Preprocessing CCD images with MaximDL v5.23

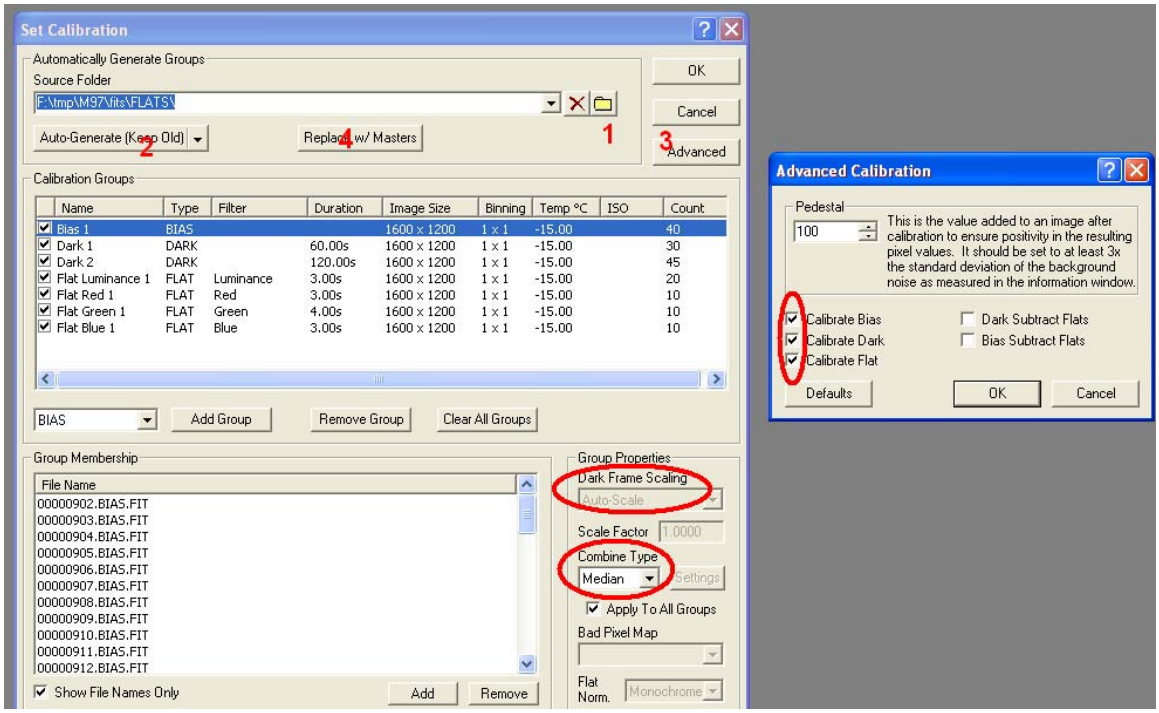
In this guide you can see the steps I follow in order to preprocess the CCD Raw images I have captured with my astro setup (SBIG ST2000XM+VC200L). Preprocess means to make the master L, master R, master G and master B frames. Then create the RGB frame which can be combined in Photoshop later, together with the master L frame, in order to create the final result and publish it on the internet.

We work with this set of captured frames with the CCD chip temperature at -15 degrees Celsius:

Calibration frames	Bias	40 x 0 sec, bin 1x1
	Darks	30 x 1 min, bin 1x1 45 x 2 min, bin 1x1
	Flats	20 x 3 sec, bin 1x1 (L) 10 x 3 sec, bin 1x1 (R) 10 x 4 sec, bin 1x1 (G) 10 x 3 sec, bin 1x1 (B)
Light frames	Luminance	30 x 1 min, bin 1x1
	Red	15 x 2 min, bin 1x1
	Green	15 x 2 min, bin 1x1
	Blue	15 x 2 min, bin 1x1

Step1: Set Calibration

Under the “Process” menu we select “Set Calibration”, and then the following window appears



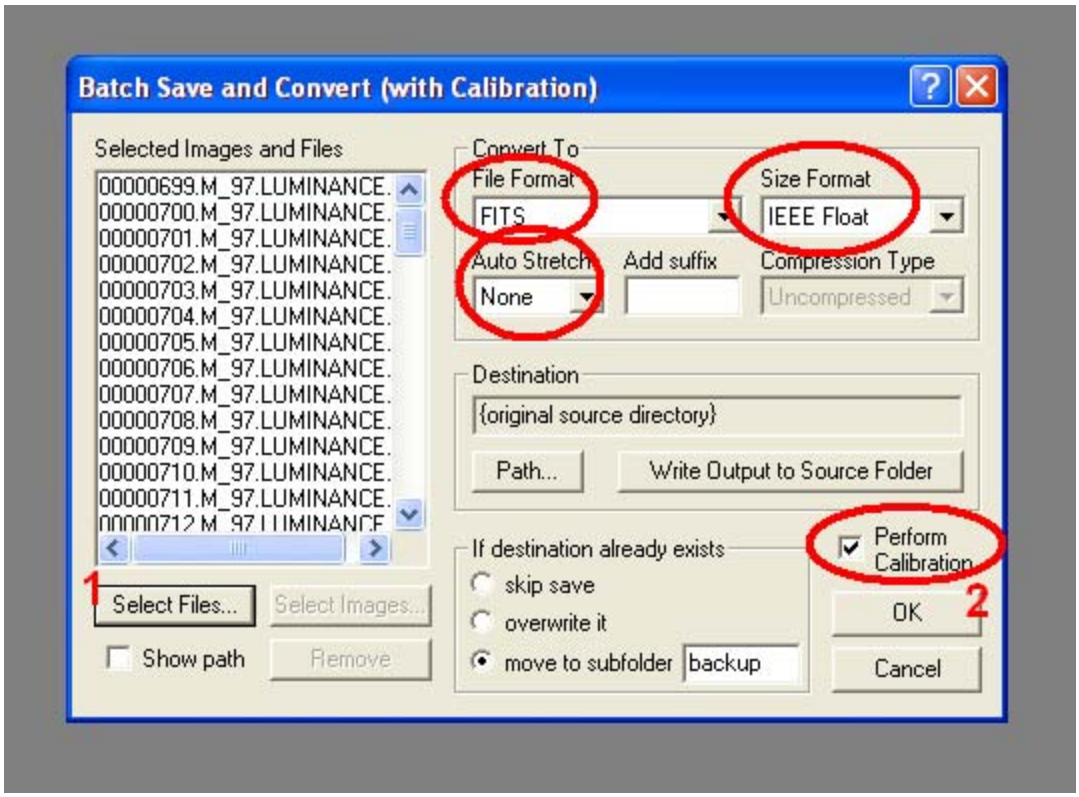
1. Select the calibration frames
2. Press this button for every group you select
3. Press on Advanced button and make the configuration you see in the Advanced Calibration window
4. Press this button once

Please notice that the Dark frame Scaling is set to “Auto-scale” and Combine Type to “Median” to be applied to all groups.

After the calibration process finishes, the master calibration frames (Bias/Darks/Flats) have been created. You can close the “Set Calibration” window.

Step2: Calibrate raw frames

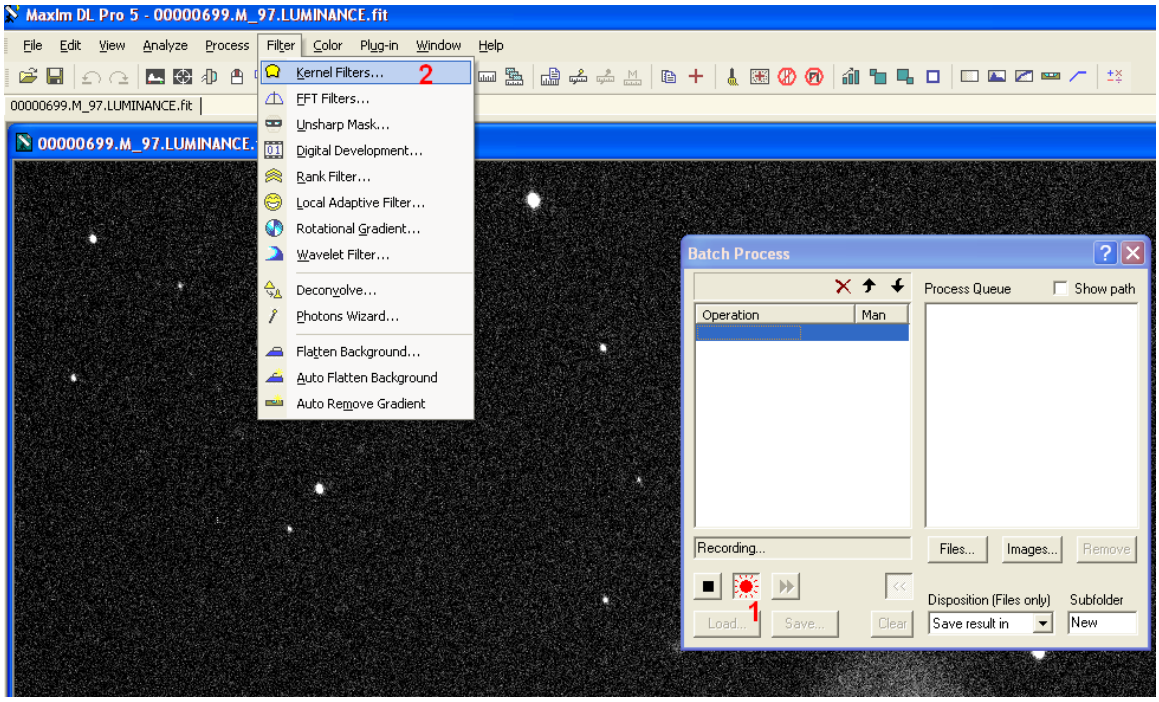
Under the "File" menu we select "Batch Save and Convert", and then the following window appears



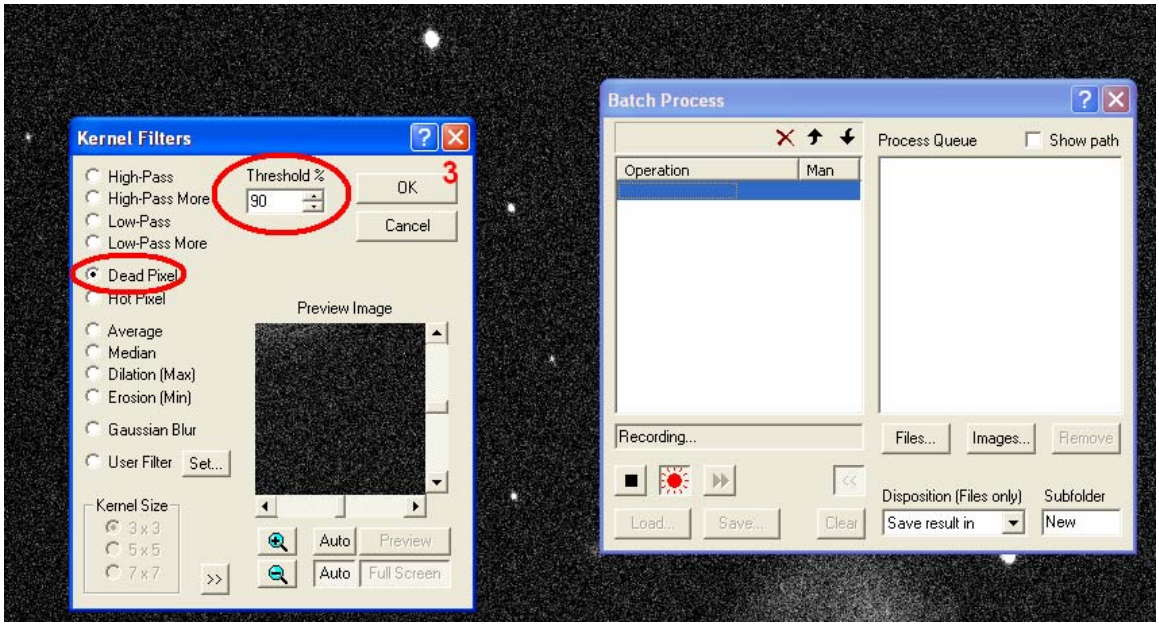
1. Select all the Raw light frames: L,R,G,B
2. Press this button to perform calibration

Step3: Hot, Cold pixels removal

Open a calibrated luminance frame, then under the “View” menu we select “Batch Process Window”, and then the following window appears

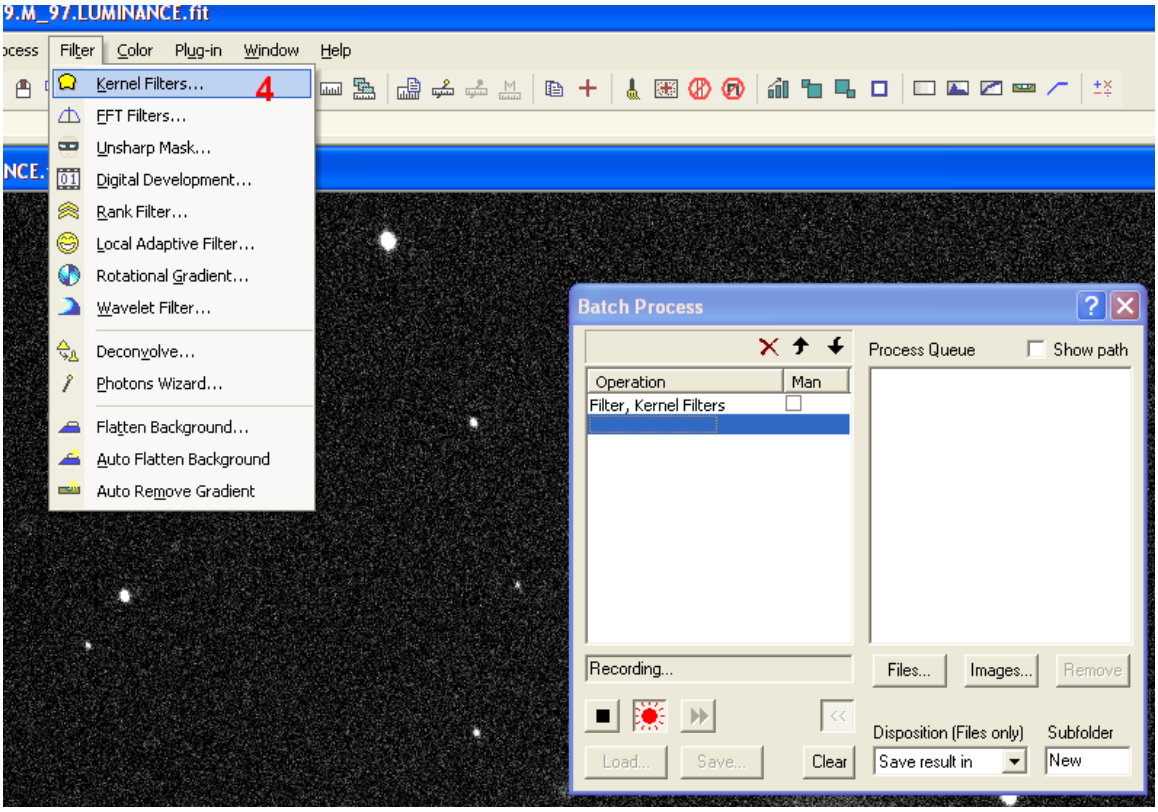


1. Press this button to start recording
2. Select Kernel Filters

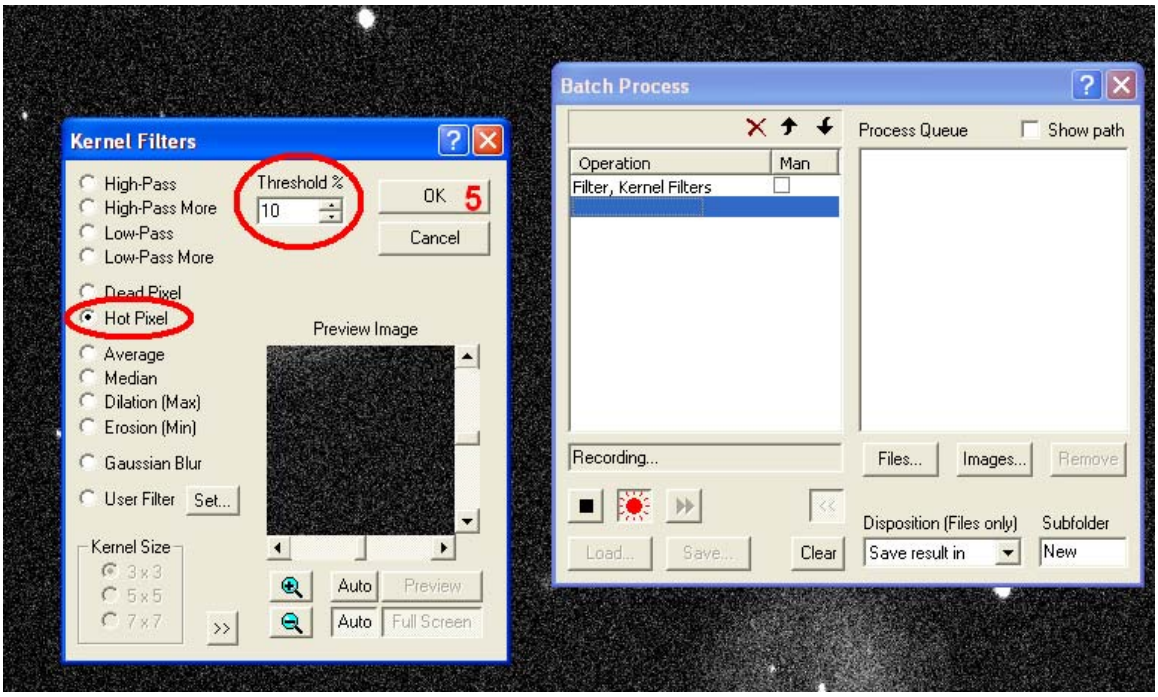


Define threshold value to taste

3. Press this button

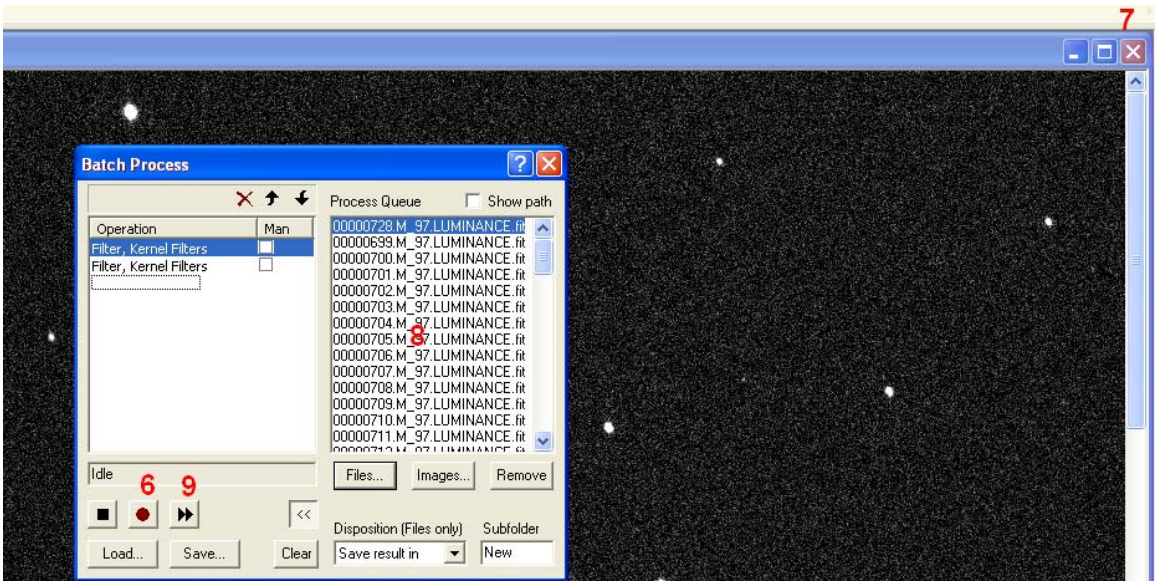


4. Select Kernel Filters again



Define threshold value to taste

5. Press this button



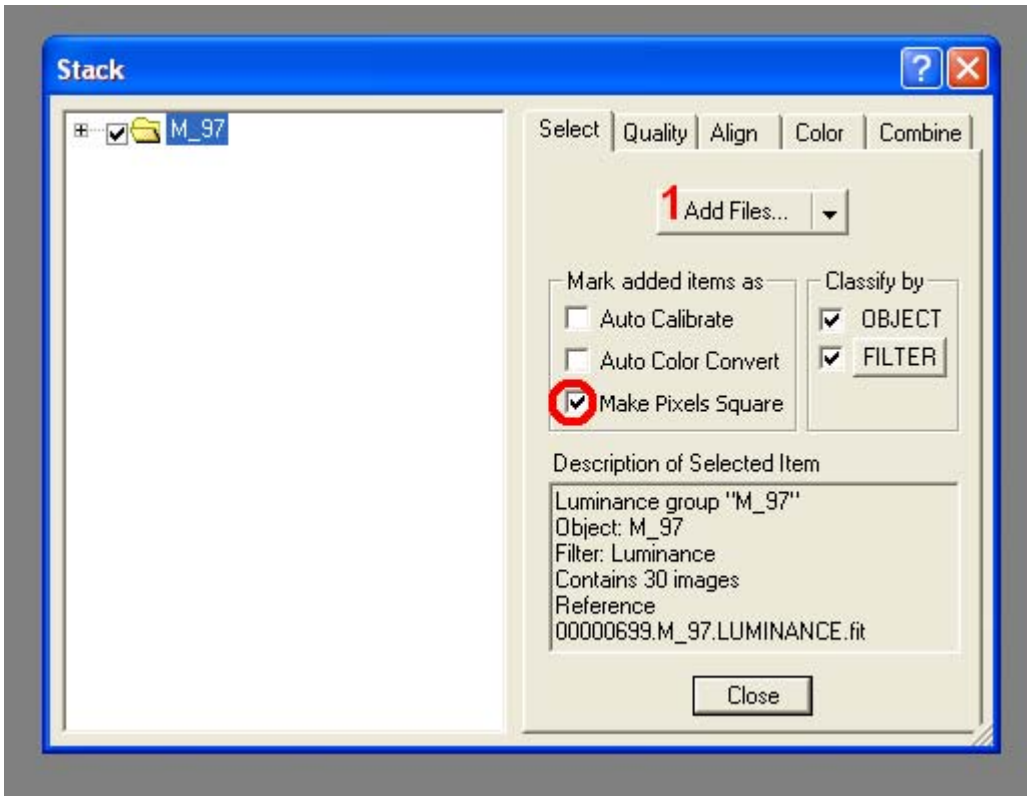
6. Press this button to stop record sequence
7. Close the luminance frame
8. Input the calibrated L,R,G,B frames from previous step
9. Play sequence on the multiple images

After the process finishes you can close the Batch Process window.

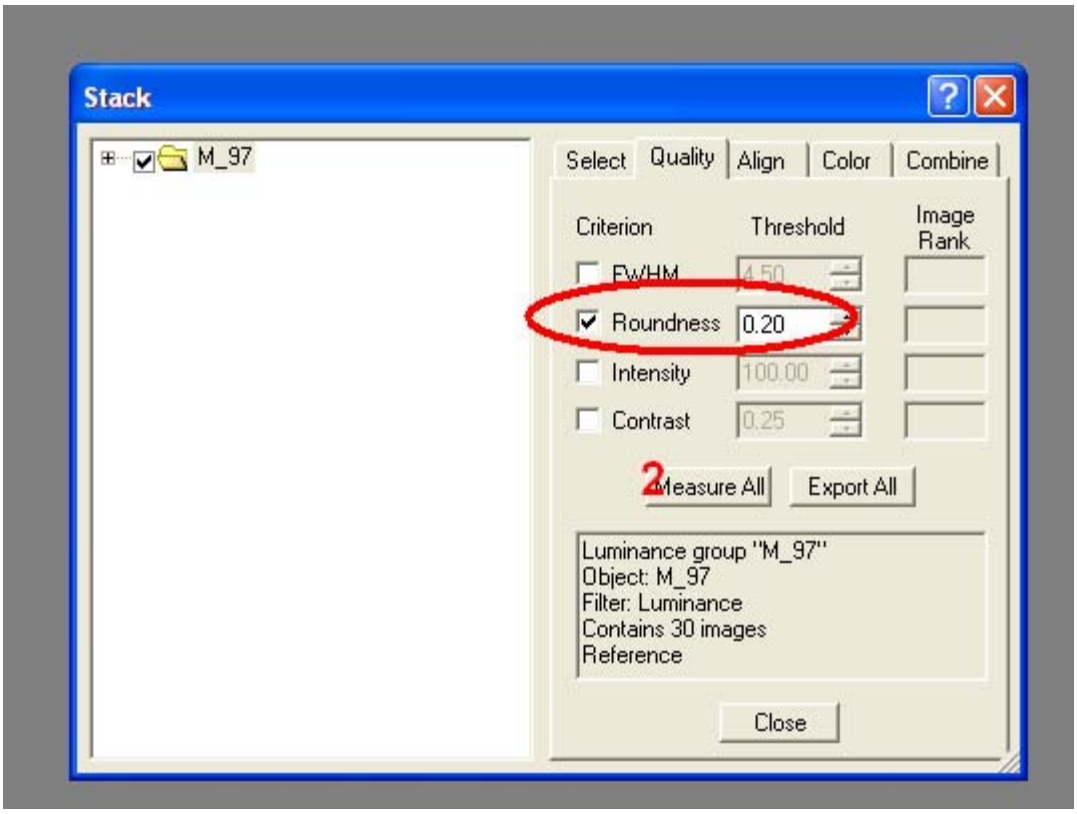
Step4: Align and stack

First I create the master Luminance frame.

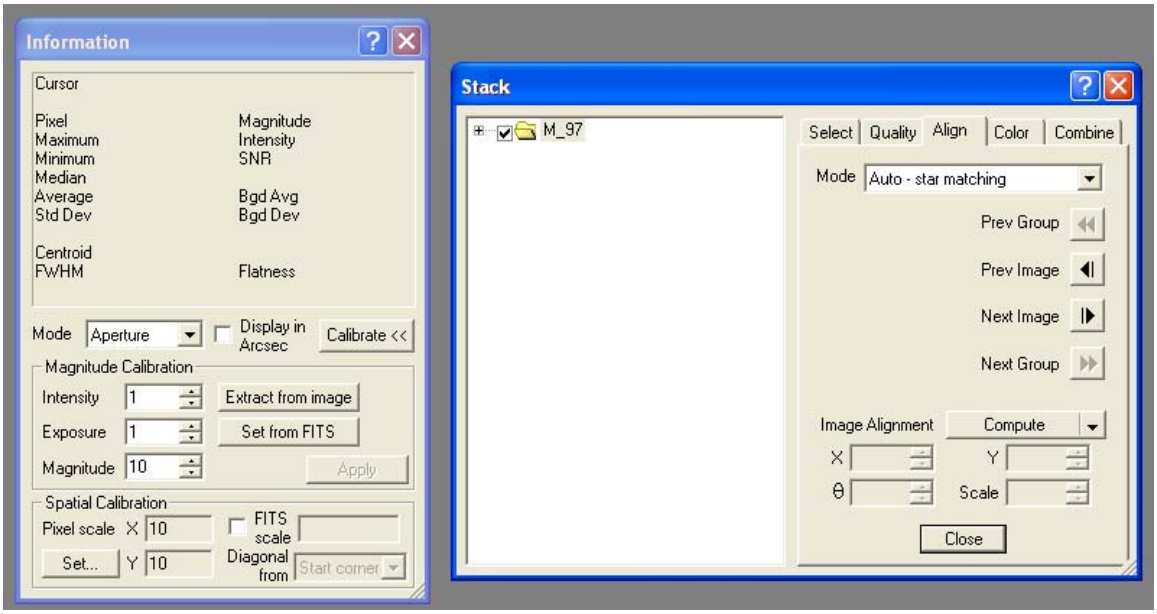
Under the “Process” menu we select “Stack”, and then the following window appears

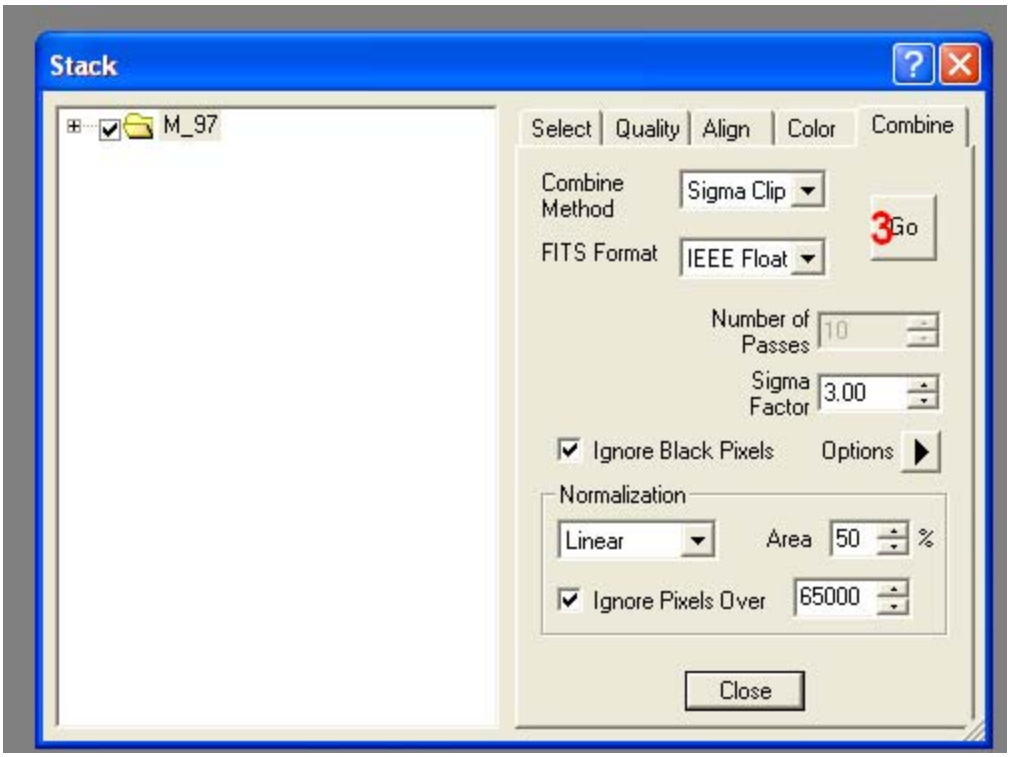


1. Add calibrated Luminance frames from New subfolder (see step 3)



2. Press the “Measure All” button, after defining Star Roundness value

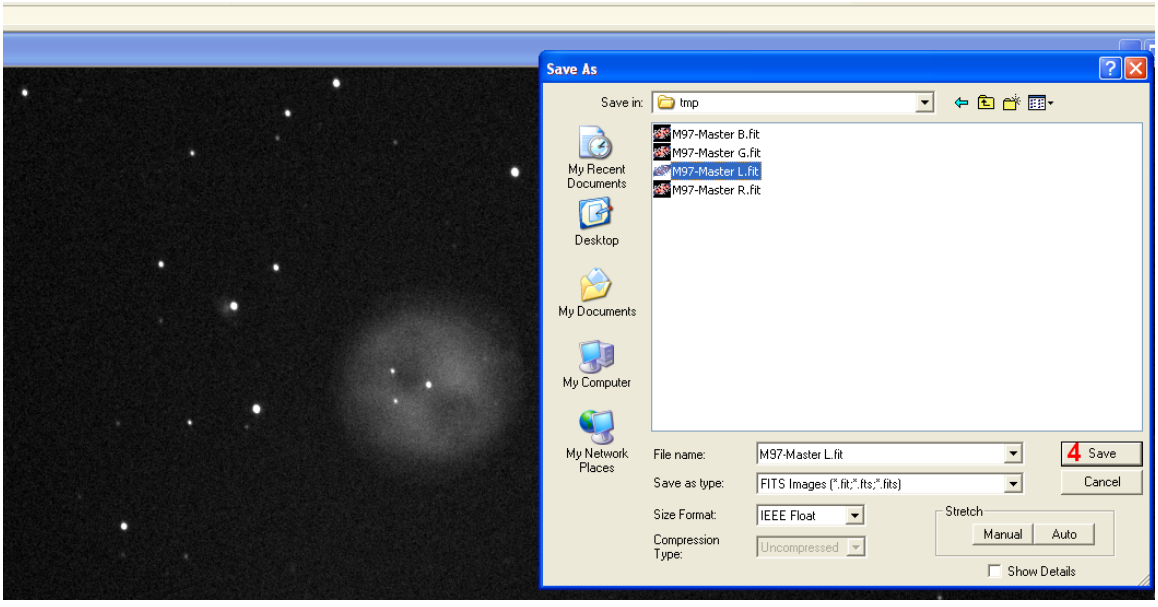




Sigma Clip combine method is recommended to use

3. Press the “Go” button

Master Luminance frame is created



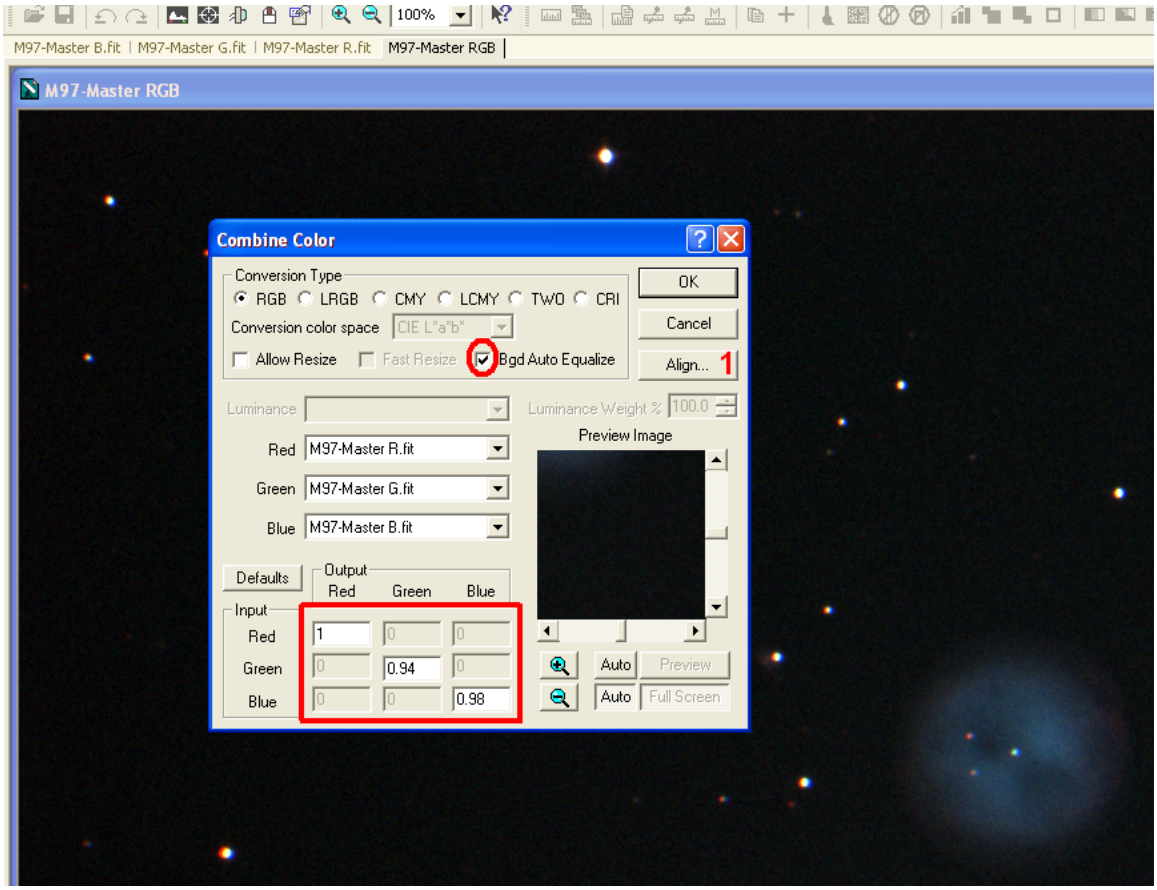
4. Save the Master Luminance frame

Perform the same actions described in this step in order to create the Master Red, Master Green and Master Blue frames.

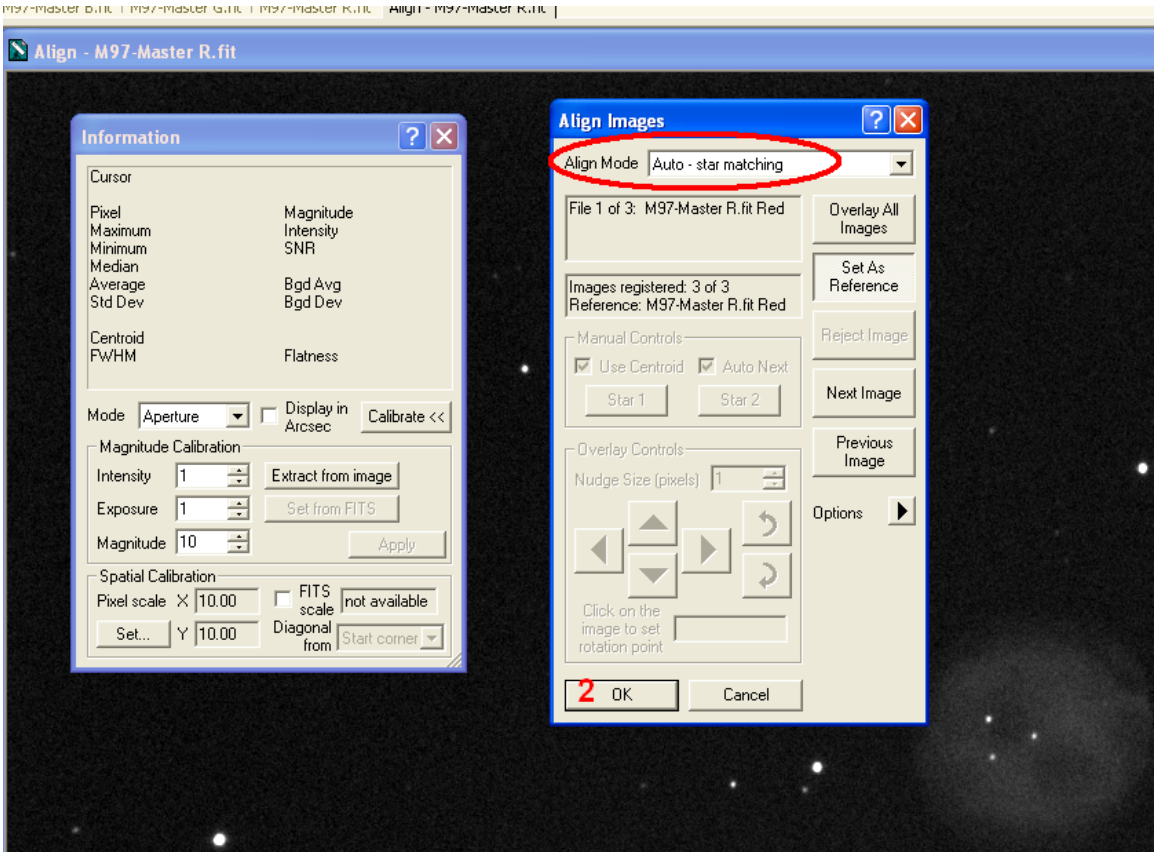
Step5: Make the RGB frame

Open the Master R, Master G and Master B frames.

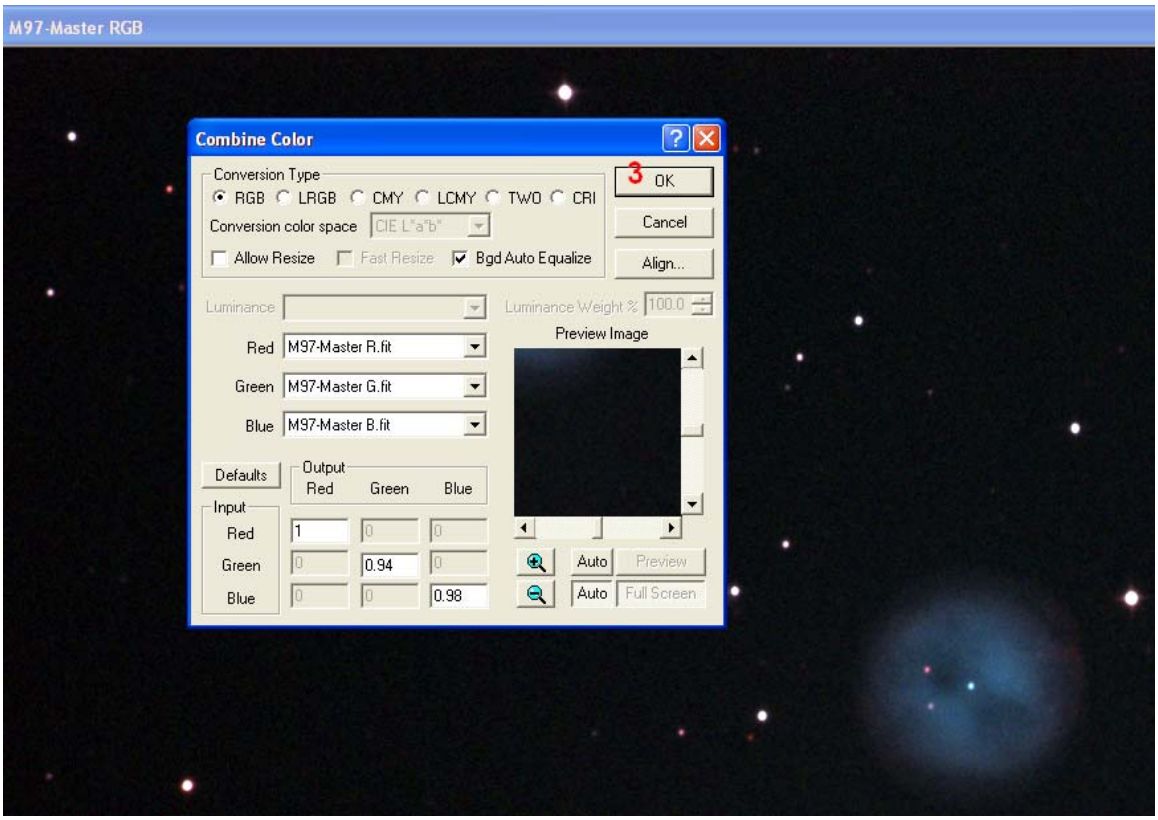
Under the “Color” menu we select “Combine Color”, and then the following window appears



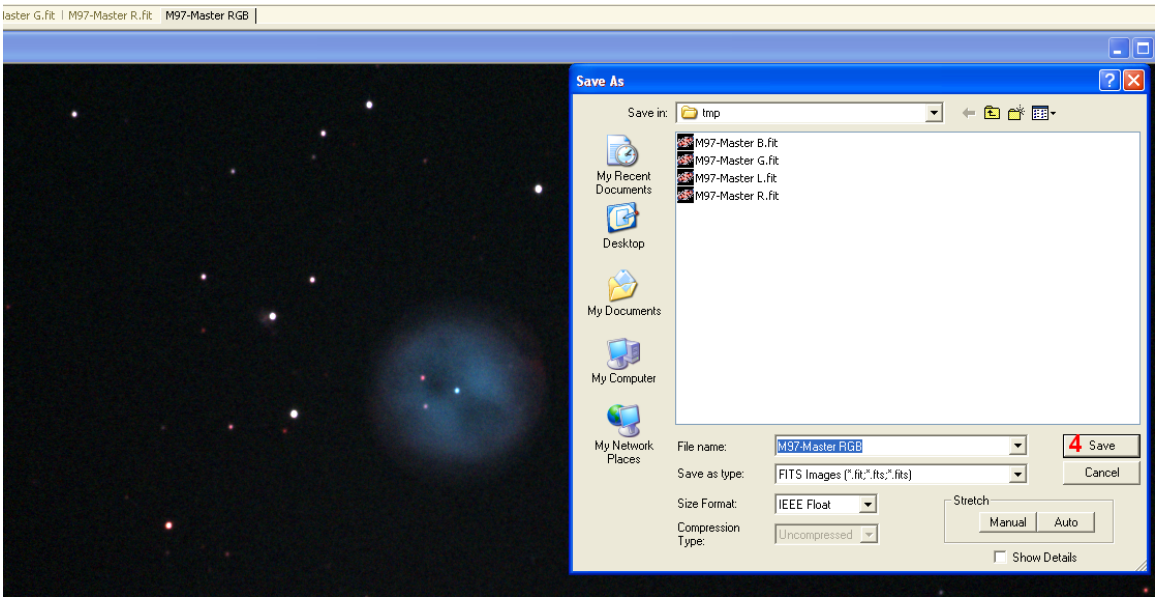
1. Press the Align button



2. Press the OK button to align the images



3. Press the OK button to combine color



4. Save the RGB frame

If you have any comments about this processing guide you can feedback to me.

Thank you and clear skies from Greece!!!