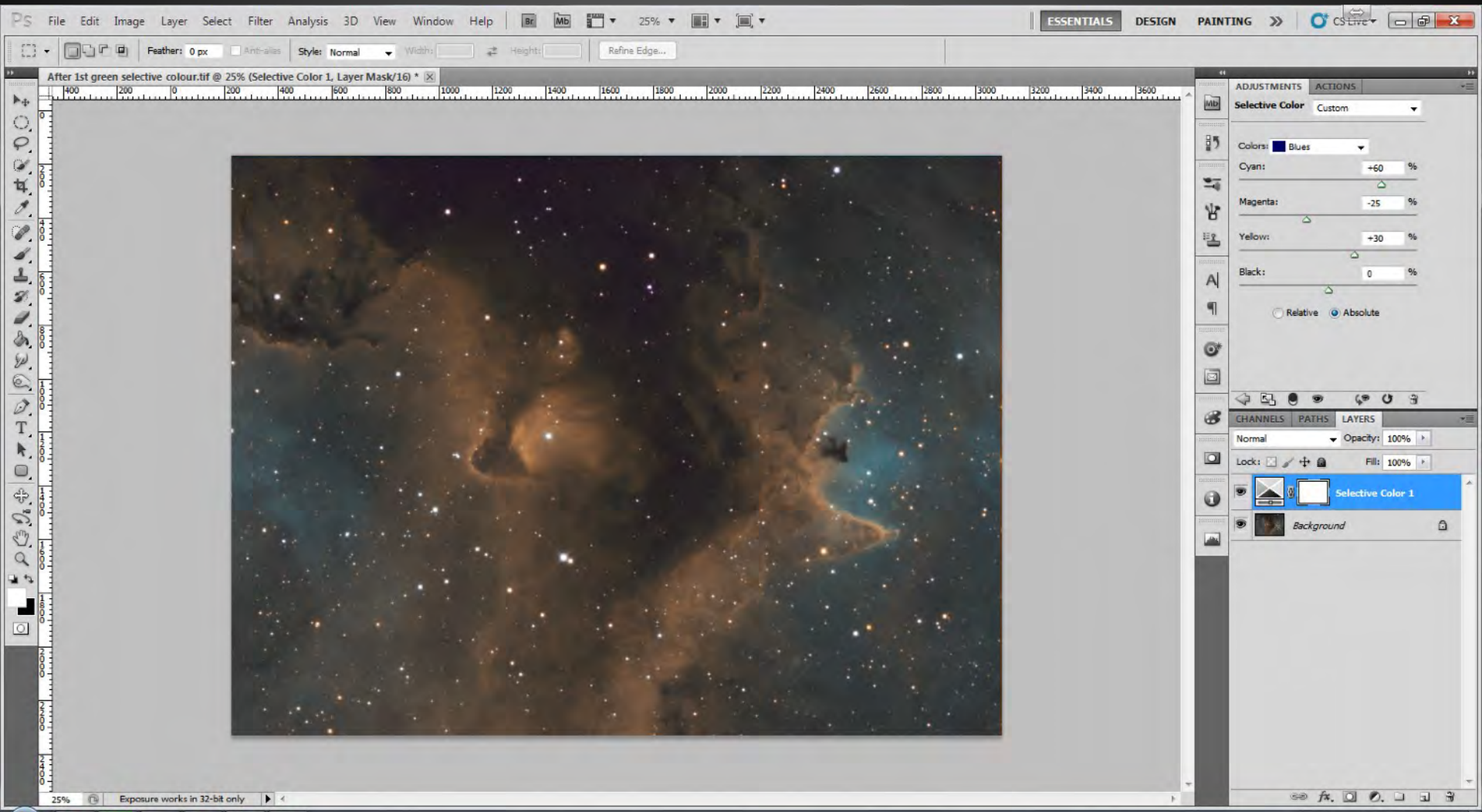
Yellow Selective colour – Working on making the yellows more orange



Cyan Selective colour – Working on the blue areas of the nebula – This can be tweaked further with blue selective colour as required.

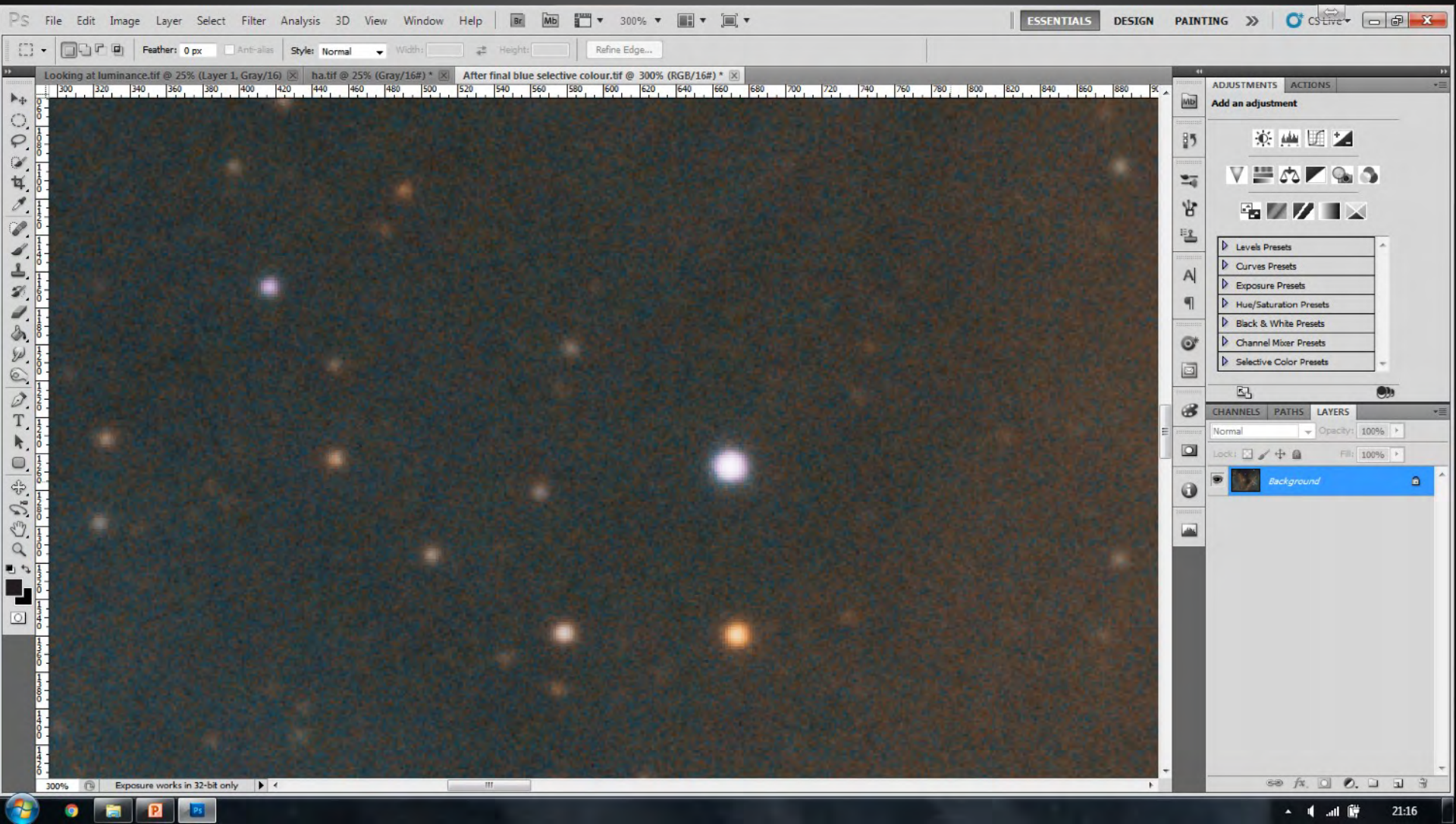


Blue Selective colour – Changing the blue to a lighter and slightly more cyan colour….



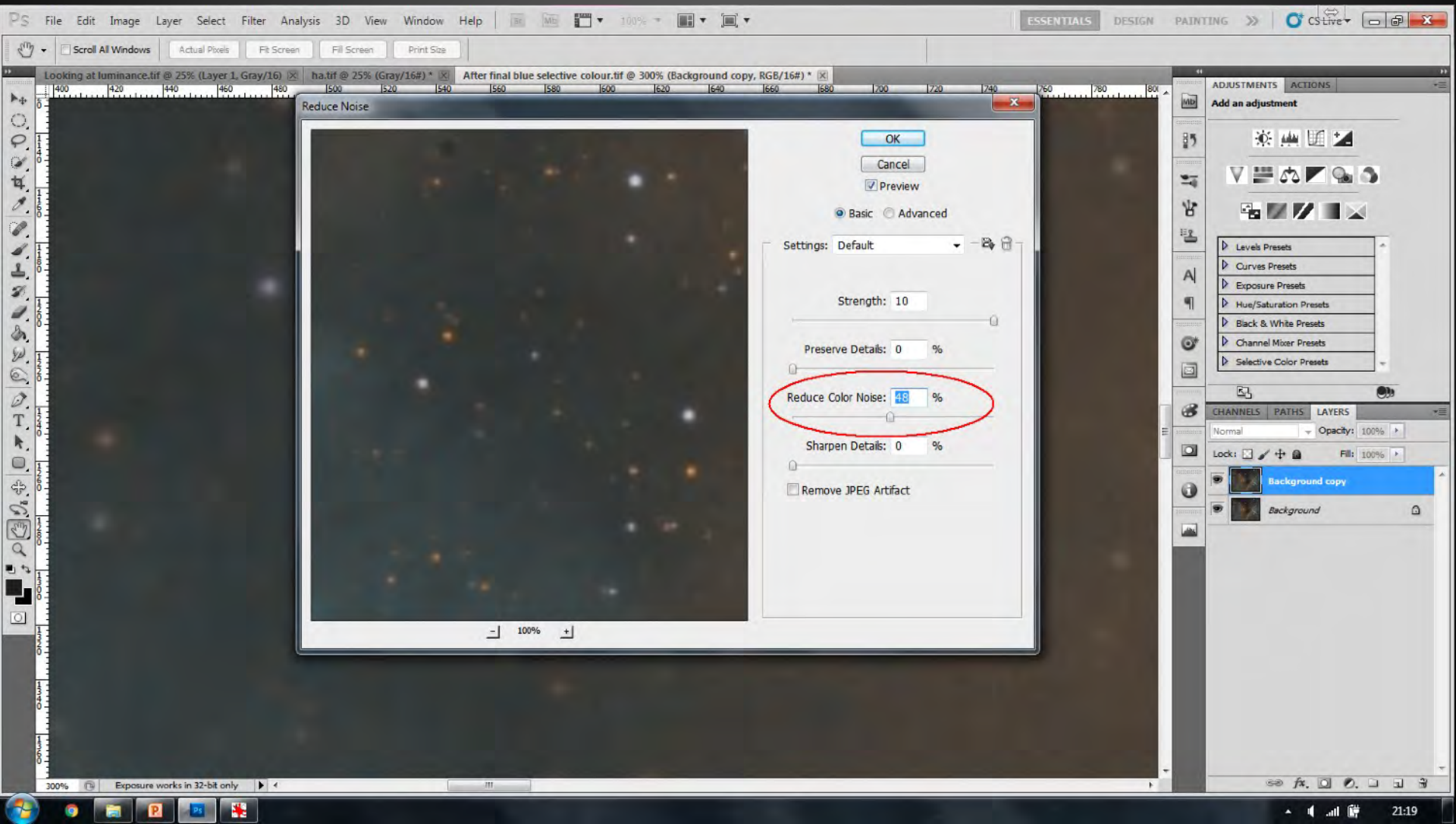
Processing

Preparing for luminance (noise)



Processing

Blurring the layer to combat noise



Processing

The difference once noise is removed

Processing

Considering the luminance

False Luminance

How to create a false luminance

- Use the image BEFORE any noise reduction
- Desaturate the image by changing the mode to grayscale

Why a false luminance

- It will include the details from ALL data channels. In some cases this is imperative

Luminance

Using a luminance filter you will get data in all visible channels.

- Star bloat issues
- Light pollution

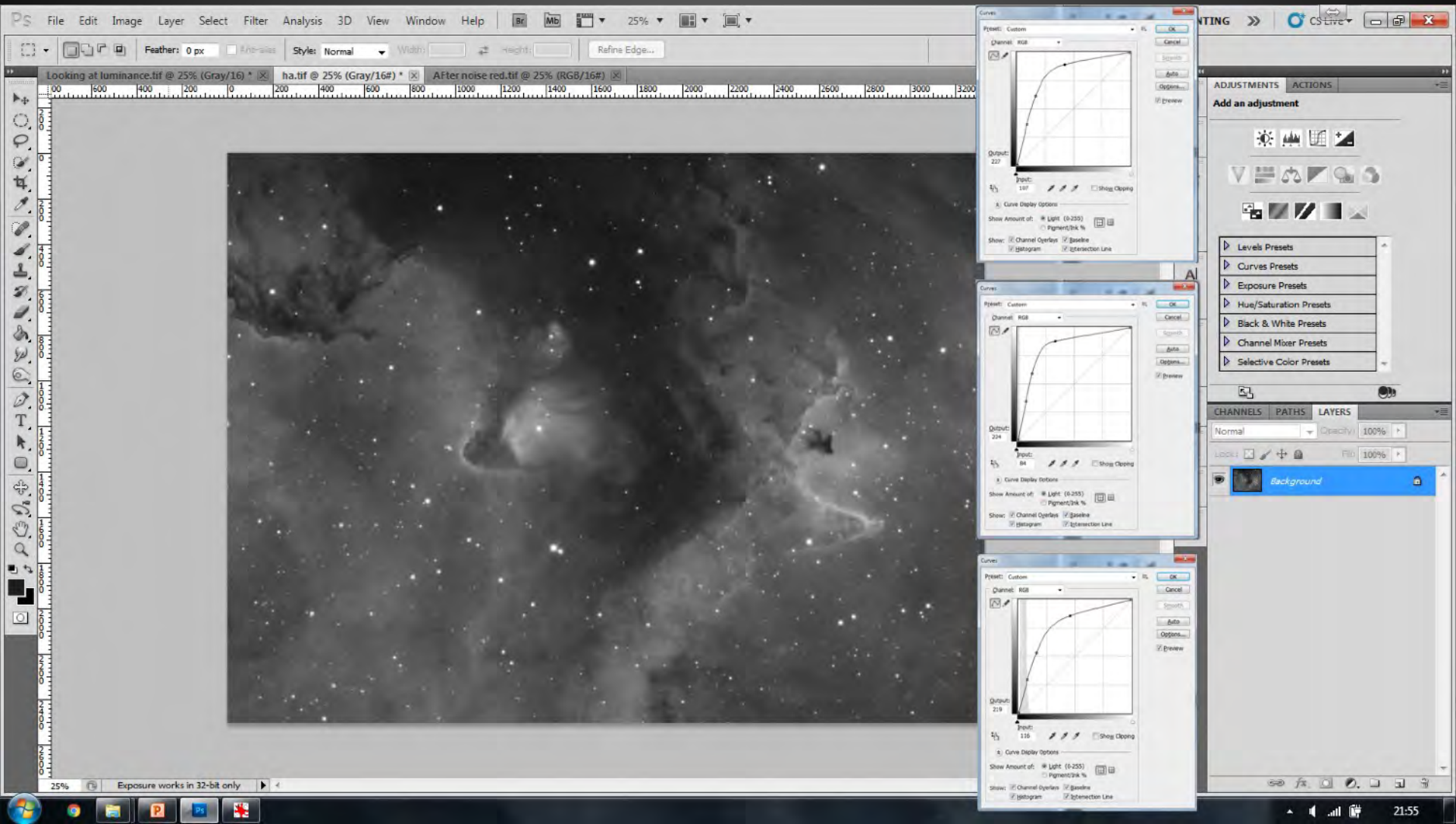
Ha as luminance

Data is only in the Ha channel – Lets consider if this is an issue.

Stars are smaller

Processing

Creating an Ha luminance



Processing
Comparing the luminance

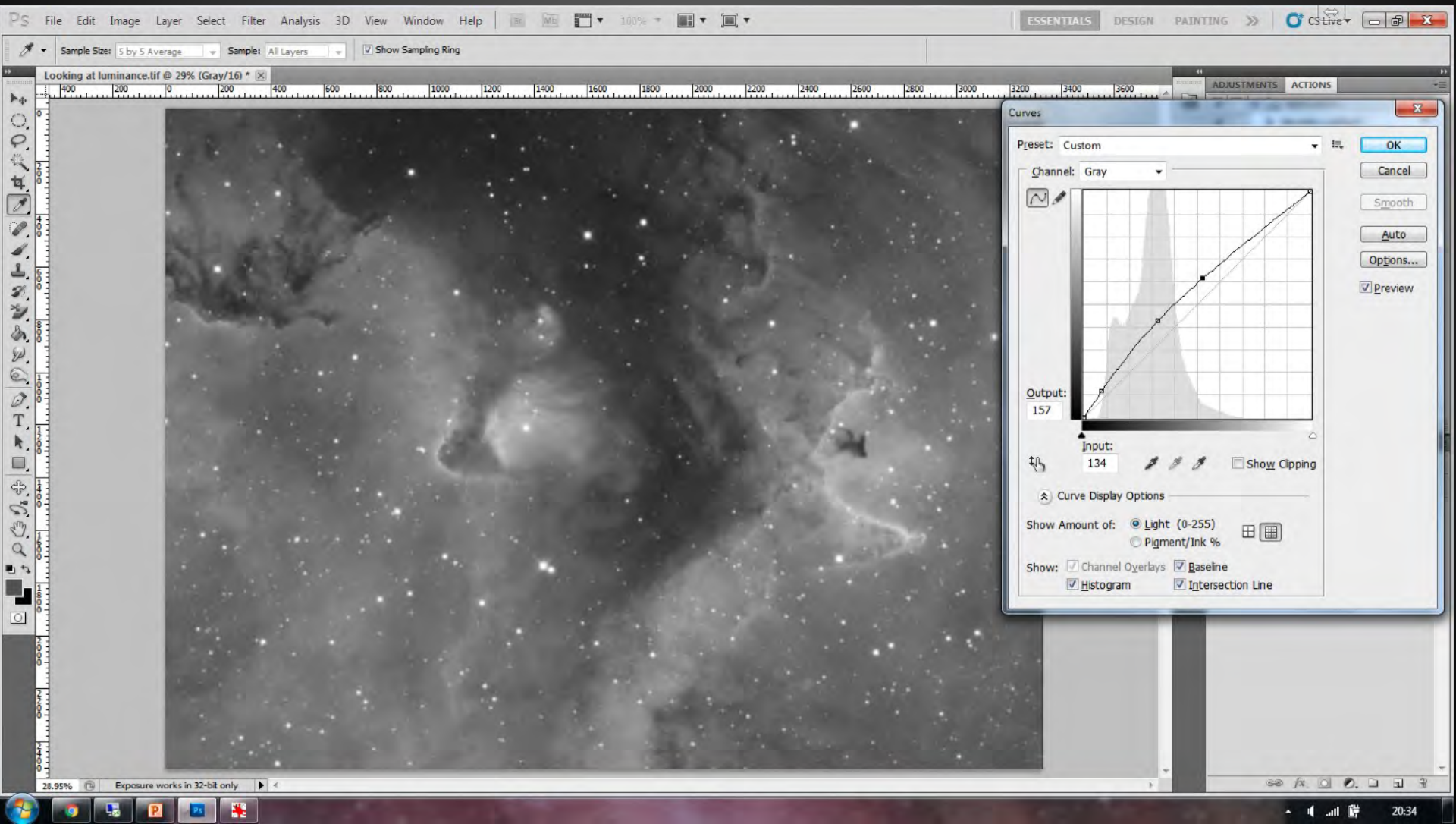
False luminance

Ha only luminance

- Very little difference between them.
- False luminance has a little more noise
- Ha luminance has smaller stars

Curves – Lighten the Luminance

Ensure that there is no clipping of the dark areas

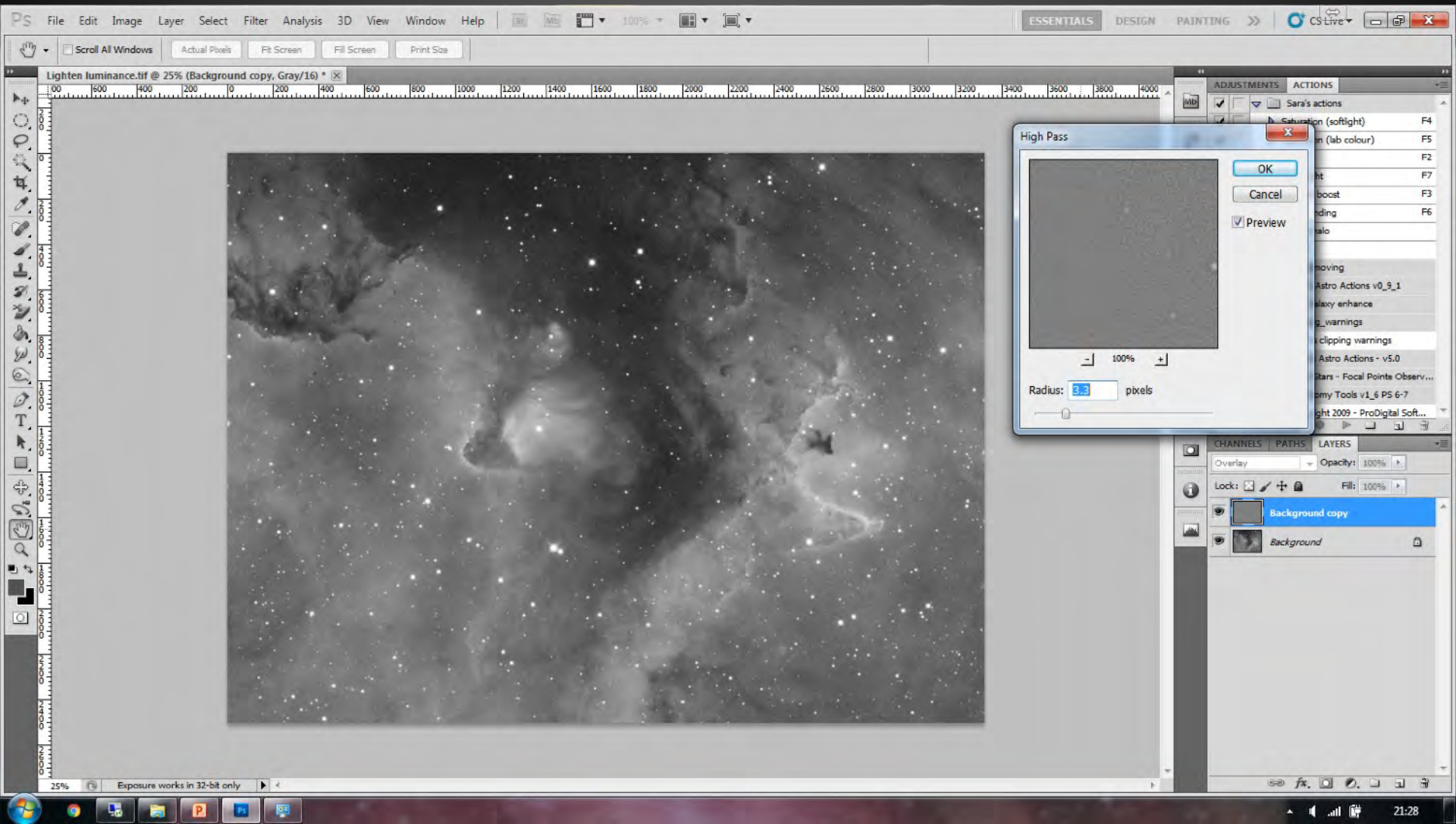


Duplicate the layer

Select ‘Blend mode’ overlay

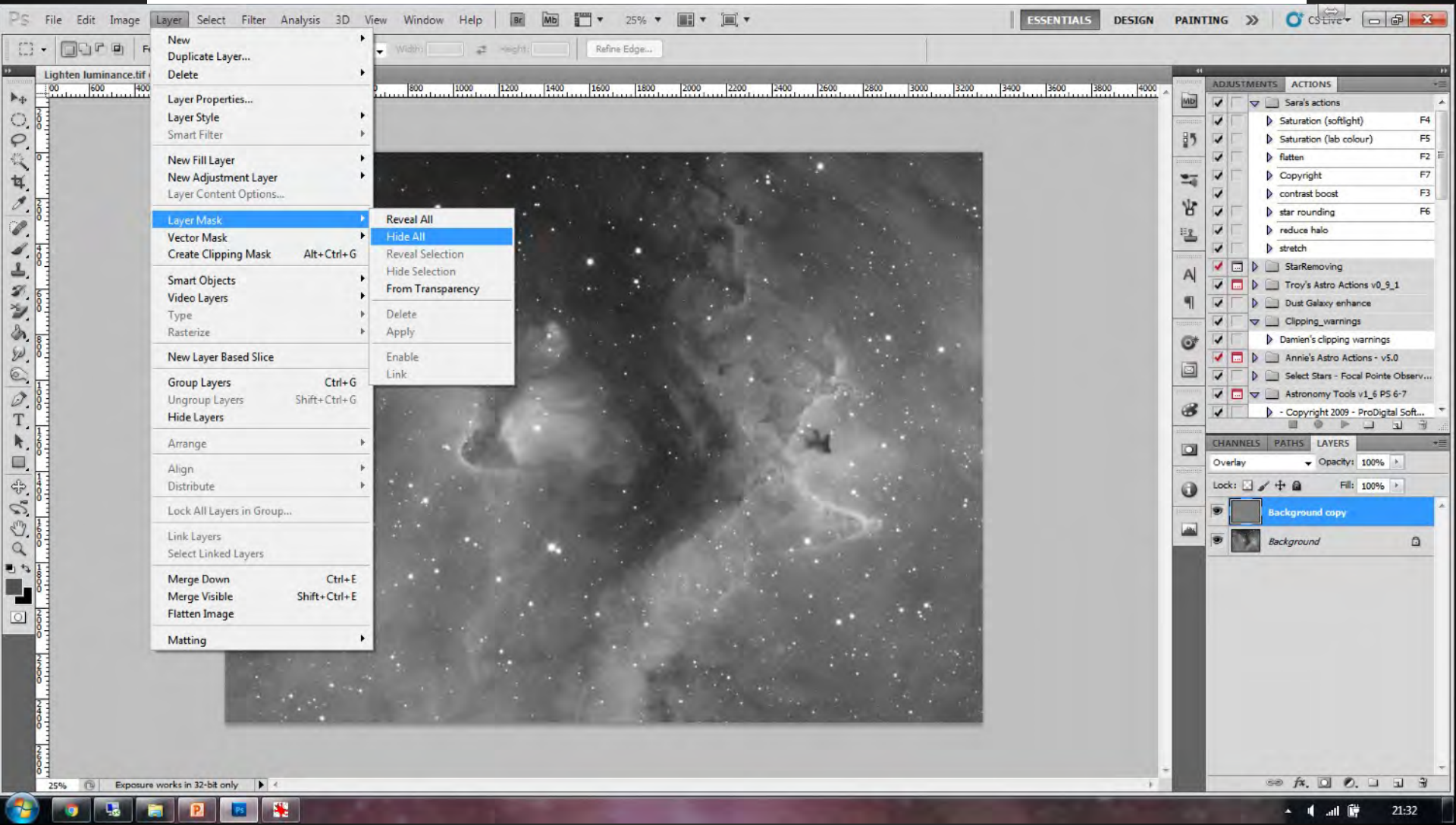
High Pass – Radius selection…

This can be tweaked in Opacity afterwards in a couple of ways

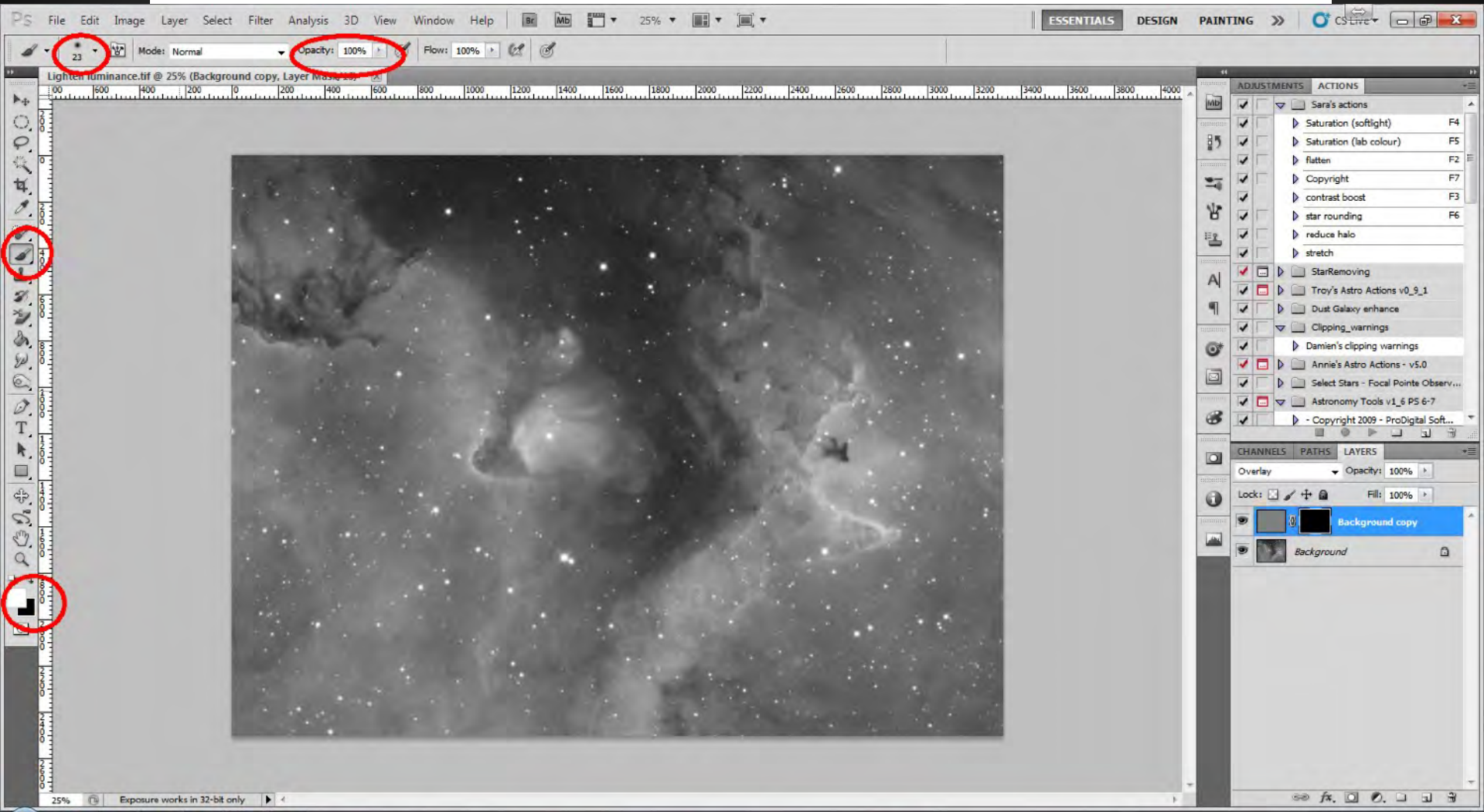


Layer mask – Hide

This allows us to sharpen up edge details and where the signal is the best

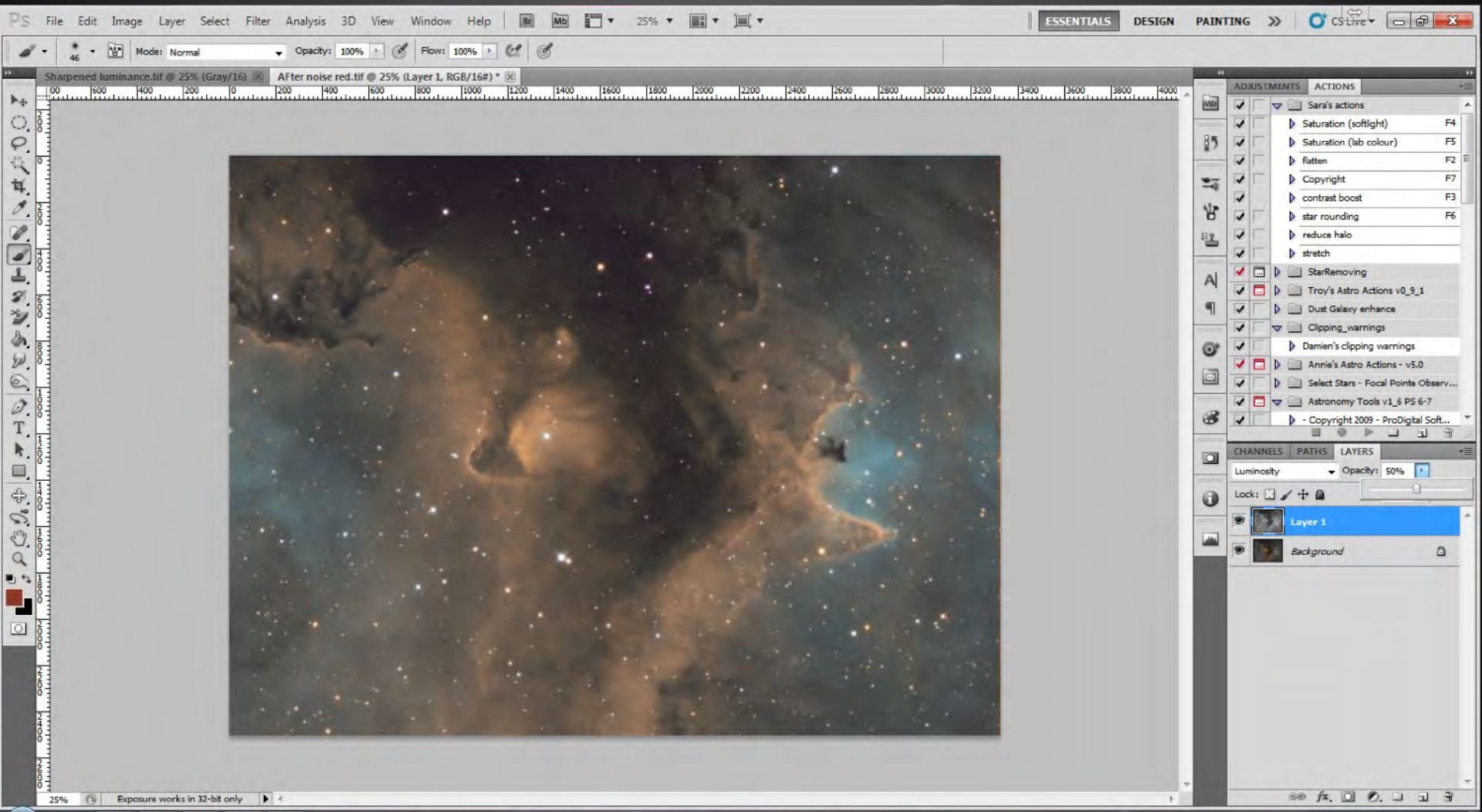


1) Background selection
2) Select brush
3) Select brush size
4) Select Opacity

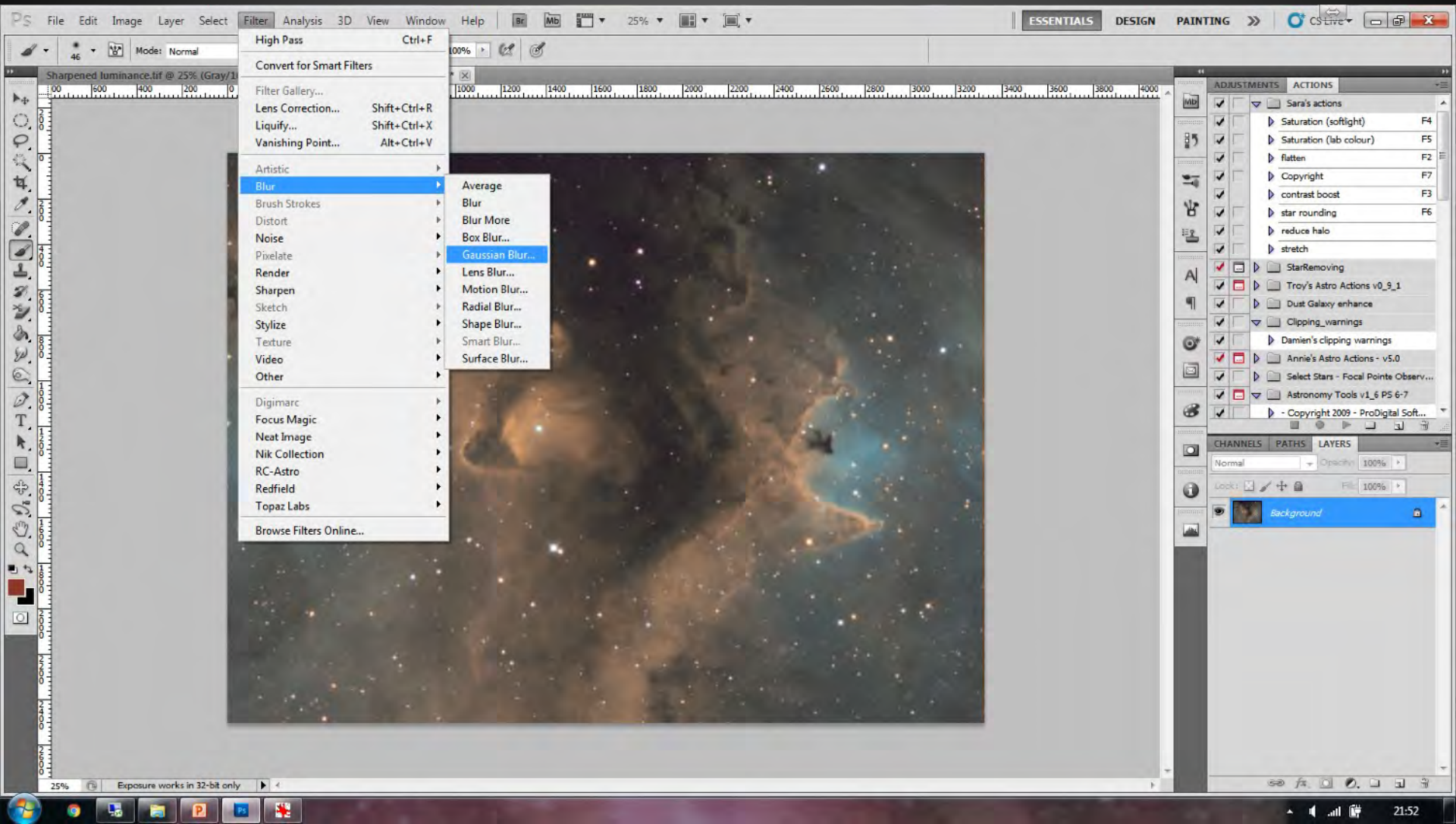


Copy the Luminance image and paste it onto the Coloured Noise reduced image.

Don’t add all luminance at once

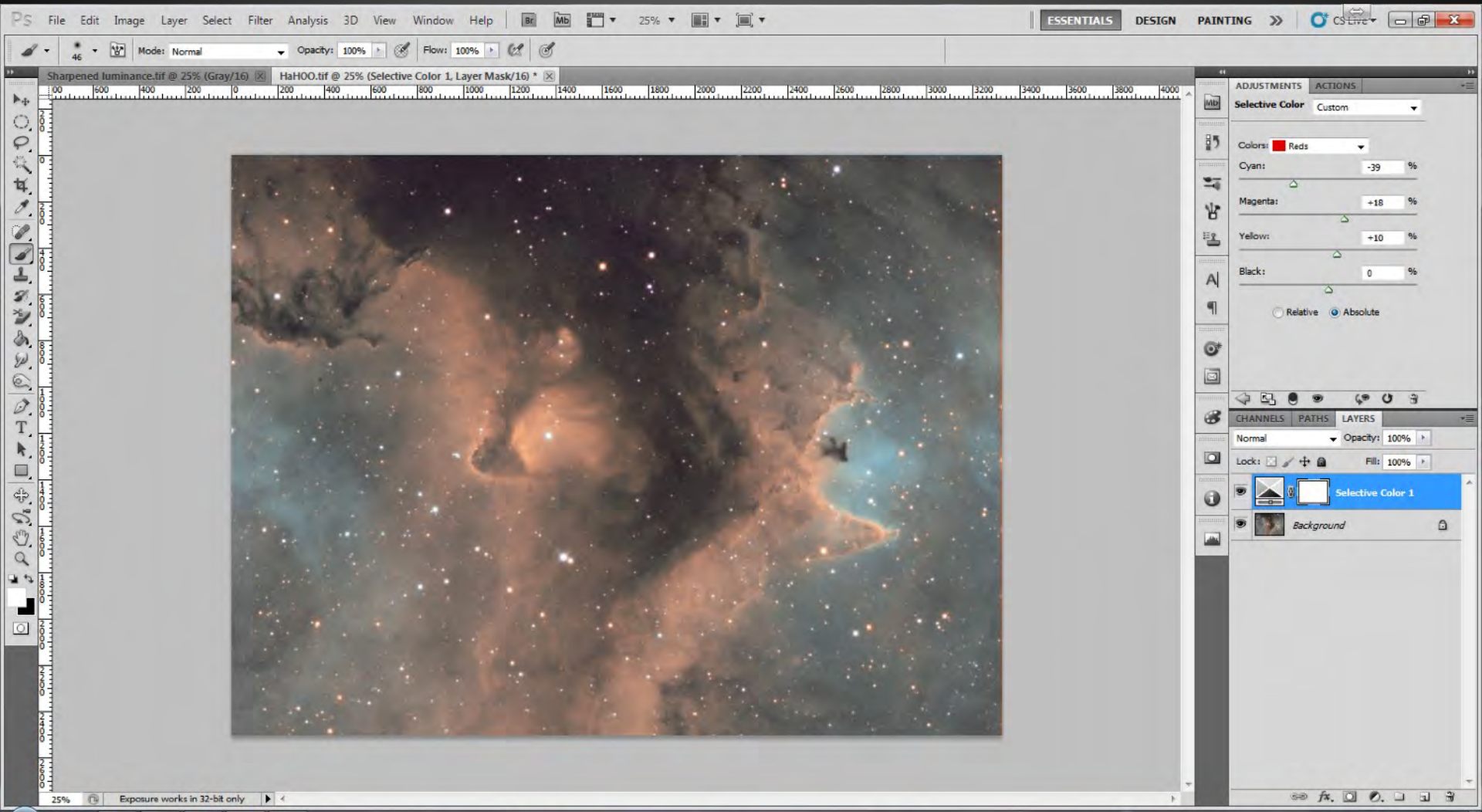


Iteratively add the luminance and blur in-between each iteration of about 0.9 pixels



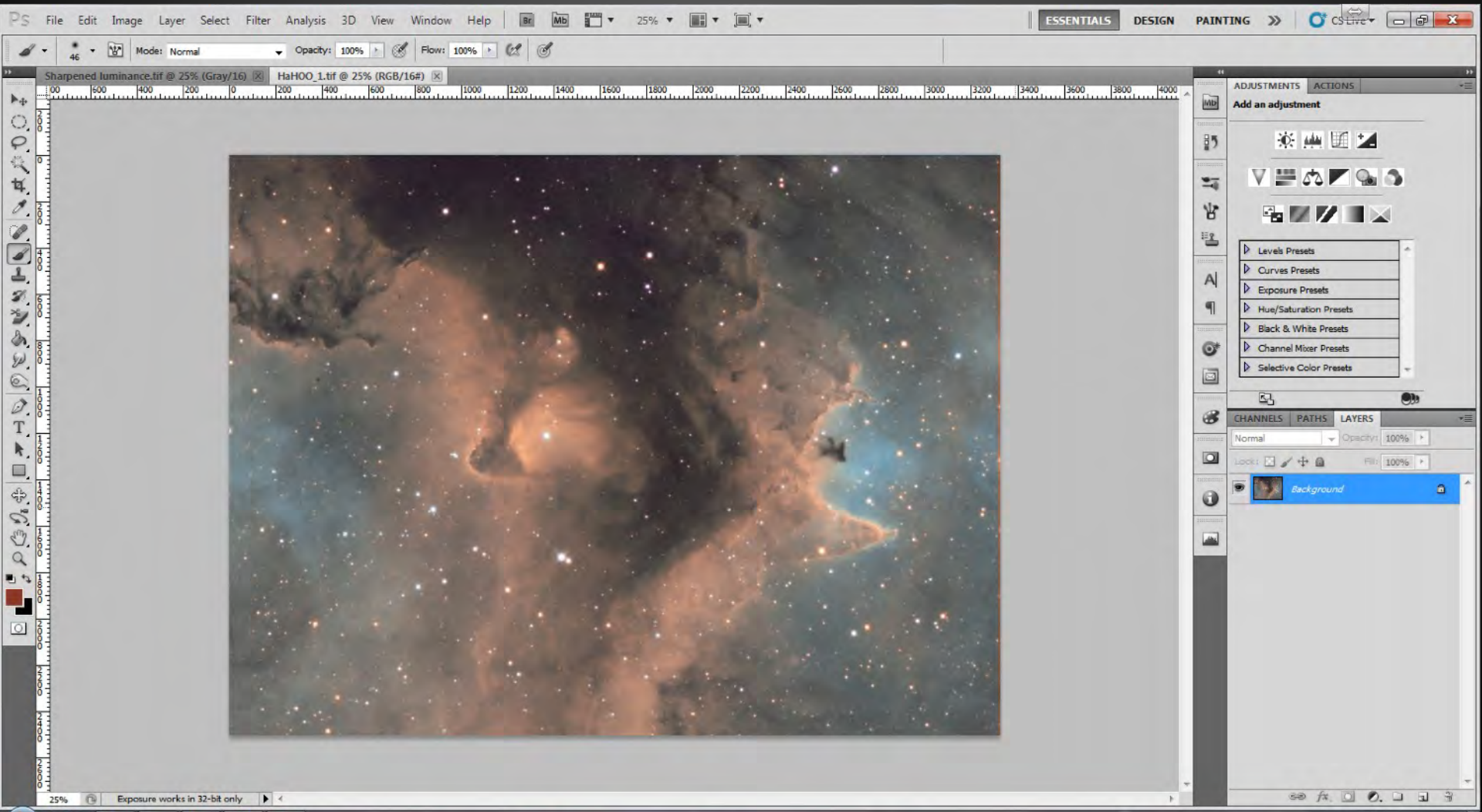
Once the luminance has been added to 100% opacity – Consider the colour again.

Red / Blue / Cyan



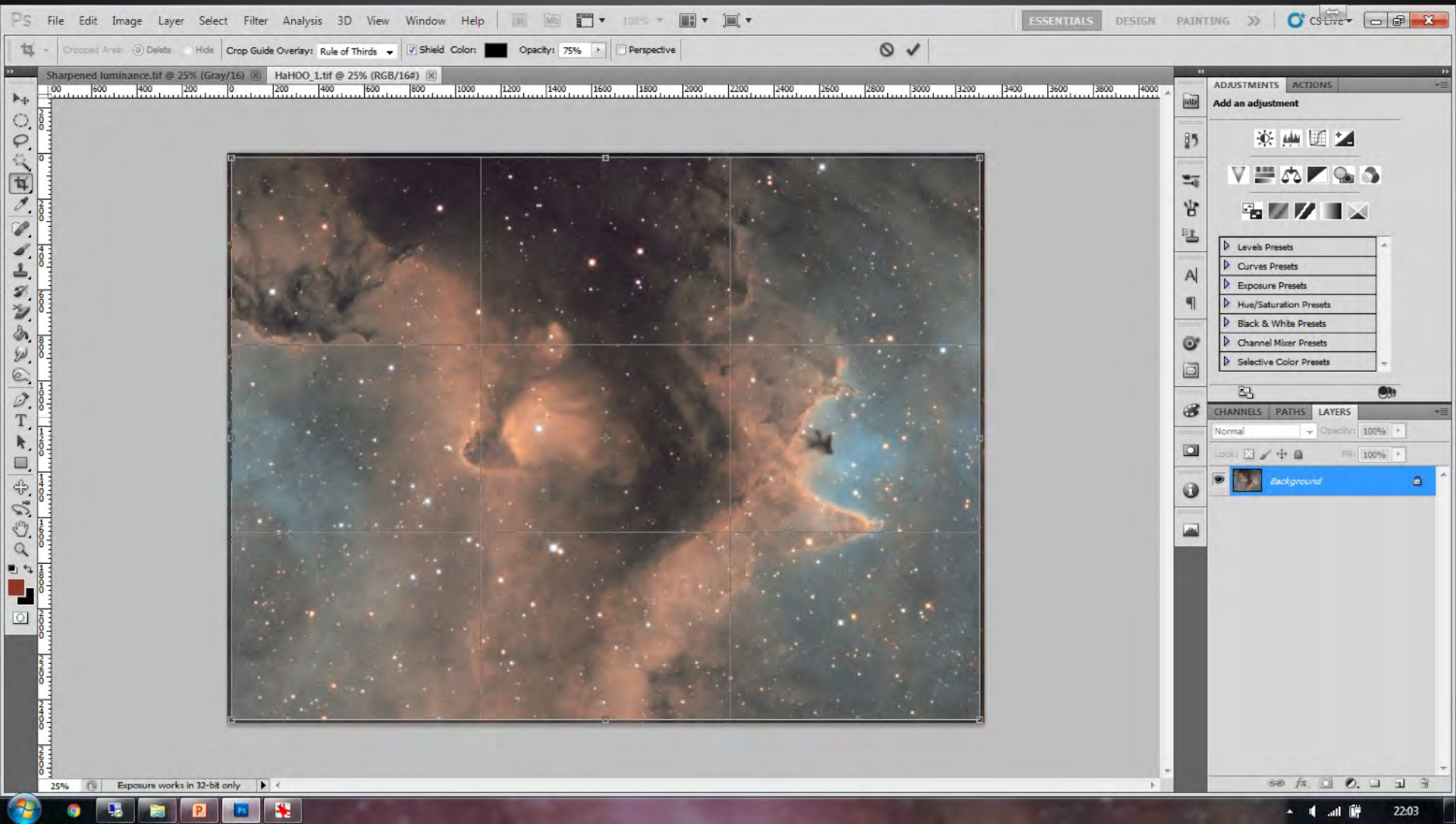
Processing

What is needed next ….

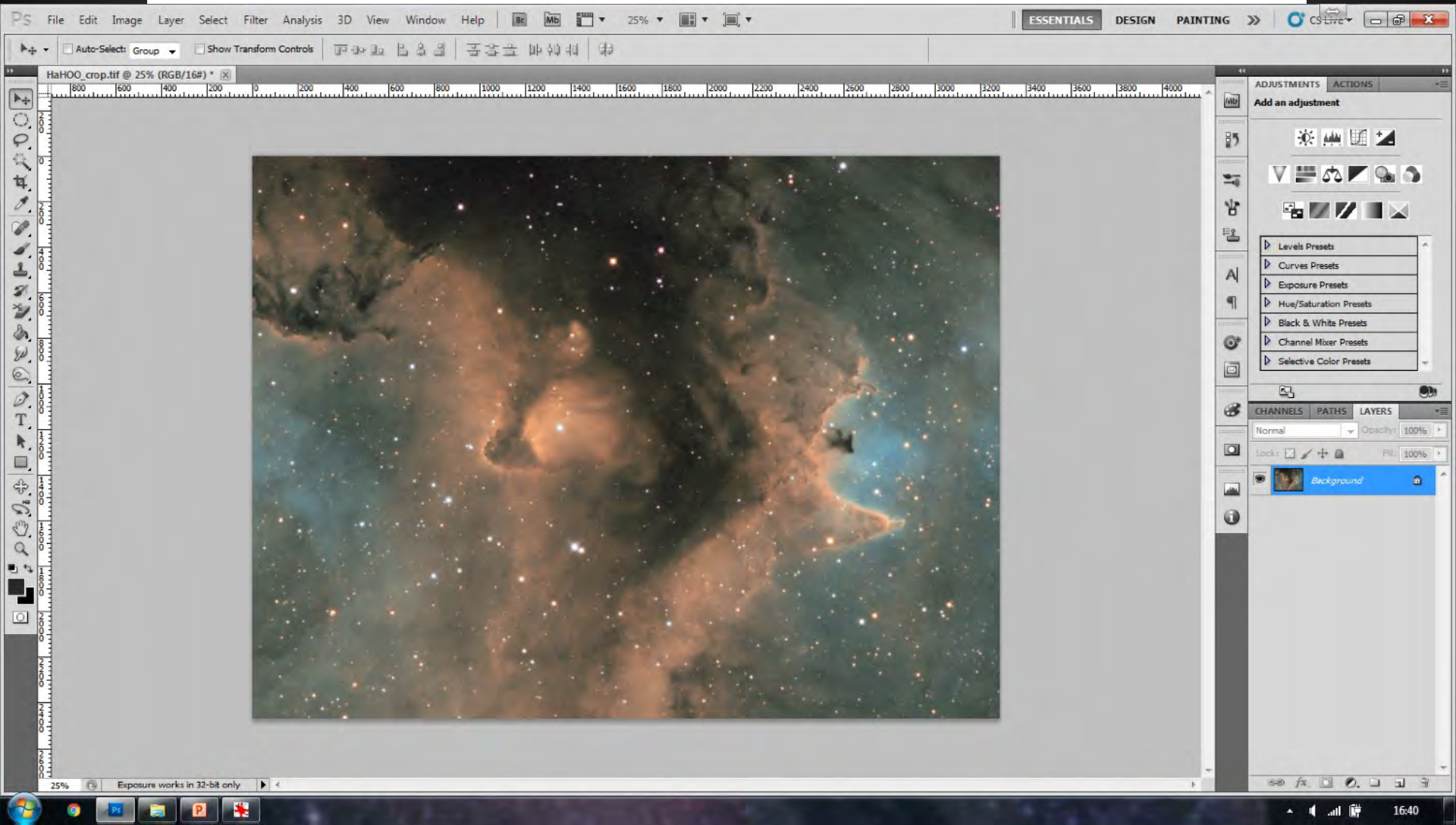


Processing

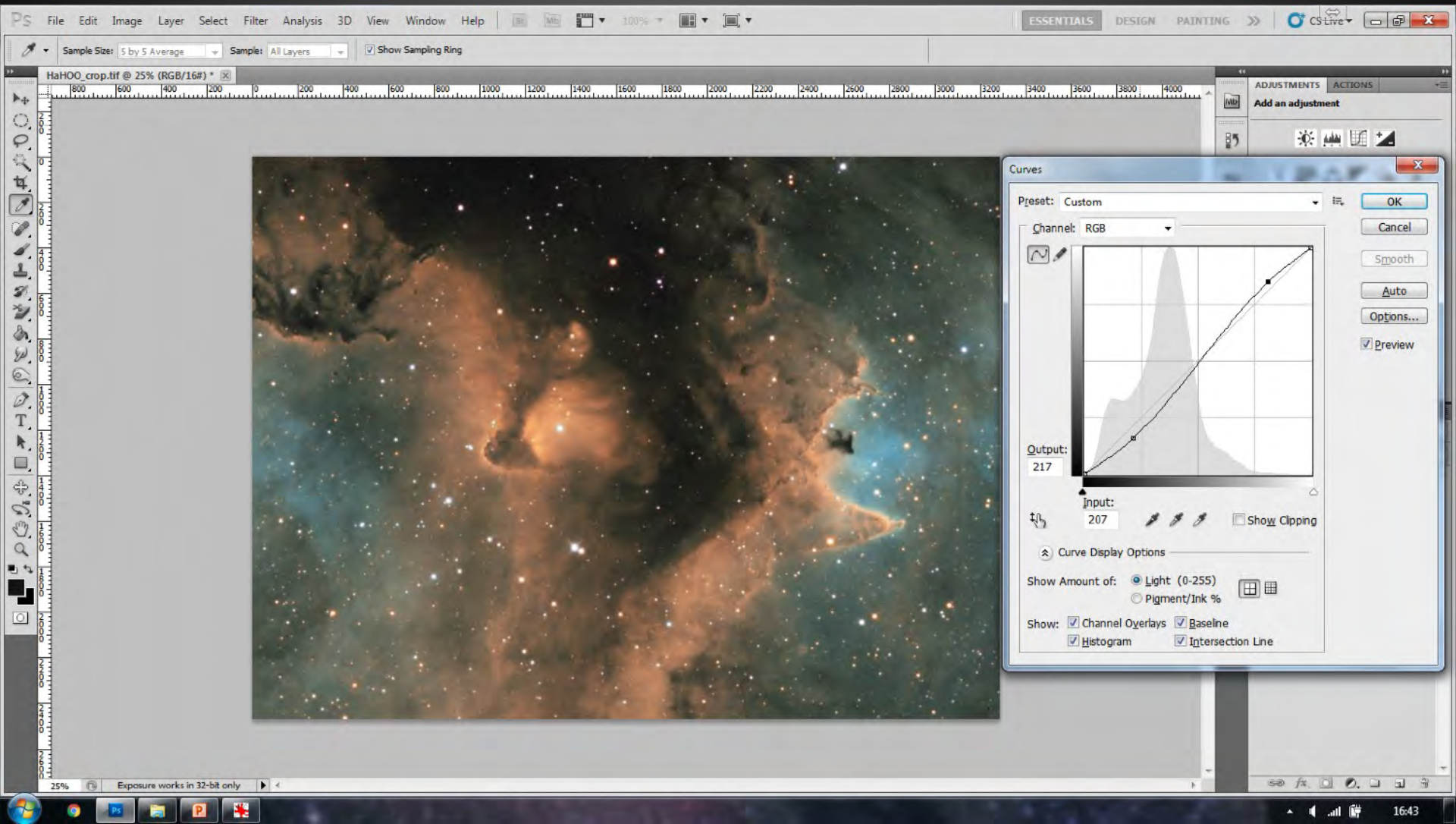
Crop the edges



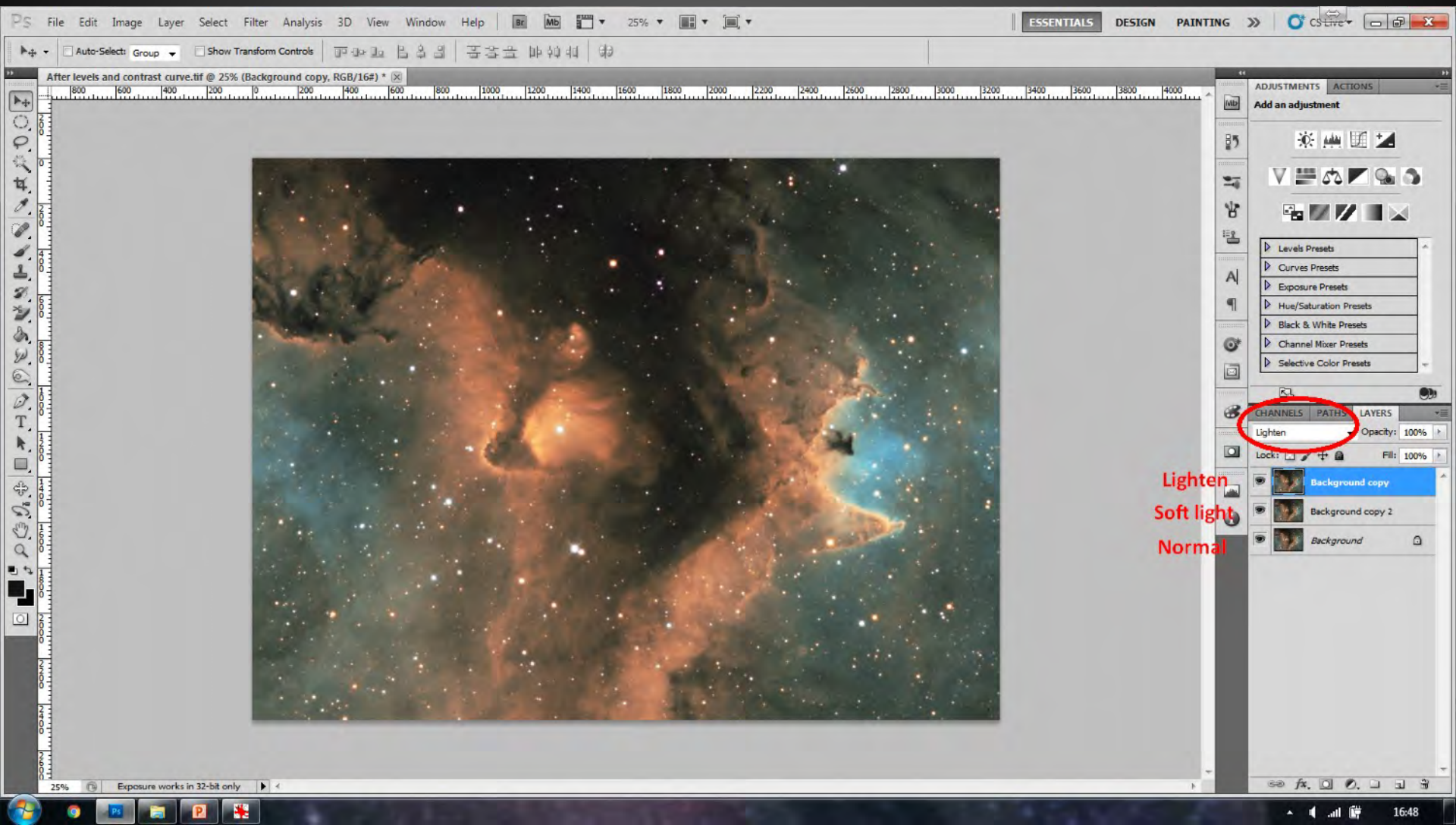
1) Move blackpoint on individual colours……. Attains a balanced histogram.



Contrast curve – Lowers the dark end and lightens the brighter areas…. Watch out for clipping



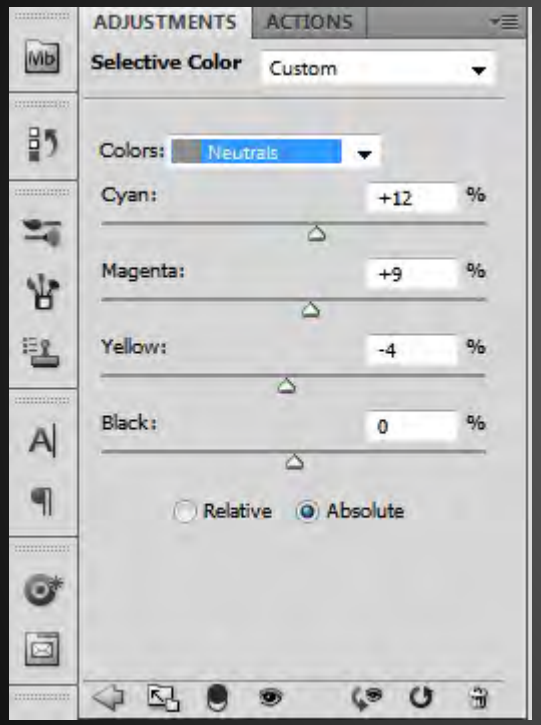
1) Create three duplicate layers.
2) Blend mode as shown
3) Flatten the complete image – Change opacity of the 2 upper layers to suit as required.

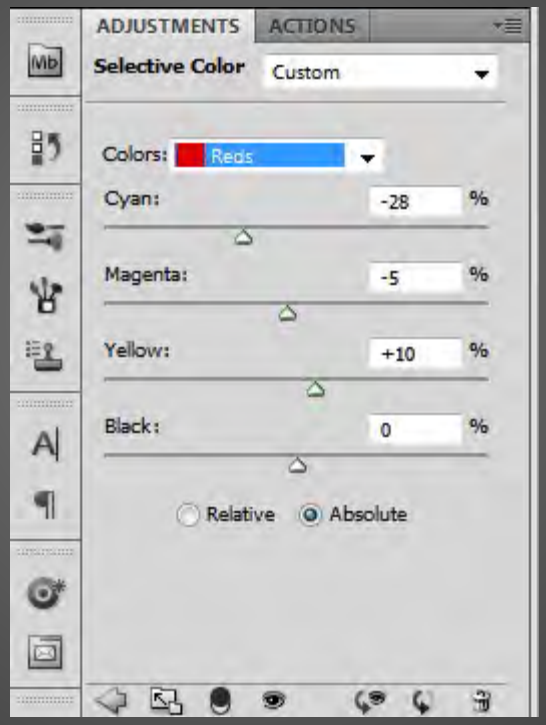


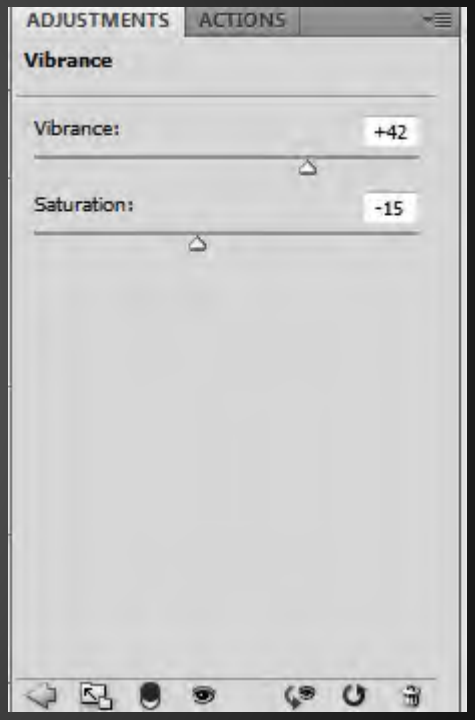
Processing

How to finally present your image

Processing
Selective colour







2016 in pictures

All images are produced by Sara Wager www.swagastro.com

Thank you

CEDIC 2017

Sara Wager