



## Welcome to the 1<sup>st</sup> Edition of the ASSA observing section Quarterly

Greetings fellow astronomers! As some of you might be aware, ASSA has combined the deep and shallow sky sections into one group known as the “Observing Section.” Basically, the Observing section will now be focusing on anything and everything to do with the solar system, and everything to do outside of it. This represents quite a wide range of subject matter but also many exciting opportunities to observe.



The ASSA “Southern Skies” quarterly has been created to provide a space for beginners to advanced observational astronomers and astrophotographers to share their experiences, inform everyone of upcoming celestial events/phenomena and most importantly, have some fun!

## Approach and how to contribute

Every 3 months the newsletter 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](mailto:Observing@assa.saao.ac.za) They may then appear

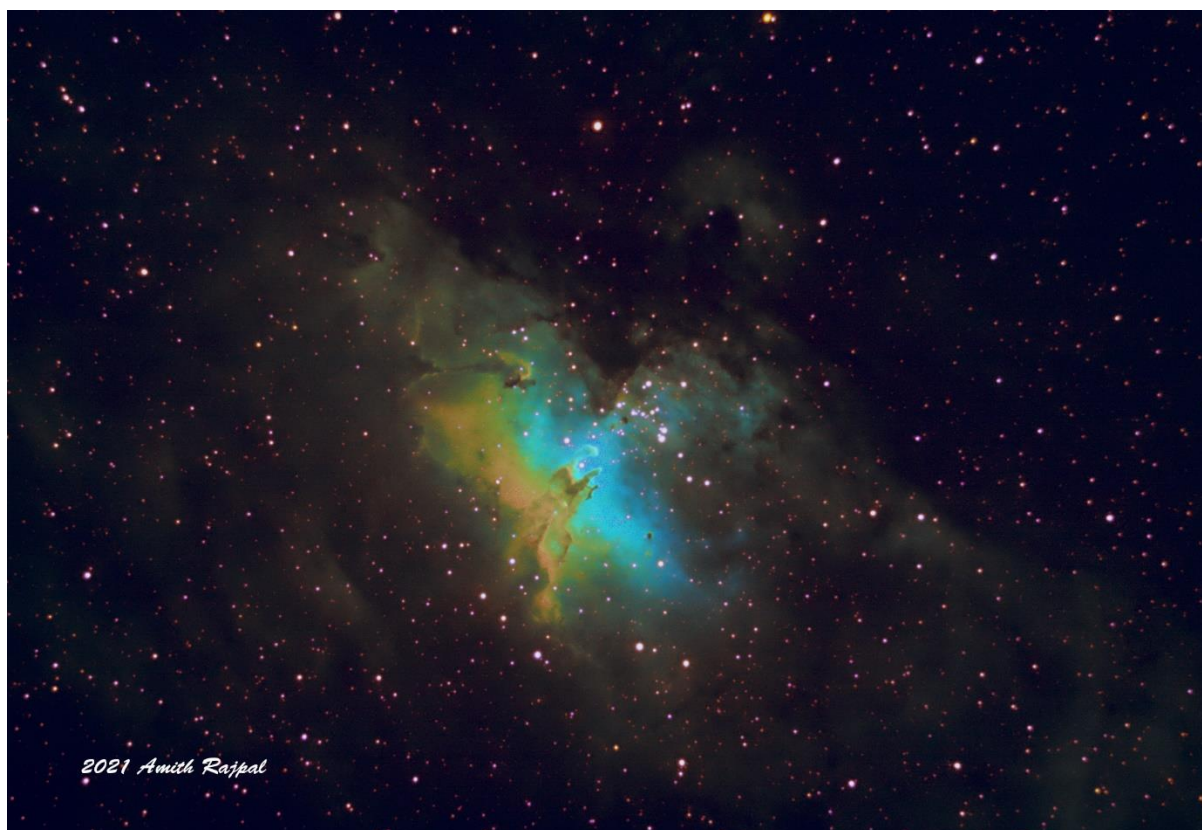
in future editions of this publication. There will also be fun competitions from time to time, reviews on telescopes (and other astronomy gear) and public events.

The cosmos is a fascinating and exciting place. It is hoped this newsletter will inspire existing ASSA (and potential new) members to spend more time looking up and enjoying our amazing Southern Skies.

Please visit the ASSA website <https://assa.saao.ac.za/> to learn more about the society. 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.

With that said, let's look at the last few months in review. The following was submitted from around South Africa and draws our attention to various observations made from May to end August 2021.

## From KZN



Amith Rajpal from Durban used his Meade SN10 telescope with a QHY294M-Pro camera to observe and image the famous Eagle Nebula (M16) during Winter. He captured only 15 mins of data to produce this beautiful image from the comfort of his garden. Note: he used various filters with his camera to produce a “false colour” (SHO palette) image of this object. This approach to astrophotography reveals different details in the objects being imaged. In Amith’s image, the picturesque “pillars of creation” can be clearly seen in the centre. The Eagle Nebula is located in the constellation Serpens Cauda and is about 7000 light years away from us.

To learn more about astrophotography, please visit the astrophotography section of the ASSA website: <https://assa.saao.ac.za/sections/astrophotography/> In addition, please visit <https://assa.saao.ac.za/sections/deep-sky/nightfall/> to read ASSA's Nightfall publications – this detailed and professional resource provides a wealth of information.





Sun and Moon Halos (or 22° Halos) observed in Newcastle KZN by Angus Burns on the 15<sup>th</sup> June 2021 & 25<sup>th</sup> May 2021. Numerous members of the public reported seeing this phenomenon and Miss Lindiwe Sigasa from Newcastle KZN enquired what caused it.

Sun and Moon halos are caused when light from the sun (or reflected sunlight from the moon) is refracted by high altitude ice crystals that are suspended in the atmosphere. The phenomenon is more common in occurrence than rainbows but, just like a rainbow is always fascinating to witness.



Angus Burns also observed and imaged Saturn at opposition (2<sup>nd</sup> August 2021) and captured a wide field image of the Trifid (M20) and Lagoon nebula (NGC 6523) during August 2021 from Newcastle KZN using a Celestron 9.25" Edge HD telescope and Williams Optics RedCat51 telescope respectively. Both Nebulae are located in the constellation Sagittarius and are popular objects to observe during the Winter months.

## From Mpumalanga

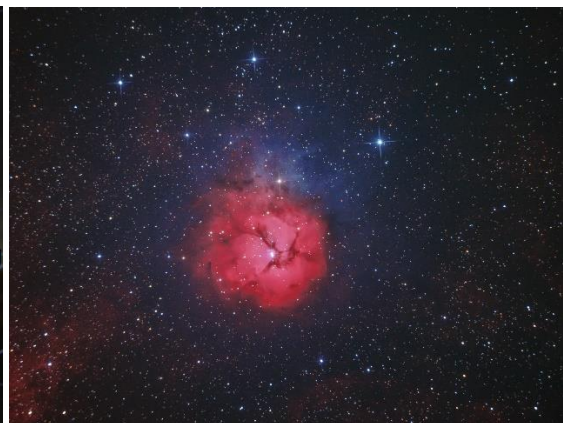


Hendrik Le Roux spent many hours over Winter observing and imaging various objects from his backyard in Nelspruit Mpumalanga. He used his 200mm F5 reflector telescope mounted on an AVX equatorial mount to capture this magnificent image of the Lagoon nebula (NGC 6523) using a ZWO ASI1600mm camera and various filters to bring out finer details of this fascinating object (note the image is referred to as a “false colour” image because of the way in which the data was captured and combined to produce this colorful version of it).

Also known as M8, this iconic nebula was discovered in 1654 and is between 4000 - 6000 light years from earth in the constellation Sagittarius. It can be seen with the naked eye but is easily observed with binoculars or a telescope at a dark location.



A basic star map showing the approximate location of the Lagoon Nebula in the constellation Sagittarius (the red arrows point to its location). Source: StarMap 3D+ mobile



Another stunning image from Hendrik of the Trifid Nebula (M20/NGC 6514) captured from Nelspruit, Mpumalanga. The image was also acquired through his 200mm F5 Reflector.

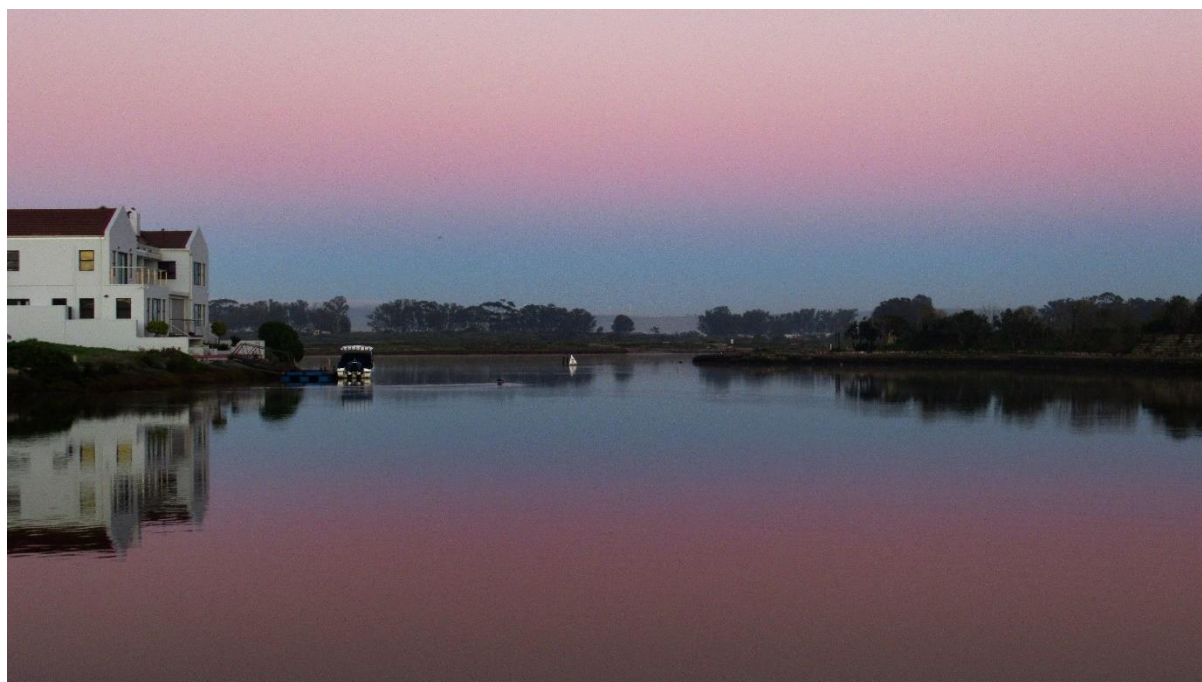


## From the Western Cape

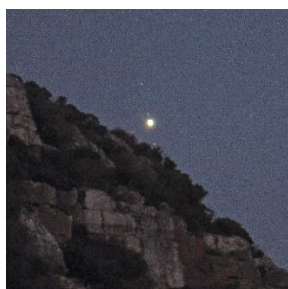


Richard Ford submitted 3 images and a written record of his observations from the Perdeberg on the 10th July 2021. From left to right are Richards photographic contributions from the evening. They include the Swan Nebula (M17), the Lagoon Nebula (M8) and the Trifid Nebula (M20) respectively.

Richard says that on the evening he used his 12" Dobsonian telescope with a Canon 800DSLR to photograph these 3 objects under freezing conditions. He also observed and photographed various globular clusters including M22, M28 and NGC 6440. Well done to Richard on a productive evening of imaging and observing in very cold conditions.



A beautiful photograph of the Belt of Venus and the Earth's shadow from Port Owen sent to us by Gary Deacon. The belt of Venus is the pinkish band or border adjacent to the Earth's shadow which appears as the blueish band beneath the pink one. Taken at sunrise on the 2<sup>nd</sup> August 2021, this tranquil scene must have been mesmerizing to observe firsthand.



Gary Deacon also sent us this image of Jupiter (with its moons Callisto, Io, Europa and Ganymede visible) rising above Clovelly on the 20<sup>th</sup> August 2021.

Readers must please consider sharing written and visual observations such as this with us for future editions of the quarterly.

Cynthia Meldon sent a message to us during August 2021 enquiring about the bright “star” that was rising towards the East after sunset near Knysna. She noticed it was brighter than usual and wanted to know if it was a star or planet. Given the description and time she provided (10<sup>th</sup> August 2021 at around 8pm), it was most likely the planet Jupiter she was observing. Jupiter approached opposition during August and was indeed appearing brighter in our night skies. This iconic gas giant was the subject of many queries from the public over the course of Winter.



A simple star map generated for Knysna in the Western Cape illustrating the position of Jupiter (with Saturn located above it) in the East at around 8pm on the 10<sup>th</sup> August 2021)

(Source: StarMap 3D+ mobile)

With Jupiter approaching opposition during August 2021, the planet became the focus for many people who wondered about the bright object in our southern skies.

To learn more about observing Jupiter and the other planets in our solar system, please visit the ASSA website:

<http://assa.sao.ac.za/how-to-observe/planets/>

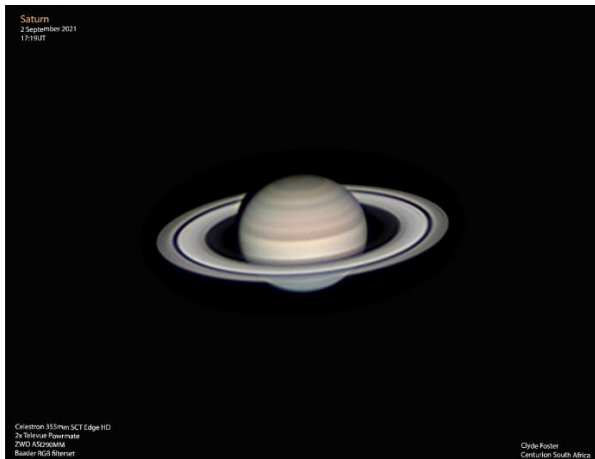
## From Gauteng

Clyde Foster who is South Africa’s leading planetary expert shared his experiences over the winter period with us. He had the following to say: “Despite Jupiter and Saturn going through **opposition** the last few months, atmospheric conditions have been very poor for high resolution planetary imaging from my observatory in Centurion. The images I have shared below were captured on rare nights when conditions were a bit improved. The Jupiter image captured in May 2021 shows the remnant of the Clyde’s Spot storm that erupted a year earlier and which is still developing.

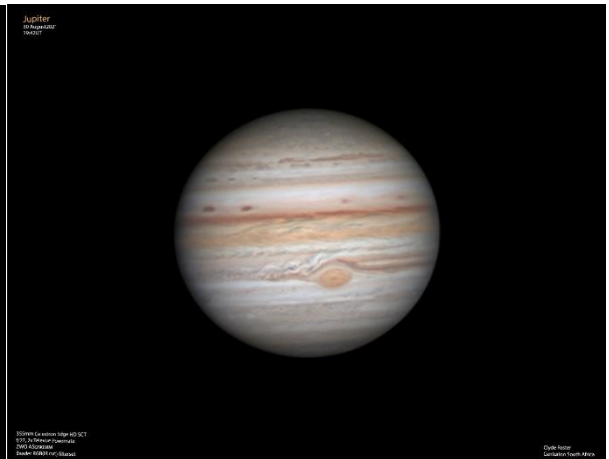
Although ‘nice’ images of Saturn can be captured reasonably easily, it is a very challenging target when attempting to capture fine details. So again, there have been very limited opportunities due to the poor atmospheric conditions.

Due to my focus on the main planets for imaging, nowadays I rarely get time to capture any lunar images. However, I did get an opportunity in June, when conditions were fairly good for the attached captures of the craters Clavius and Tycho.”

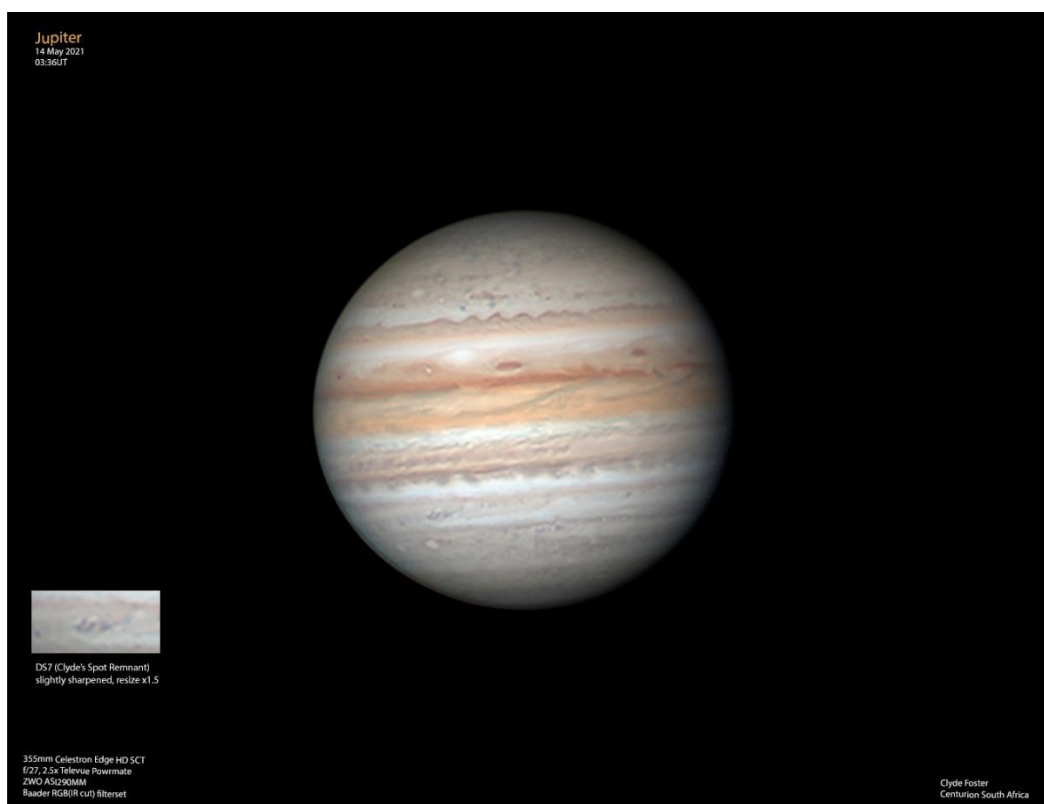
What does it mean when a planet approaches **opposition**? – This occurs when the outer planets form a straight line with the Earth and the Sun, with the Earth directly between the planet and the Sun. This is when the outer planet is closest to the Earth, and best placed for observation



Saturn (2<sup>nd</sup> September 2021)



Jupiter (30<sup>th</sup> August 2021)



Jupiter (14<sup>th</sup> May 2021)

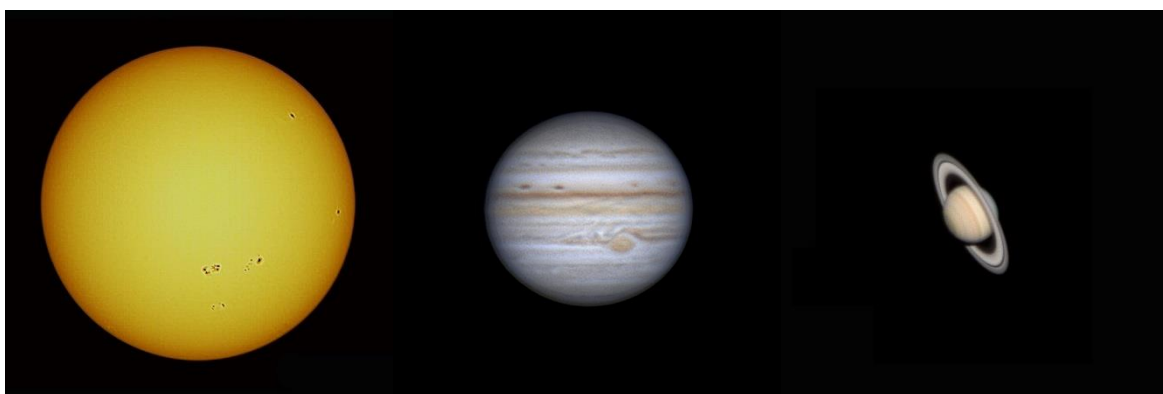


Tycho (20<sup>th</sup> July 2021)

Clavius (20<sup>th</sup> July 2021)



Oleg Toumilovitch sent us this breathtakingly beautiful image of the Sun through clouds with various Sunspots visible – Observed and captured from Johannesburg with a Canon EOS500D through an 8” XLT OTA on an AVX mount. He captured this with a full aperture solar glass filter.



Oleg also observed and captured the following additional images of sunspots and the gas giants Jupiter (with the GRS visible) and Saturn from Johannesburg (Sunspots with the CanonEOS 550D/8” XLT OTA on an AVX mount/Gas giants with a QHY5L-IIc camera through a C1100 on an AVX mount)



## National News

The bright objects crossing the sky on 24<sup>th</sup> August 2021 explained



The ASSA reporting channels and social media pages received many reports of bright lights crossing the sky at around 18h20 SAST on August 24. The lights said to be 'bright balls with burning tails' looking like 'comets' were seen from Zimbabwe, Limpopo, Gauteng, Mpumalanga, the Free State and Kwazulu-Natal. A flurry of reports appeared in the press, some shared many times, which attributed the show to a meteor shower, including the Perseids. Another refuted the assumption of meteors, and concluded the object was a bolide, a very bright fireball seen to explode.

So was it indeed a comet, meteor shower or bolide? The answer to all three is no; it was none of these. ASSA's Tim Cooper immediately pointed to space craft debris on account of several factors. Firstly comets don't appear to move quickly across the sky, and their motion is only apparent over several days. Meteors on the other hand move very quickly, most lasting a second or two or less, and rarely more than 10 seconds even in the case of larger objects. The object in this case moved slowly, taking perhaps one to two minutes to cross the sky according to various reports. The behaviour in which the object was burning and disintegrating was also not typical of a meteor or fireball.

Having pointed these facts out, we then investigated the exact source of the debris. Together with Alan Pickup, we located the launch of a Chinese Long March 2C rocket at 11h15 UT which placed three satellites into space, and the re-entry of the upper stage of the rocket coincided with the time and location of the sightings. Confirmation came from a post by Jonathan McDowell 'The YZ-1S upper stage entered an elliptical orbit after its first burn at 1125 UTC and an 1100 km circular orbit after its second burn at around 1212 UTC. The satellites were deployed shortly after this. At about 1230 UTC the YZ-1S made a deorbit burn targeting entry over the central Indian Ocean. However, it appears that the resulting perigee was not low enough for immediate re-entry and the YZ-1S remained up for four hours, re-entered at third perigee over southern Africa at around 1620-1625 UTC where it was widely observed.'

If this interested you, please visit our ASSA home page to learn about the Bolide that appeared over the Western Cape on the 9<sup>th</sup> August 2021. <https://assa.sao.ac.za/>

## What's up for the next 3 months

Observing highlights to look out for over the next 3 months include:

### September 2021

- 21<sup>st</sup> Sept 2021: Full Moon (at 01h55)

### October 2021

- 4<sup>th</sup> Oct 2021: World Space Week (4<sup>th</sup> -10<sup>th</sup> Oct 2021)
- 9<sup>th</sup> Oct 2021: Moon near Venus (at 20h36)
- 20<sup>th</sup> Oct 2021: Full Moon (at 16h57)
- 21<sup>st</sup> Oct 2021: Orionid meteor shower active

### November 2021

- 4<sup>th</sup> Nov 2021: New Moon (23h15) near Mars
- 10<sup>th</sup> Nov 2021: Moon near Saturn (16h27), Mercury near Mars (17h00)
- 17<sup>th</sup> Nov 2021: Leonid meteor shower at maximum
- 19<sup>th</sup> Nov 2021: Full Moon (at 10h58)

As we move into the warmer months, various constellations and deep sky objects become prominent again in our Southern Skies. Look out for Orion, the Pleiades and Taurus along with a host of other famous constellations as they start to rise earlier in the evening sky. For a detailed guide on our night skies from month to month along with loads of useful information, consider purchasing a SKY GUIDE.

Visit <https://assa.saao.ac.za/about/publications/sky-guide/> to learn more about this wonderful publication.

## Show us your setup

We would love to see what you use to observe the night sky. Please send us a photo of your astronomy setup and a short explanation. You can send them to: [Observing@assa.saao.ac.za](mailto:Observing@assa.saao.ac.za)

In addition, please send any questions / observations and comments to the same email address.

## Until next time

We hope you enjoyed this first edition of the Southern Skies Quarterly. We wish all readers a wonderful Spring season with productive observing!

**Angus Burns**

Director observing section (Deep and Shallow Sky)