

Spring and Summer combined – welcome to the 5th Edition of the ASSA Observing Section Quarterly

The 5th edition of the Southern Skies Quarterly was substantially delayed due to the few submissions, observations and images submitted during the Spring period. This was largely due to incessant cloud cover that plagued most observers around South Africa. It was decided to rather wait for the summer period to near its end and then collate all observations submitted from both seasons. One of the highlights from this period was the Mars occultation that occurred on the 3rd January 2023. Luckily a few astronomers were able to observe and capture the event despite the unpredictable weather.



A sequence of images capturing the Mars occultation on the 3rd January 2023 from Newcastle KZN by Angus Burns using a Celestron 9.25" Edge HD telescope and ZWO290mc planetary camera.

A reminder on the approach and how to contribute

As and when weather conditions allow for submissions (usually every 3-4 months), the Quarterly will be published on the ASSA website and shared on various social media platforms. Members of ASSA and the general public can submit written observations, images, stories and questions by sending them to: Observing@assa.saao.ac.za They may then appear in future editions of ASSA publications (visit: [Publications](#) | [ASSA \(saao.ac.za\)](#) for more information). There will also be fun competitions from time to time, reviews on telescopes (and other astronomy gear) and public events.

Please visit the ASSA website <https://assa.saao.ac.za/> to learn more about the Society in general. More specifically, pay a visit to the observing section <https://assa.saao.ac.za/how-to-observe/> to discover how to observe the various wonders in our skies.

Please note that Tim Cooper heads up the Comet, Asteroid and Meteor (CAM) Section for ASSA. You can visit the updated page and section notes at: <https://assa.saao.ac.za/sections/comet-asteroid->

[meteor-section/](#) and download the latest CAM notes here: <https://assa.saa.ac.za/wp-content/uploads/sites/23/2023/01/ASSA-CAMnotes-2023-Number-1.pdf>



Please also click on the link to read MNASSA's latest peer-reviewed journals. The latest edition can be found here: [MNASSA Download Page](#)

MNASSA is a registered, peer-reviewed journal, with an ISSN number, and is referenced by and searchable in various academic databases. It is an excellent place for publishing ASSA's work, which can then be properly cited in subsequent publications.

The link on the ASSA website is <https://assa.saa.ac.za/about/publications/mnassa/> and provides more info about back copies and where to send contributions.

Here is a roundup of various observations and imaging sessions from around South Africa received over the 6 months... Note: the submissions we receive are usually a hybrid of observations and imaging.

From KZN



The volatile weather has prevented many astronomers from doing lengthy observing sessions but despite this, some interesting observations and imaging sessions did take place (image of lightning captured from Newcastle KZN by Angus Burns)



Gerald De Beer is a skilled Astrophotographer based in Eshowe and he captured this magnificent image of NGC 6357 (a diffuse nebula near NGC 6334 in the constellation Scorpius) at the end of June 2022. According to Wikipedia, The nebula contains “many proto-stars shielded by dark discs of gas, and young stars wrapped in expanding "cocoon" or expanding gases surrounding these small stars. It is also known as the Lobster Nebula. This nebula was given the name War and Peace Nebula by the Midcourse Space Experiment scientists because of its appearance, which, in infrared images the bright, western part resembles a dove, while the eastern part looks like a skull.”

Gerald processed this in the false colour HSO pallet with RGB stars. (ZWO ASI2600MM / Skywatcher / EQ6-R Pro / AT126EDT triplet)

S-II 7nm 36mm: 30 x 5 minute (2h 30') (gain: 100.00) -10°C bin 1x1

H-alpha 7nm 36mm: 30 x 5 minutes (2h 30') (gain: 100.00) -10°C bin 1x1

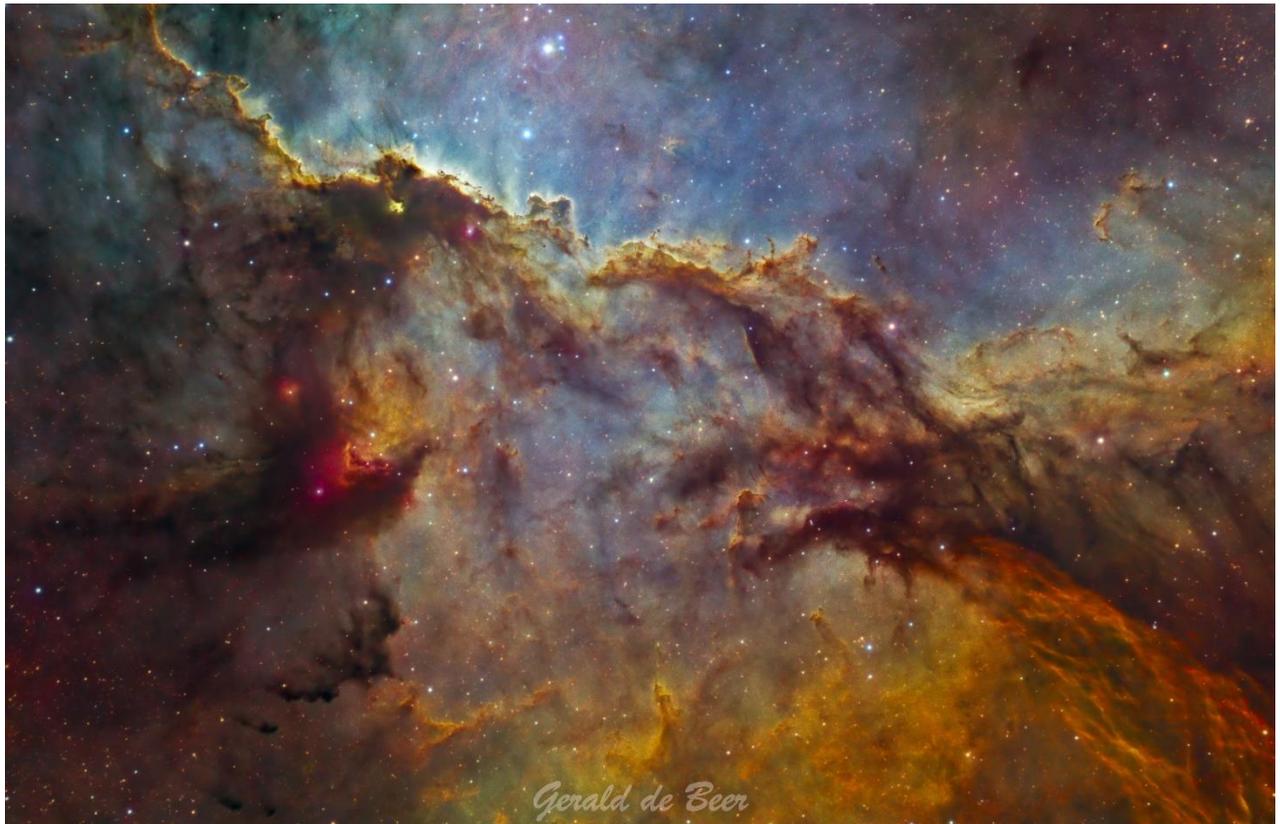
O-III 7nm 36mm: 30 x 5 minutes (2h 30') (gain: 100.00) -10°C bin 1x1

Red : 20x45 sec (15') (gain: 100.00) -10°C bin 1x1

Blue : 20x45 sec (15') (gain: 100.00) -10°C bin 1x1

Green : 20x45 sec (15') (gain: 100.00) -10°C bin 1x1

(Total Integration: 8h 15')



Gerald also aimed his telescope at NGC 6188, an emission nebula (which includes NGC 6193), and is part of a wider field commonly known as the Fighting Dragons of Ara. This area is only a few million years old. He combined 9 hours of image capture to process this image in the SHO Hubble Palette with RGB stars (35 x 5 minutes each of Ha, SII and OIII / 20 x 30 seconds each of R, G and B)

All imaged from his garden in Eshowe with the ZWO ASI2600MM at gain 100 and -10 degrees over the nights of the 17 and 18th July 2022 (AT127EDT triplet / Skywatcher EQ6-R Pro)

Captured with N.I.N.A. (while he slept) and fully processed with Pixinsight.

Certainly, one of the better images of this iconic Nebula that we have seen in a while!



Gerald also captured this detailed image of the Helix Nebula (also known as NGC 7293 or Caldwell 63). This planetary nebula located in the constellation Aquarius is also known as the eye of god.

The Helix Nebula is an example of a planetary nebula, formed by an intermediate to low-mass star, which sheds its outer layers near the end of its evolution. Gases from the star in the surrounding space appear, from our vantage point, as if we are looking down a helix structure.

Gerald processed the narrow band starless removing the stars after combining the H, S and O. For the green channel I blended 30% SII with 70% OIII for a modified HSO/HOO image. He then added the RGB stars into the final image after blending a starless Ha in as a luminance channel to the RGB NB image.

Captured: 22/24 Sept 2022 from his home in Eshowe, South Africa.

32 x 300sec Ha

30 x 300sec OIII

19 x 300 sec SII

20 x 30 sec each of R, G and B

All at gain 100 and 50 offset cooled to -10degC

Camera: ZWO ASI 2600MM

Telescope: AT127EDT triplet

Skywatcher EQ6-R Pro mount

PHD2 guided



The final submission from Gerald (after more than 2 months of clouds, rain and high humidity in inland east coast South Africa) is this magnificent image of Barnard 33 and NGC 2024.

Gerald explained that the Horsehead Nebula (also known as Barnard 33) is a small dark nebula in the constellation Orion. The nebula is located just to the south of Alnitak, the easternmost star of Orion's Belt, and is part of the much larger Orion molecular cloud complex. It appears within the southern region of the dense dust cloud known as Lynds 1630, along the edge of the much larger, active star-forming H II region called IC 434. It is one of the most identifiable nebulae because of its resemblance to a horse's head.

The Flame Nebula is designated as NGC 2024 and Sh2-277 and is an emission nebula in the constellation Orion. It is about 900 to 1,500 light-years away.

The bright star Alnitak (ζ Ori), the easternmost star in the Belt of Orion, shines energetic ultraviolet light into the Flame and this knocks electrons away from the great clouds of hydrogen gas that reside there. Much of the glow results when the electrons and ionized hydrogen recombine. Additional dark gas and dust lies in front of the bright part of the nebula, and this is what causes the dark network that appears in the centre of the glowing gas. The Flame Nebula is part of the Orion molecular cloud complex, a star-forming region that includes the famous Horsehead Nebula.

At the centre of the Flame Nebula is a cluster of newly formed stars.

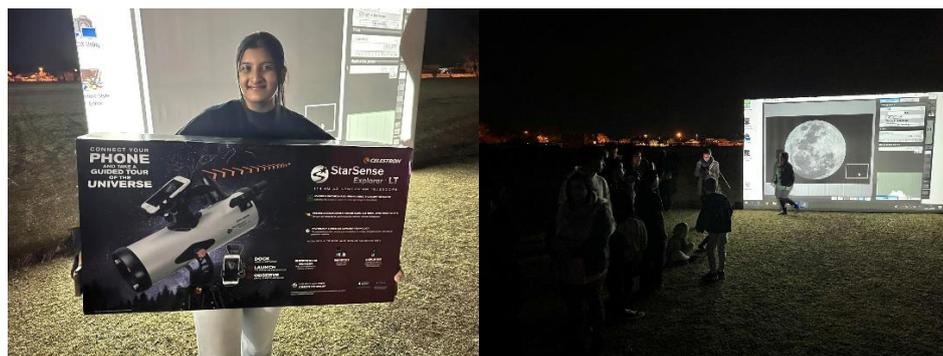
Capture details: ZWO ASI2600MM with a Skywatcher EQ6-R Pro and AT126EDT triplet

SII : 15 x 5 minutes (gain: 100.00) -5°C bin 1x1

Ha: 20 x 5 minutes (gain: 100.00) -5°C bin 1x1

OIII: 15 x 5 minutes (gain: 100.00) -5°C bin 1x1

Total capture time: 4h10



On the 11th August 2022, just before the onset of less predictable weather, St Dominics in Newcastle KZN hosted an astronomy evening which was proudly supported by Celestron South Africa. Over 750 people supported the event with one lucky pupil winning a telescope. After a talk by Angus Burns, the eager crowd were treated to a live projection of the rising moon and presented with the opportunity to capture an image on their smartphones using a NEXYZ smartphone adapter. The event was such a success it will be repeated in 2023.



In this composite image are Jupiter, Saturn and Mars captured at or near to opposition. More specifically: from left to right – Jupiter on 26th September 2022 captured at opposition, Saturn on the 9th August 2022 captured a few days prior to opposition and Mars on the 10th December 2022 captured a couple of days after opposition (all from Newcastle KZN by Angus Burns with a Celestron 9.25" Edge HD telescope and ZWO290mc planetary camera).



A series of planetary images and observations made from August to December 2022 from Newcastle KZN by Angus Burns (from top left to bottom right: Celestron 9.25" Edge HD telescope pointed at Jupiter, Jupiter with its iconic Great Red Spot visible, Saturn and finally Mars).



The 1st quarter moons observed and captured on the 5th August 2022 and the 29 Nov 2022 respectively from Newcastle KZN with a Celestron 8SE and Canon 60Da camera (by Angus Burns).



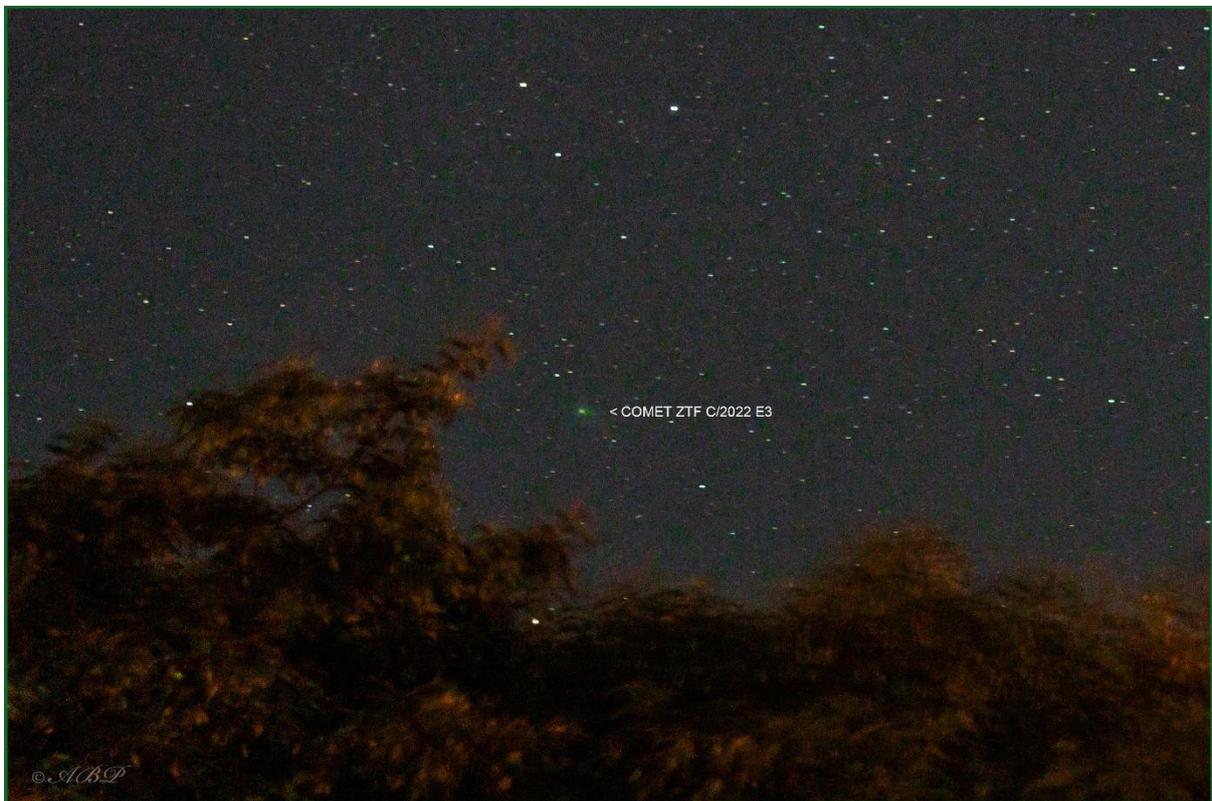
The Helix nebula (NGC 7239) and The Pleiades (M45) observed and imaged from Newcastle on the 21st November 2022 and 30 November 2022 respectively (imaged by Angus Burns with a Celestron RASA 8 and ZWO294mc Pro camera).



The Orion (M42) and Running Man (Sh2-279) nebulae, and Flame (NGC 2024) and Horsehead (IC 434) nebulae observed and captured from Newcastle KZN on the 24th and 12th January 2023 respectively (imaged by Angus Burns with a Celestron RASA 8 and ZWO 294mc Pro camera)



On the left is a wide field image of the Mars occultation captured with a Canon 60Da and Celestron 8SE from Newcastle KZN and on the right is a starless version of the Rosette Nebula (NGC 2237) orientated to reveal the "skull" it hides. Both images captured from Newcastle KZN (on the 3rd January 2023 with a Canon 60da through a Celestron 8SE and the 15th Jan 2023 with a RASA 8 and ZWO294mc Pro camera by Angus Burns)



A wide field test shot of comet C/2022 E3 (ZTF) captured by Angus Burns from Newcastle KZN on the 6th February 2023 (image taken with a Canon EOSR camera and 70-300mm zoom lens on a static tripod).



On the 14th February 2023, Angus Burns managed to capture 7 minutes of data in between clouds and fine haze to produce this image of comet C/2022 E3 (ZTF). Captured with a ZWO294mc Pro and Celestron RASA 8 from Newcastle KZN

From the Free State



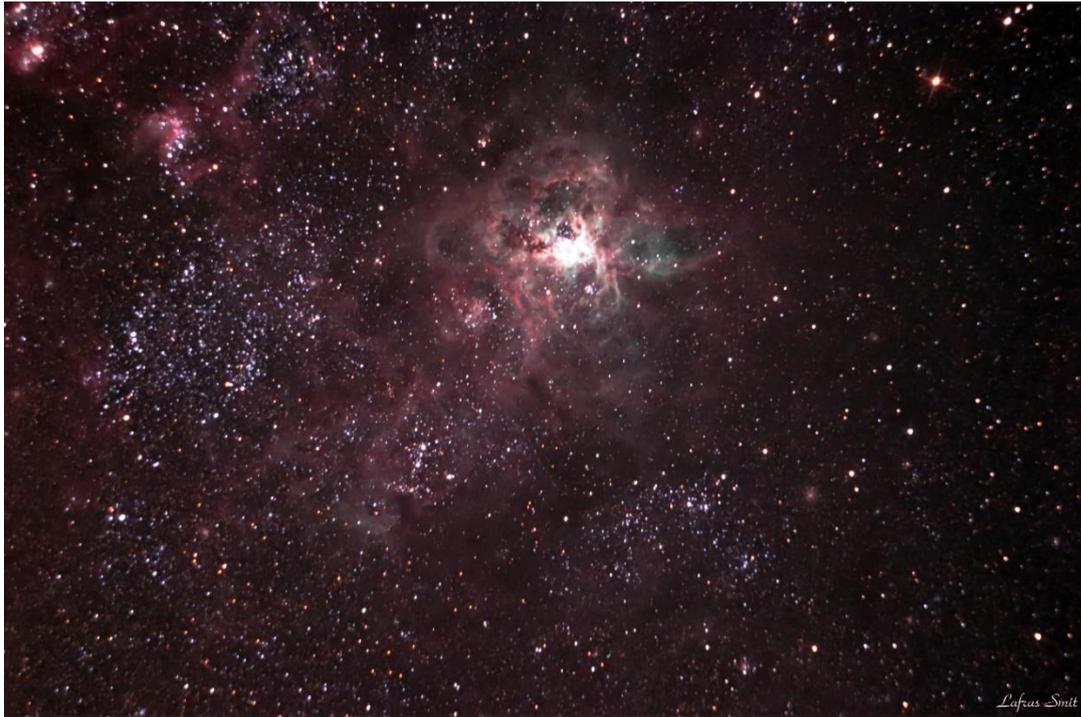
Lafraas Smit is an experienced Astrophotographer and knowledgeable astronomer based in Heilbron in the Free State. He managed to capture this beautiful image of the Mars occultation on the 3rd January 2023 with his 10 inch Sky-Watcher and Canon 200D (single exposure)



On the 15th January 2023, Lafraas captured this wide field image of the Eta Carina nebula with a Canon 70 - 200mm lens (f/2.8) and his modified Canon 200D



He also captured this beautiful image of the famous Omega Centauri globular cluster (NGC 5139) with his 10 inch Sky-Watcher and modified Canon 200D (20 minutes of exposure) on the 27 January 2023.



Lafraas also submitted this wide field image of the Tarantula Nebula on the 27 January 2023 (Also taken with his 10 inch Sky-Watcher and modified Canon 200D with over an hour of exposure to produce this image)



Lafraas observed the Jewel Box cluster on 27 January 2023 and captured this beautiful image with his 10 inch Sky-Watcher and Canon 200D (total 10 minutes of exposure).



Finally, Lafras succeeded in capturing this excellent photograph of comet C/2022 E3 (ZTF) on the 6th February 2023. He captured it with his 10 inch Sky-Watcher and Canon 90D (a single exposure of 30 seconds at ISO 1600). Hopefully we will see additional submissions of this comet for inclusion in the next edition of the Southern Skies Quarterly from other parts of South Africa.

You may have noticed that besides visual observations, many readers have made photographic or astrophotography submissions to the quarterly. If this interests you, please visit the astrophotography section of the ASSA website: <https://assa.saa.ac.za/sections/astrophotography/>

In addition, please visit <https://assa.saa.ac.za/sections/deep-sky/nightfall/> to read ASSA's Nightfall publications – this detailed and professional resource provides a wealth of information.



What's up for the next 3 months

A few observing highlights to look out for over the next 3 months include:

March 2023

- 7th March 2023 (Full Moon)
- 19th March 2023 (Moon near Saturn)
- 21st March 2023 (New Moon – great time for observing and astrophotography)

April 2023

- 6th April 2023 (Full Moon)
- 19th April 2023 (Moon near Jupiter)
- 20th April 2023 (New Moon – great time for observing and astrophotography)

May 2023

- 5th May 2023 (Full Moon)
- 19th May 2023 (New Moon – great time for observing and astrophotography)
- 23 May 2023 (Moon near Venus)

Now that we are heading towards the Autumn months, the constellation Orion is well positioned above the horizon after dark and Scorpius is rising in the early morning in the East. For detailed information about the coming months, please consider purchasing a SKY GUIDE 2023 which is currently available.

The 2023 edition of **Sky Guide Southern Africa** now features more star charts, double the amount of astrophotos and greater geographical coverage. This annual publication is a practical resource for all stargazers, from novice to professional, and can also be used by city dwellers.

The guide highlights the cosmic events for each month of the upcoming year, including planetary movements, predicted eclipses and meteor showers. Star charts plot the evening sky for each season, facilitating the identification of stars and constellations. The guide contains a wealth of information about the Sun, Moon, planets, comets, meteors and bright stars, with photos, diagrams, charts and images.

Struik Nature joins forces with the **Astronomical Society of Southern Africa** to publish this annual guide. Now in its 78th year of publication, the book is prepared by a team of specialist contributors.

**MAKE YOUR OWN PLANISHERE!
FIND YOUR SOUTHERN STAR WHEEL ATTACHED.**

Visit <https://www.penguinrandomhouse.co.za/book/sky-guide-southern-africa-2023/9781775848127> to obtain an e-book version.

In addition you can access free digital supplements by clicking on this link:

<http://assa.saao.ac.za/skyguide2023/> (The supplement contains, for each location, the local times of Sun rise, culmination, and setting; the start and end of astronomical twilight; the times of Moon rise, culmination, and setting; summary of lunar phases for 2023; star charts showing the position of the planets; and diagrams showing the positions of Jupiter's Galilean moons)

Note: you can become a country member of ASSA at: <https://assa.saao.ac.za/about/membership/> and receive a free SKY GUIDE with your membership!

Until the next edition....

We hope you enjoyed the 5th edition of the Southern Skies Quarterly. Thank you to everyone who contributed to this edition – without your support this publication would not be possible, and we urge you to support the publication with your observations (written and photographic). We wish all readers a productive time observing over the coming Autumn months.

Angus Burns

Director observing section (Deep and Shallow Sky)



A wide field image of the Cats Paw nebula (NGC 6334) and Lobster nebula (6357) captured from Newcastle KZN with a RedCat 51 and ZWO 294mc Pro camera