

# Rhodes Astrophotography: Photographing the Milky Way

August 2025

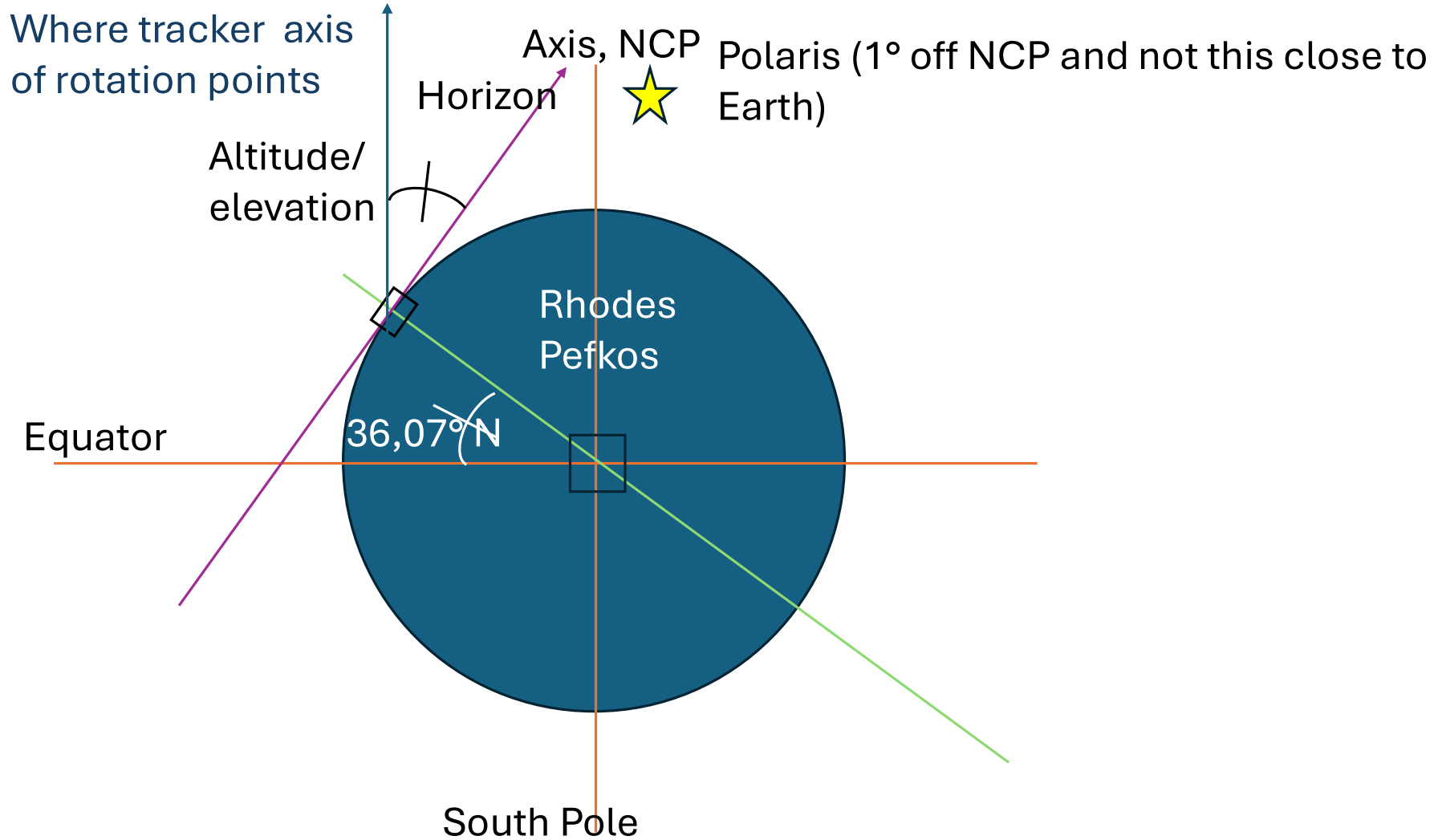
Ana Kostic

# Location/setup

[1]

- Slightly light polluted spot in east Rhodes, with a clear sight of the Milky Way
- TPE (The Photographer's Ephemeris) app [1]
- Vixen Polaris (Equatorial mount) unguided tracker, angle of elevation set to Rhodes latitude
- Unguided exposures require excellent polar alignment

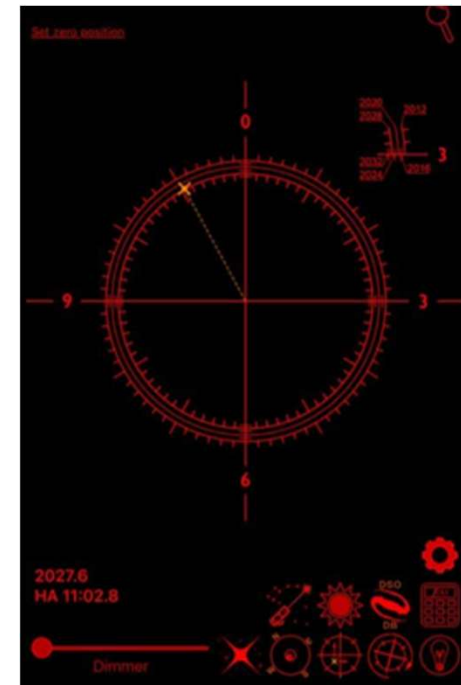




# Polar alignment

- Done using a polar scope and the app called Polar Scope Align Pro [2]
  - App shows where Polaris should be placed in the polar scope, since it's not exactly at the north celestial pole (NCP)

[2]



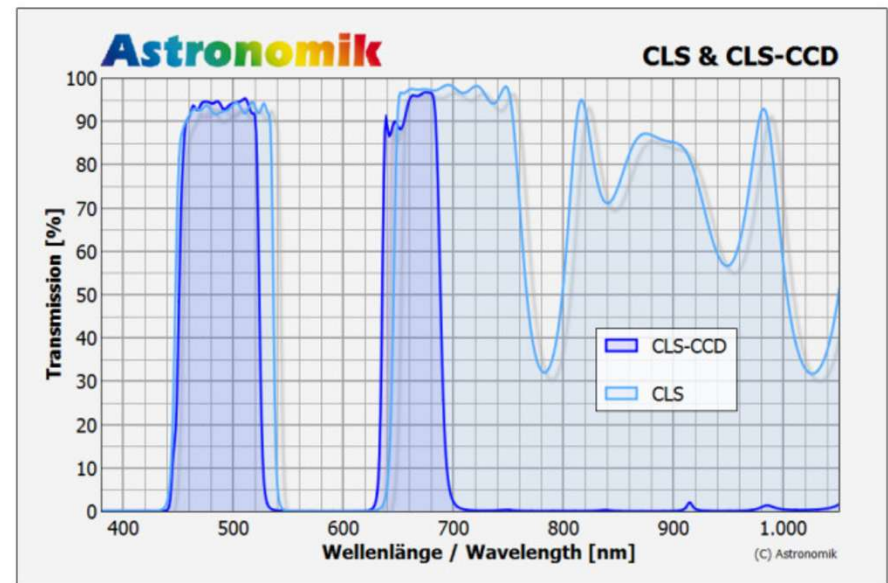
# Fighting light pollution

[3]

- Astronomik CLS-CCD filter that unfortunately only removes classic yellow light pollution from sodium vapor lamps

Preserves the color balance for galaxies

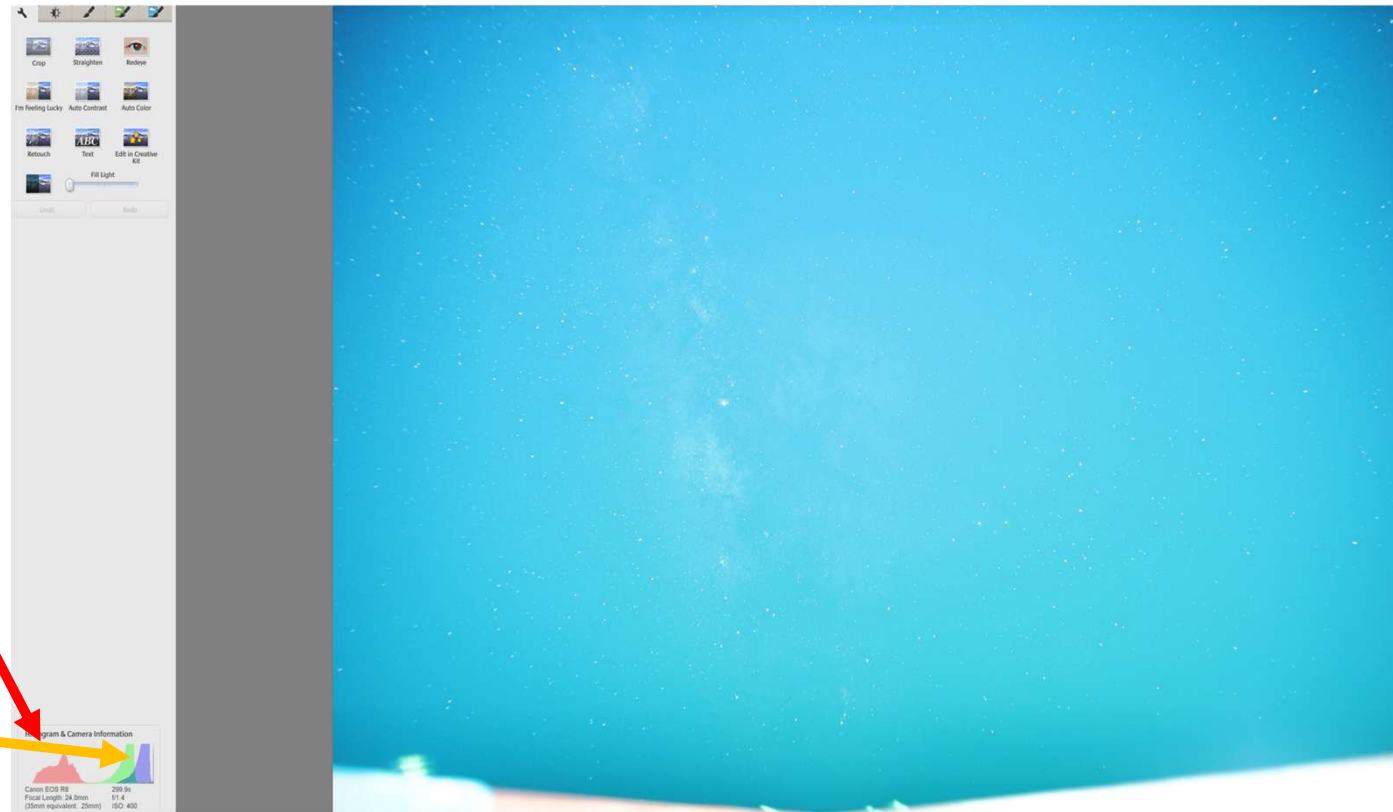
-CCD version not needed but other cameras in the family are astro-modified



# Data acquisition

[4]

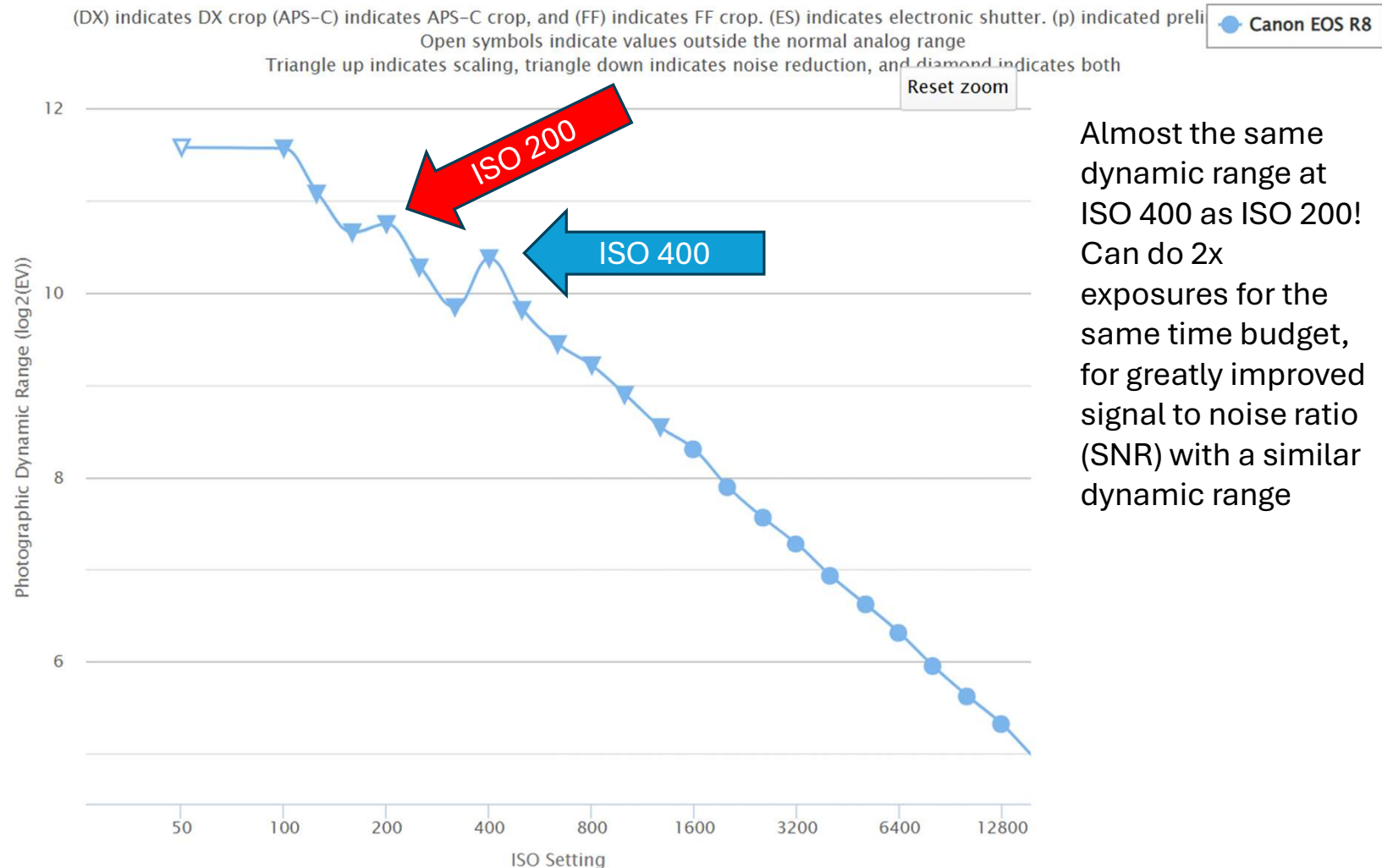
- Sigma 24 mm f/1.4 EF lens on the **non Astro-modified** Canon EOS R8
- Eight 5-minute exposures at f/1.4, ISO 400 for exposure to the right left ETTR)
  - without clipping the highlights





[5]

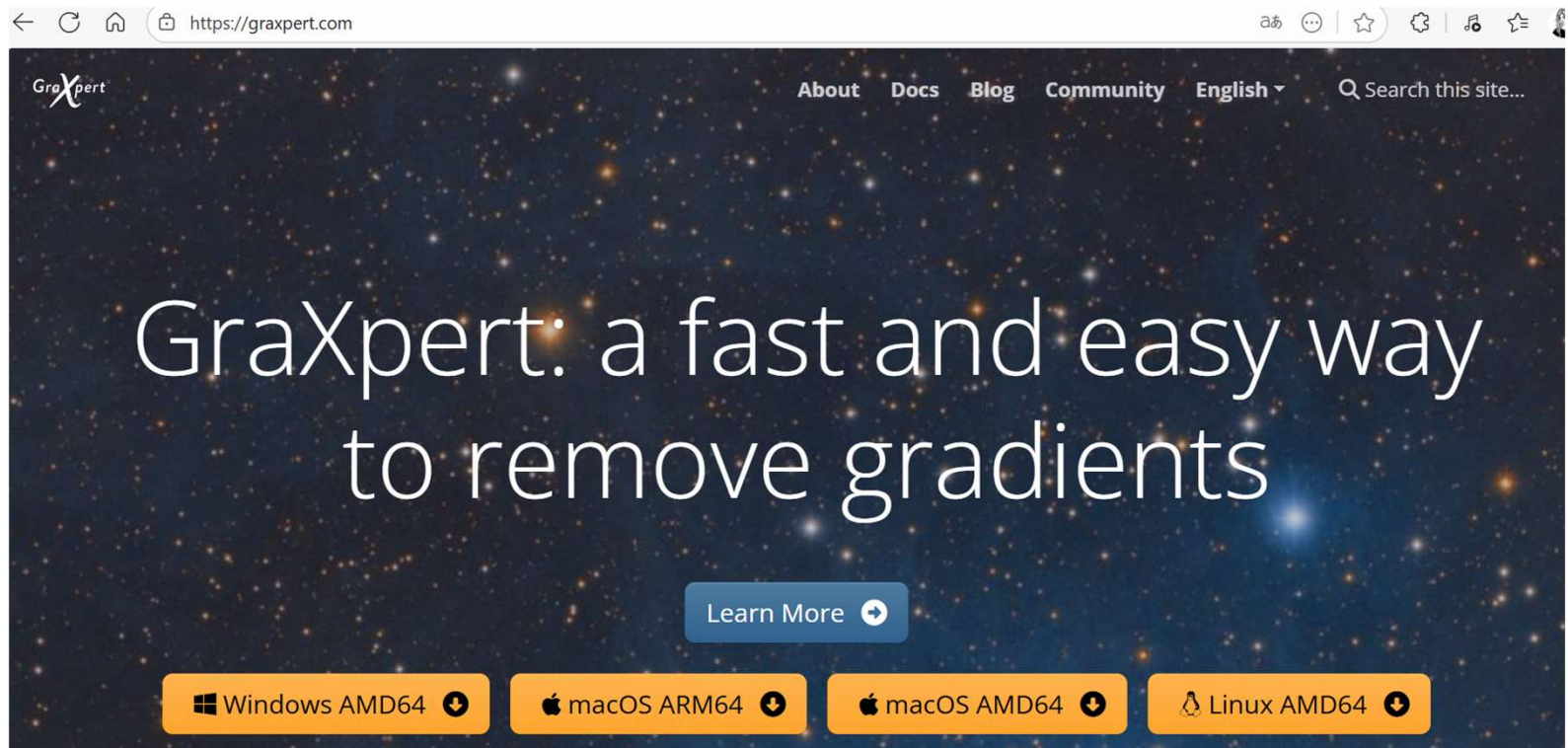
## Photographic Dynamic Range versus ISO Setting

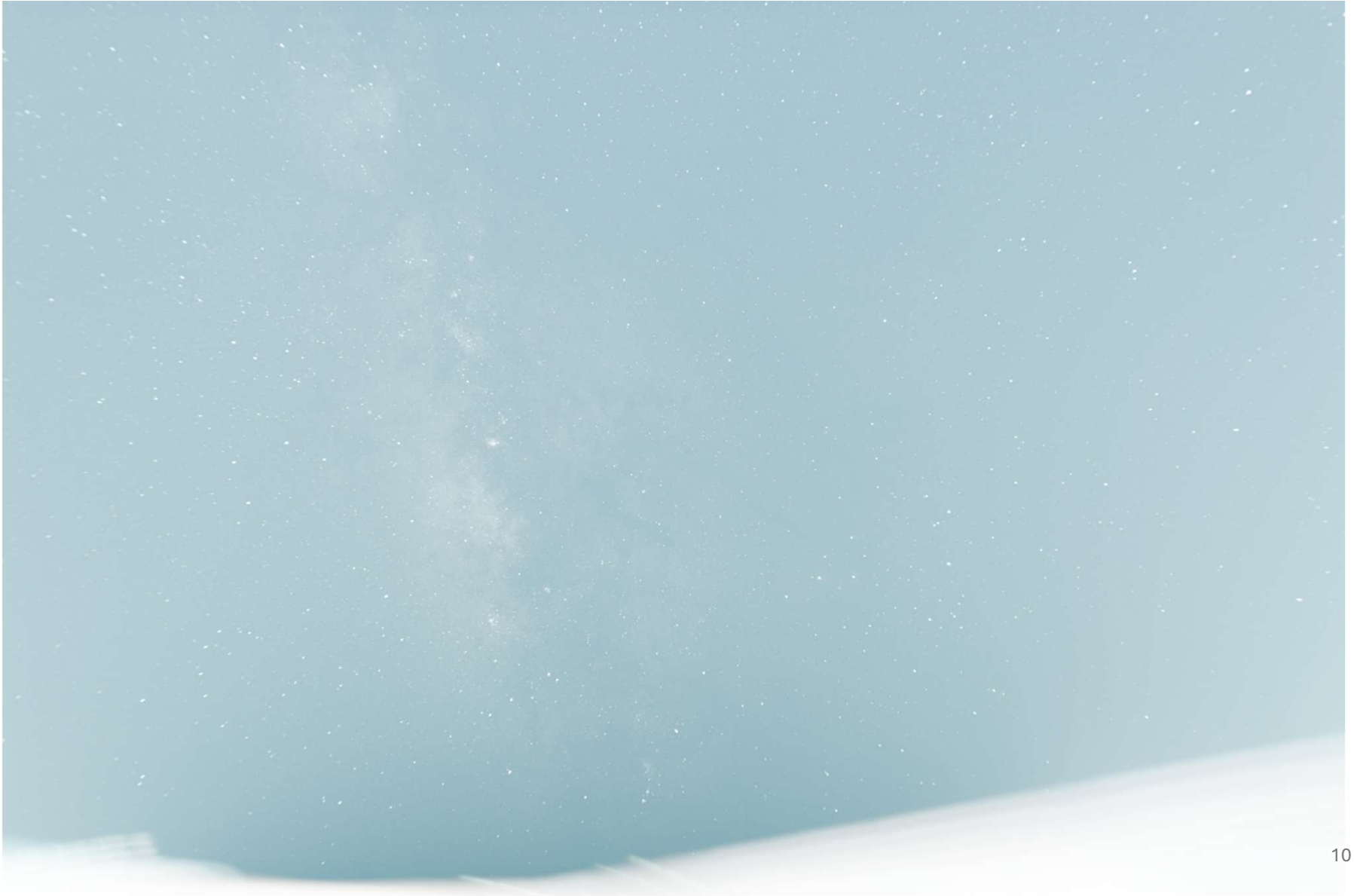


# Processing

- Stacked in DeepSkyStacker [4], including flat frames (taken with an ND filter against a uniform light LED panel)
- Processed in PixInsight 1.9.3 [6]:
  - Dynamic Crop
  - GraXpert gradient removal [7]
    - smoothing parameter of 1.0 (smooth) then again with 0.0 (complex)
  - StarXterminator [8] to remove the stars, then Bill Blanshan's scripts [9] to reduce stars
  - BlurXTerminator for sharpening/deconvolution [10]
  - NoiseXTerminator for noise reduction [11]
  - Screen transfer function stretched histogram into histogram transformation

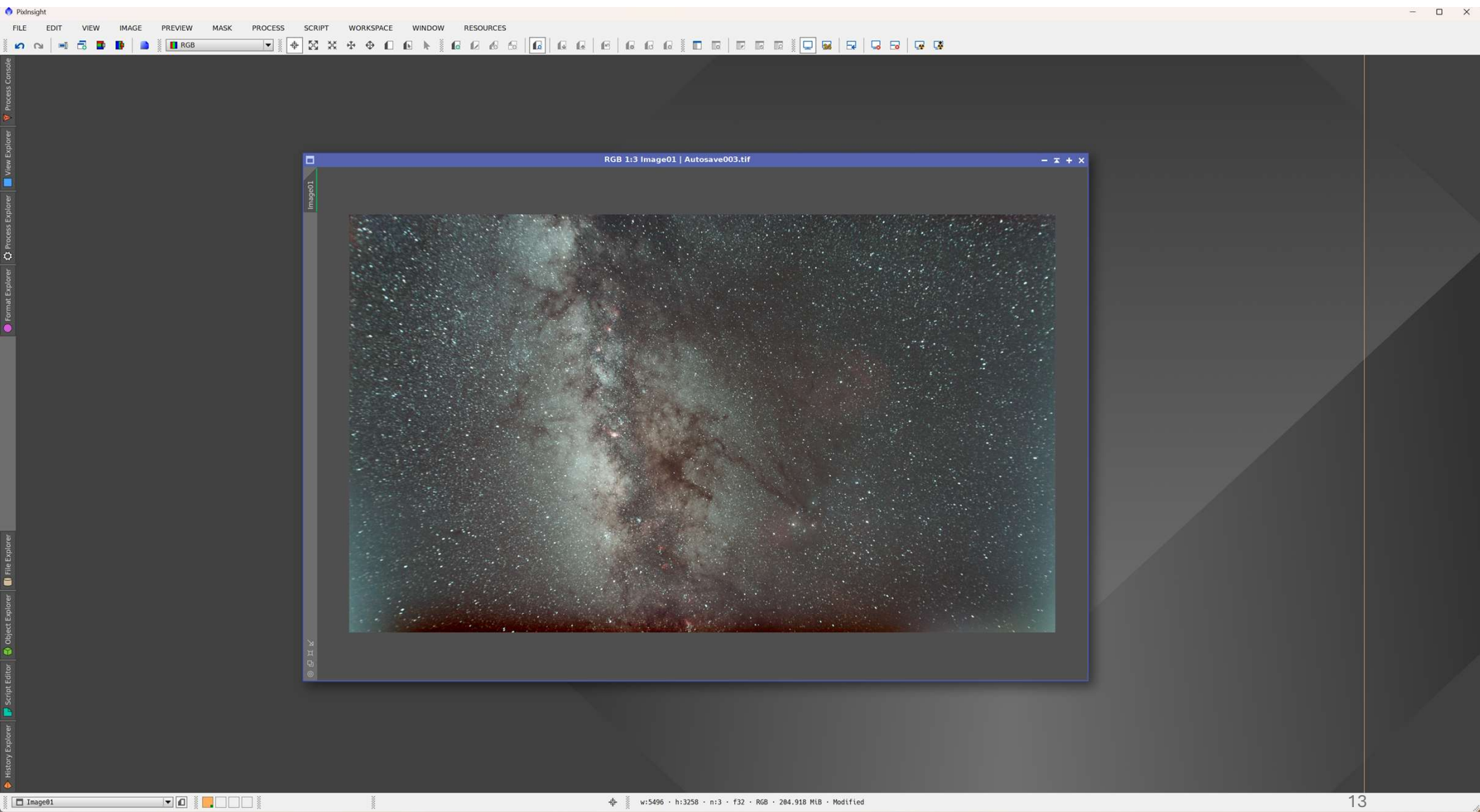
# GraXpert [7]

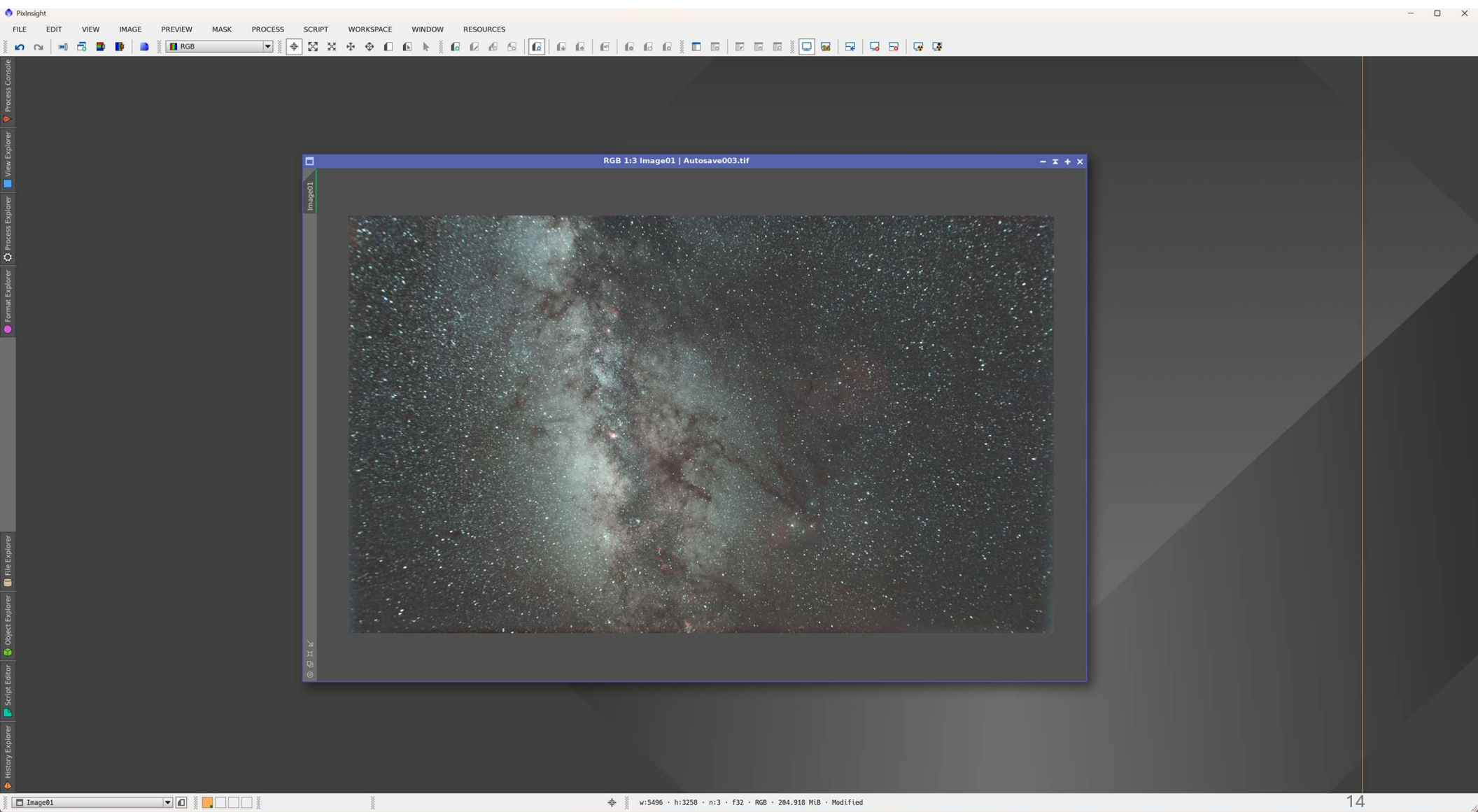


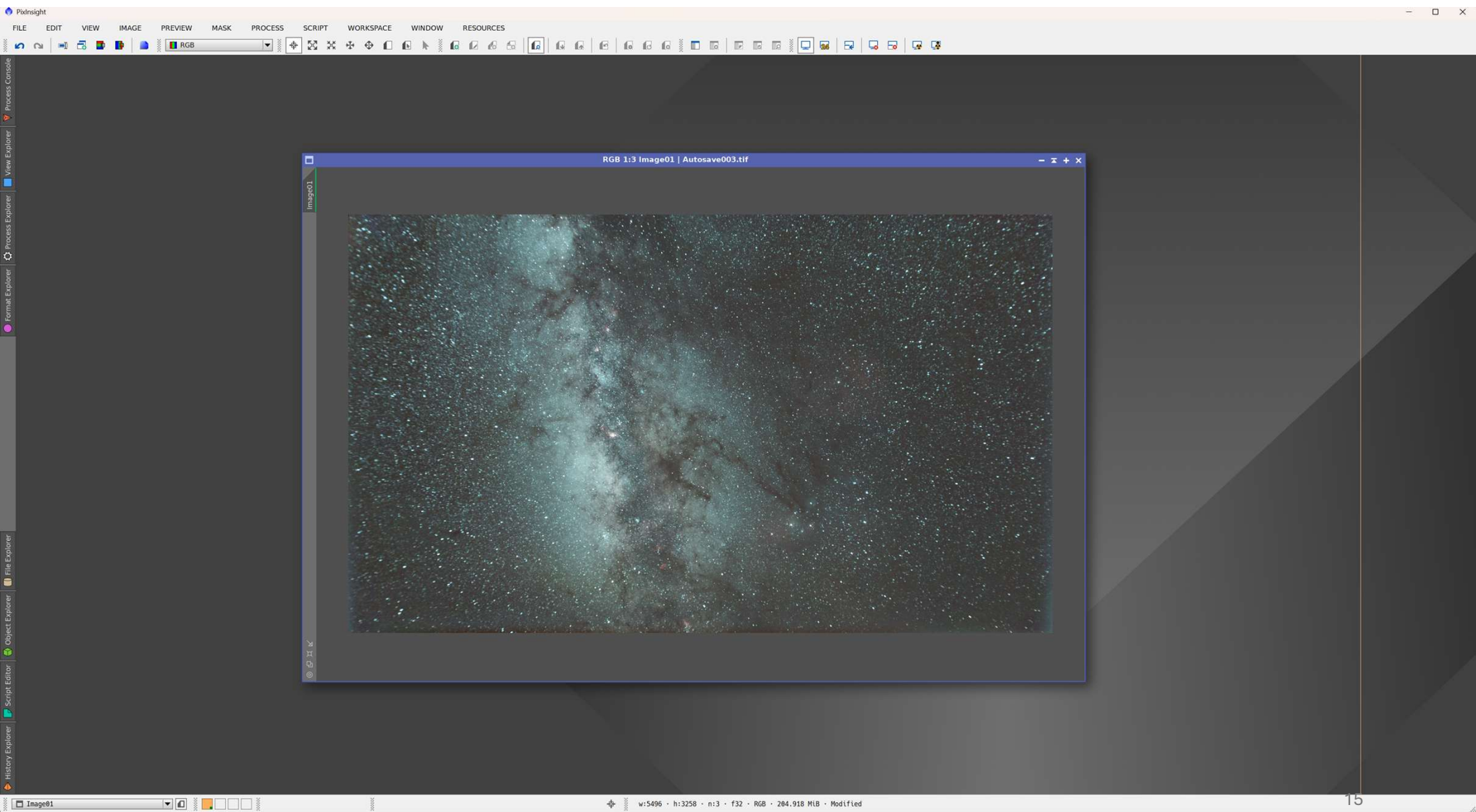


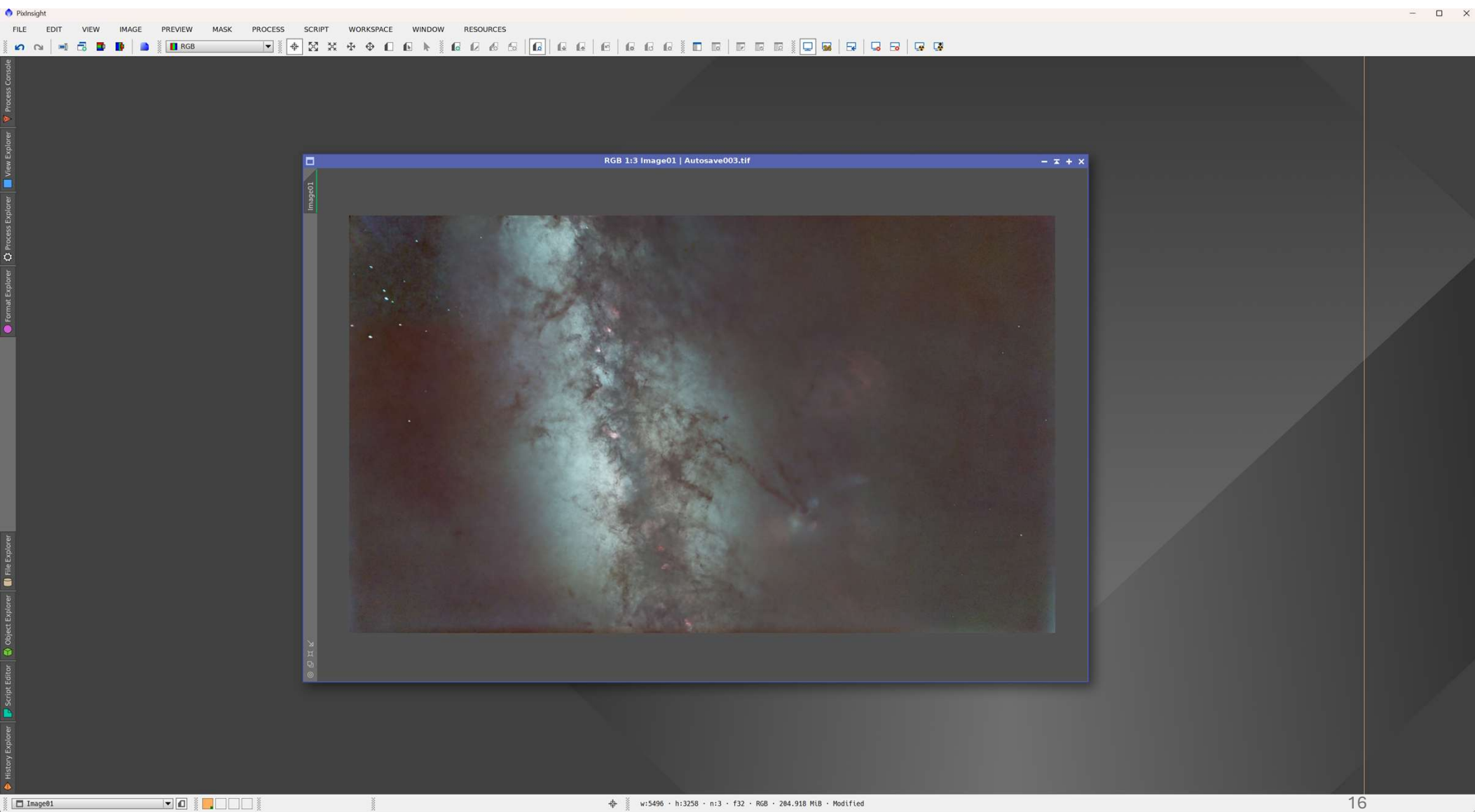


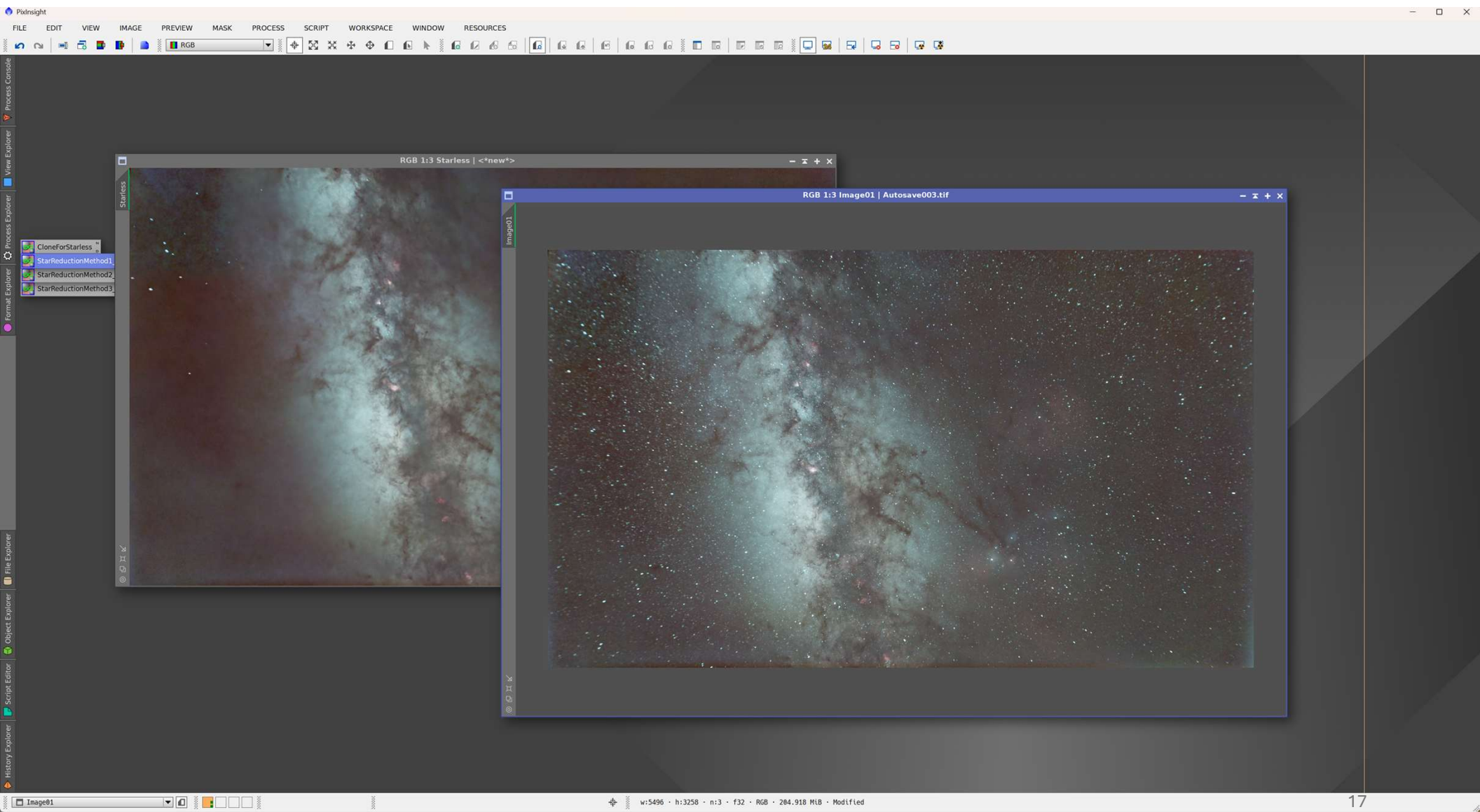


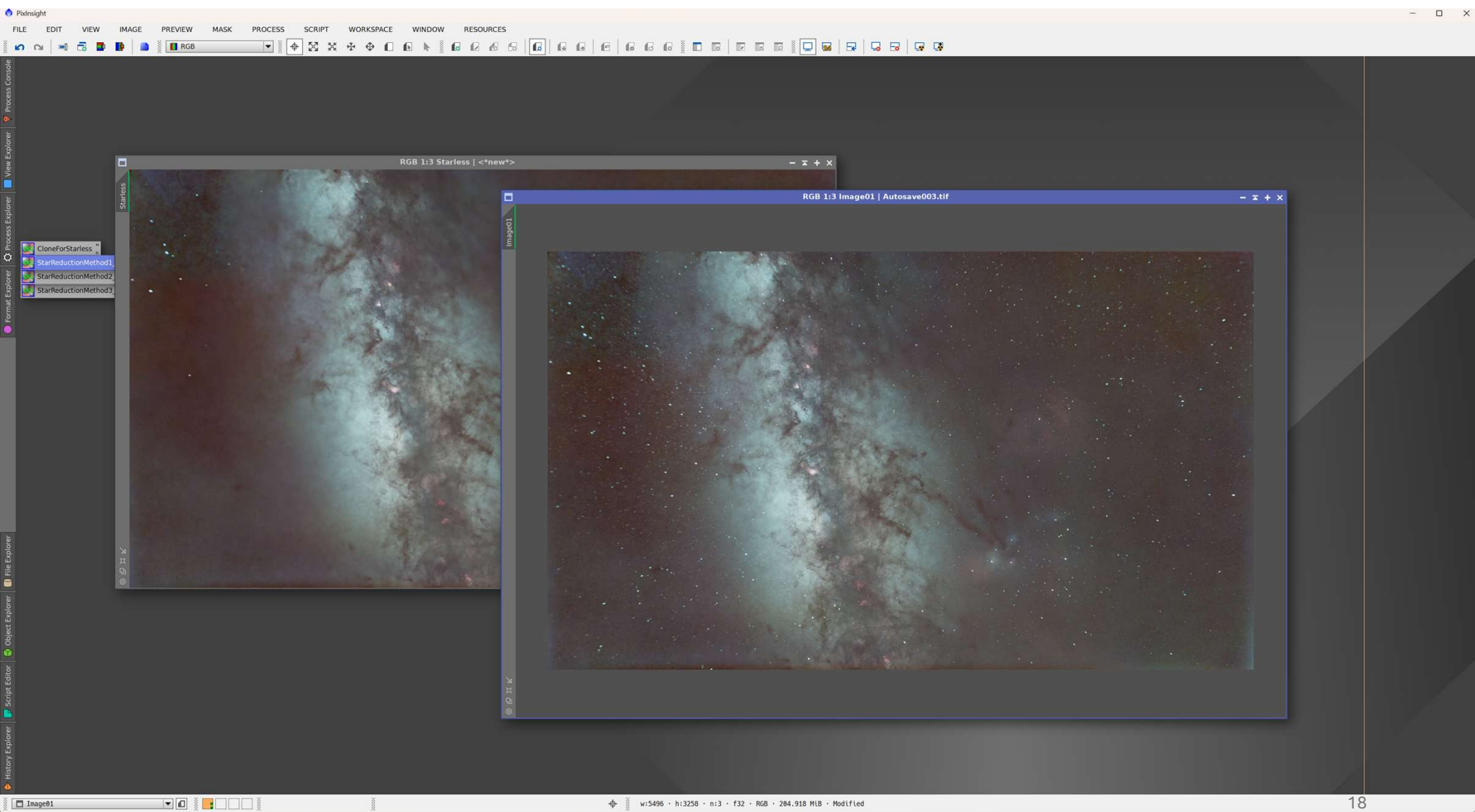


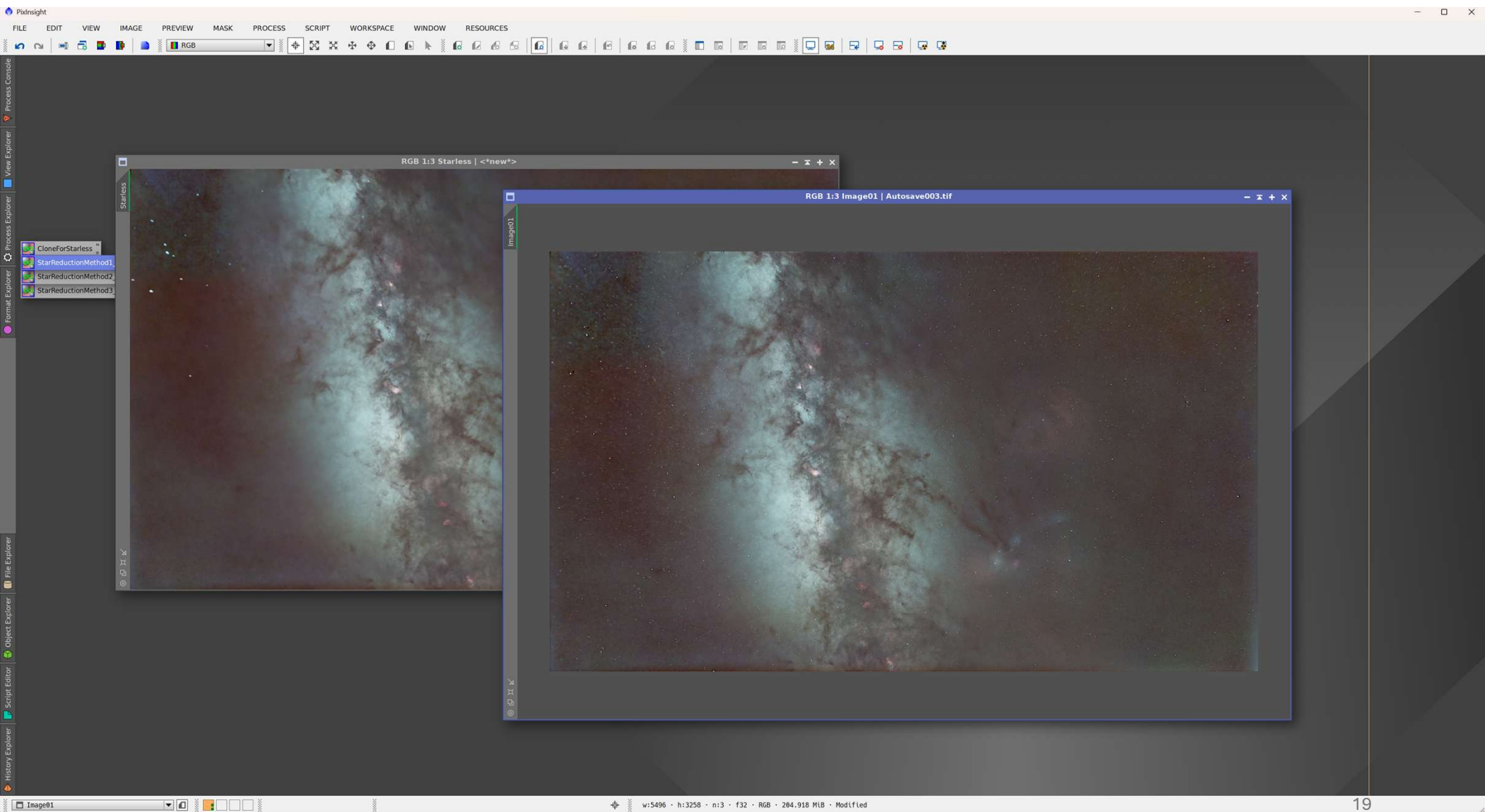


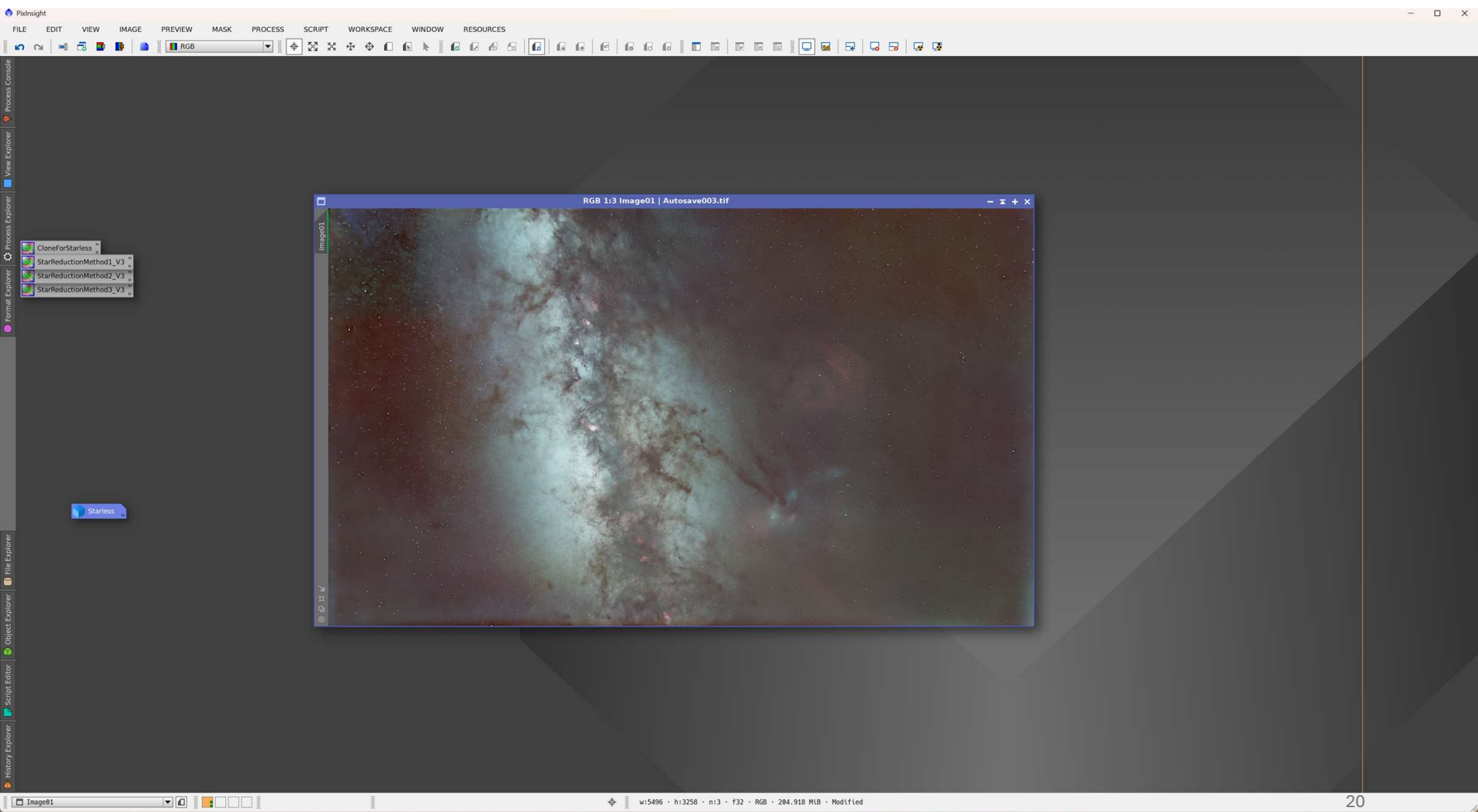


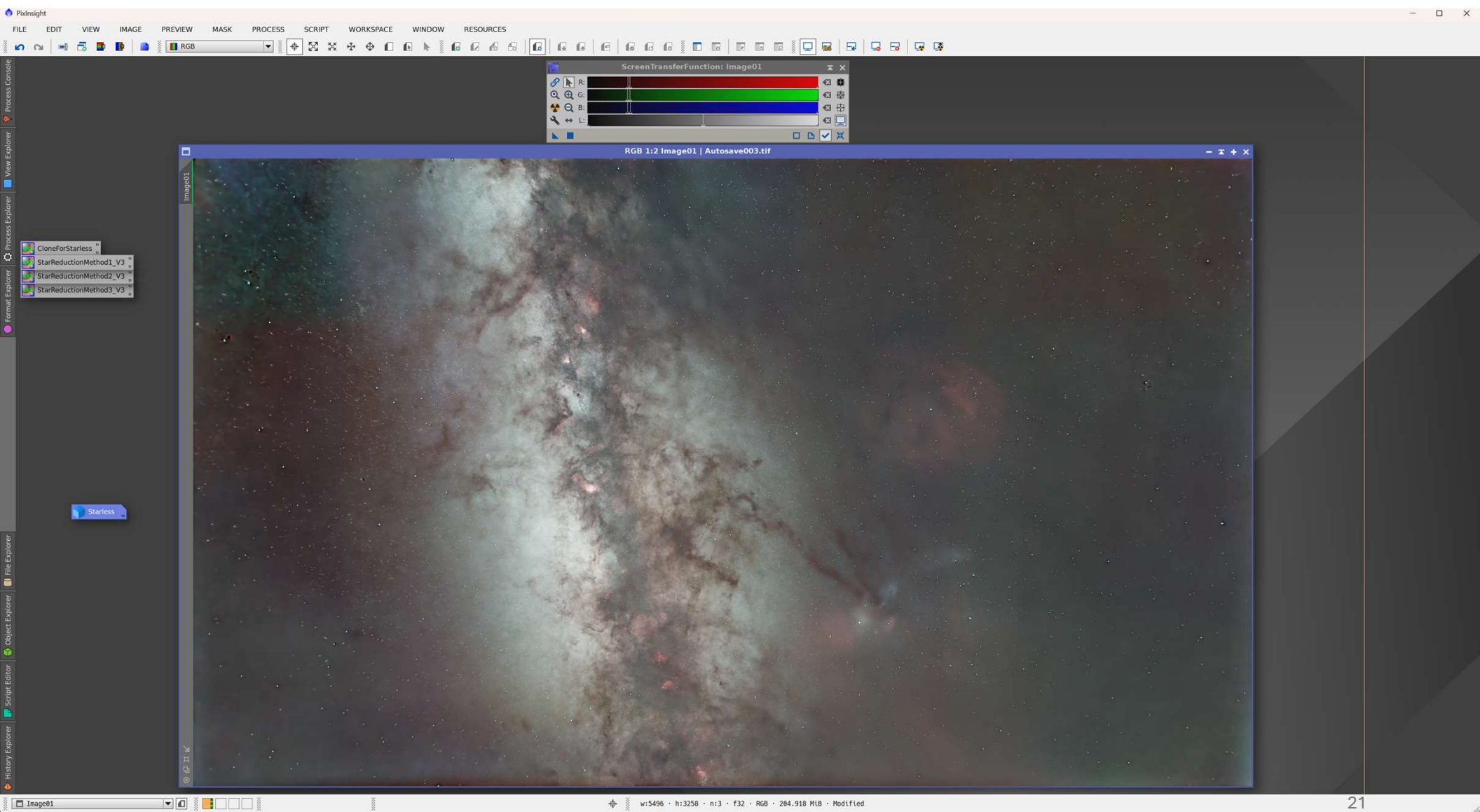


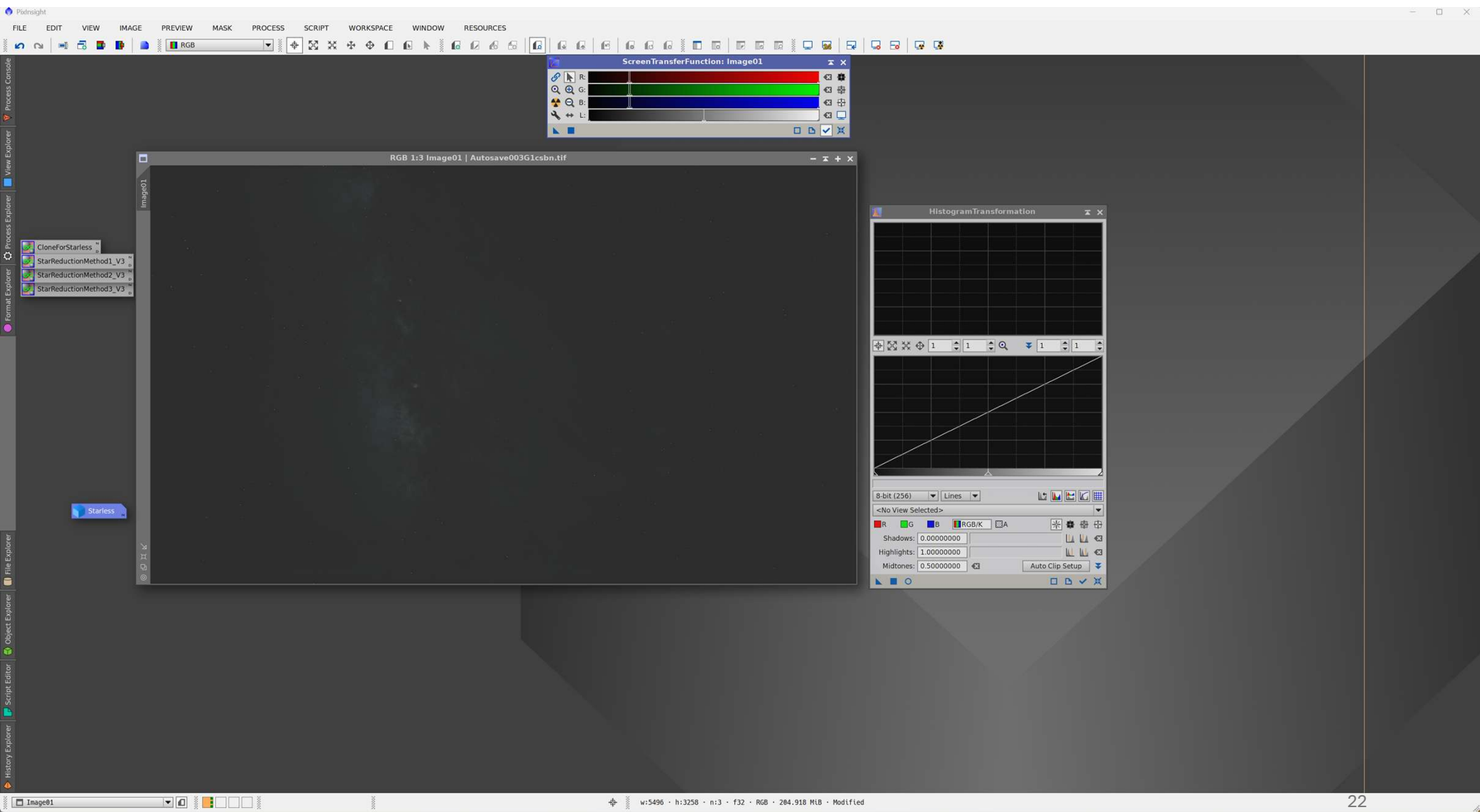


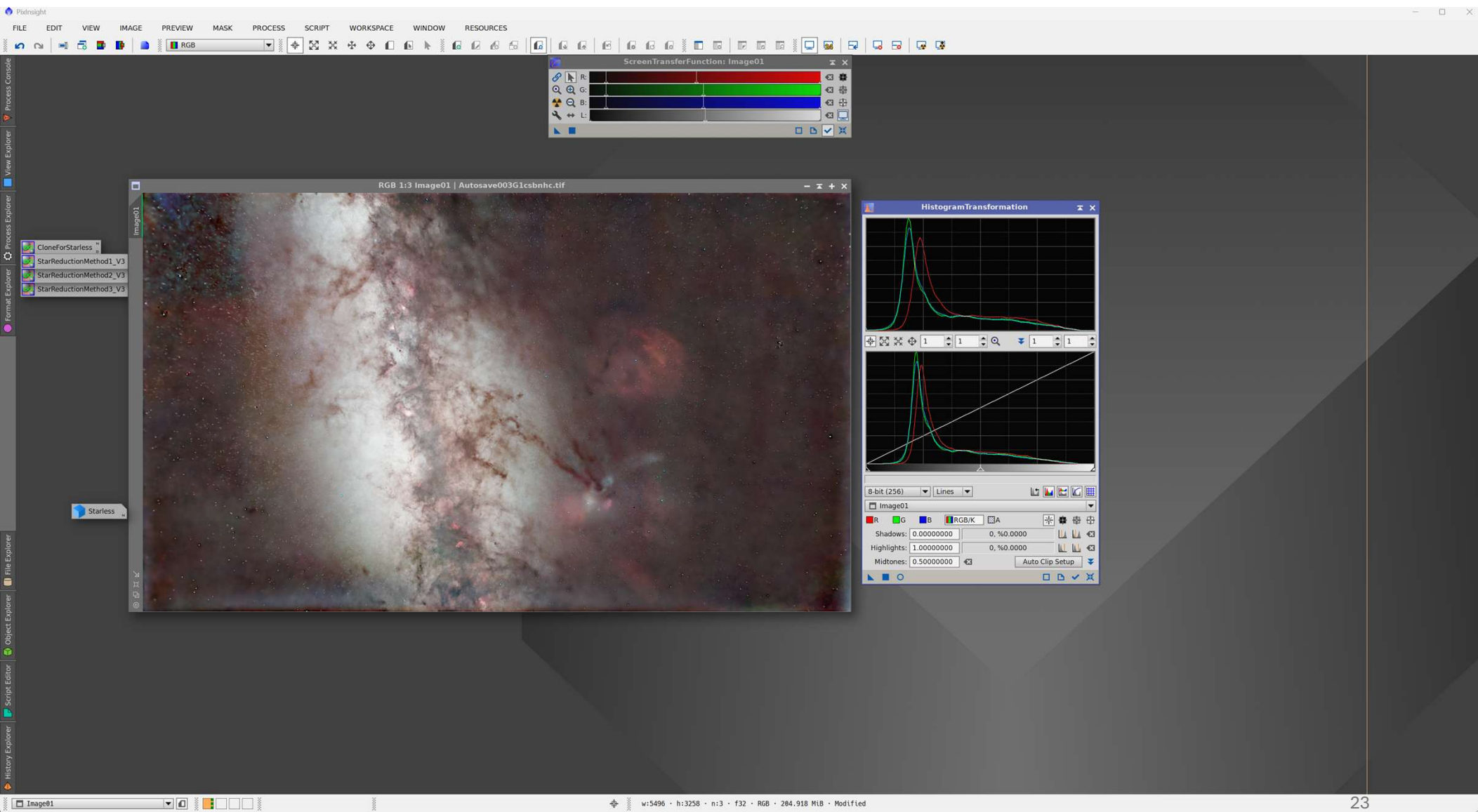


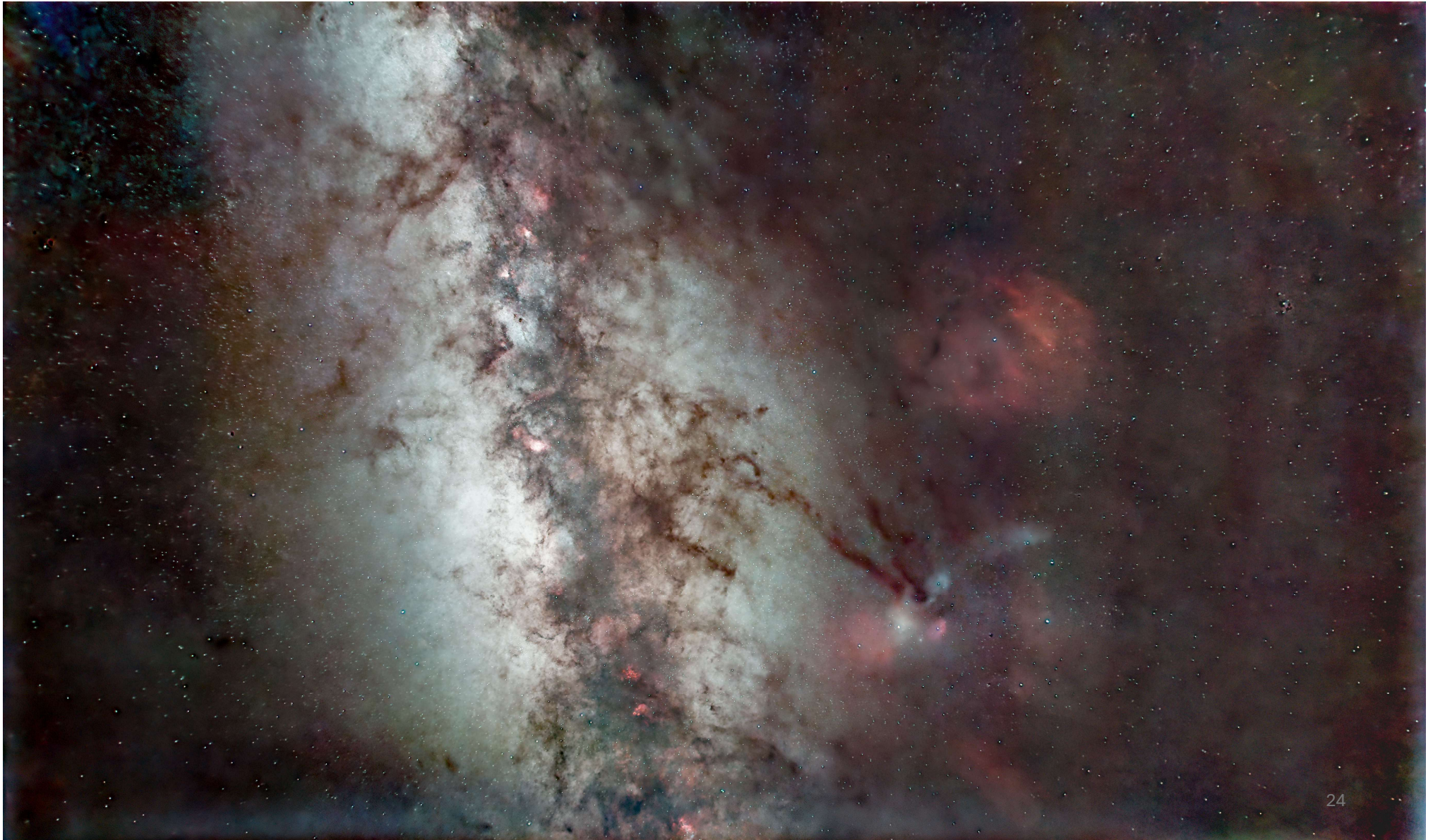












Zetta  
Ophiuchi  
nebula!

Lagoon  
and Trifid  
nebulae

Lobster and  
Cat's paw  
nebulae

Rho  
Ophiuchi  
cloud  
complex

# Conclusion

- Surprising result: true red from hydrogen alpha emissions
  - Non-astro-modified camera
- Key elements of success:
  - Equatorial (but unguided) mount
  - Exposure to the right to get the most out of the sensor's fairly high dynamic range
    - Luckily still high at ISO 400 (10+ stops of dynamic range)
  - Proper polar alignment!

# References

- [1] The Photographer's Ephemeris. <https://photoephemeris.com/en/>
- [2] Polar Scope Align Pro. <https://apps.apple.com/us/app/polar-scope-align-pro/id970161373>
- [3] Astroshop.eu. <https://www.astroshop.eu/broadband-filters/astronomik-filters-cls-ccd-50x50mm-filter-unmounted/p,52924>
- [4] Deepskystacker. <https://deepskystacker.com/>
- [5] Photons to Photos. <https://www.photonstophotos.net/Charts/PDR.htm>
- [6] PixInsight (version 1.9.3) <https://pixinsight.com/>
- [7] GraXpert. <https://graxpert.com/>
- [8] StarXterminator. RC Astro. Russell Croman. <https://www.rc-astro.com/>
- [9] StarReduction. Bill Blanshan. <https://pixinsight.com/forum/index.php?threads/new-script-starreduction.21109/>
- [10] BlurXterminator. RC Astro. Russell Croman. <https://www.rc-astro.com/>
- [11] NoiseXterminator. RC Astro. Russell Croman. <https://www.rc-astro.com/>