Shoalhaven Astronomers Inc.
www.shoalhavenastronomers.asn.au
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Issue 6

Astro Flyer

JUNE 2024

Club News

President's Report. Hi All,

I am still counting down the meetings until I give up the Presidency and Treasurer duties. It all happens at the July AGM meeting. Please seriously consider taking one or both of the positions when they come up.

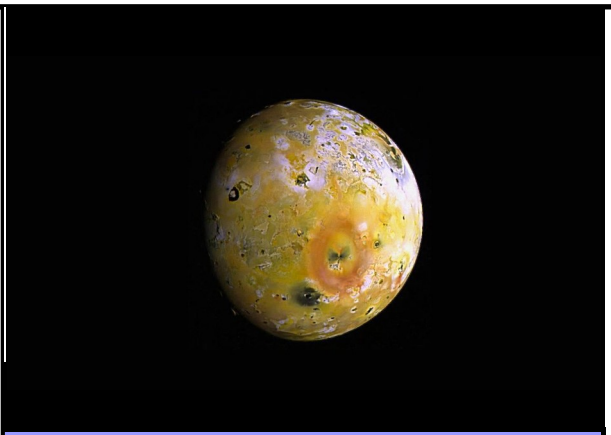
Having fun watching the clouds and rain? It still seems that it is continuing until who knows when. Still, you can hone your skills at using the observatory with Mark Town (MOB 0474859788) as your instructor. Just book a time and get more prepared for when the big clear sky starts showing its face sometime in the future.

I just heard from Andrew Wood our secretary, that Harry Roberts, a long term member and presenter extraordinary on the Sun and the Moon is in St George Hospital for an indefinite stay. I want to wish Harry the best as I am sure you all do.

See you at the **monthly meeting June 21st starting at 7 PM** at the Uni of W'Gong, Shoalhaven Campus just off Yahwal Road on George Evans Road.

Frank Gross
Public Officer, President and Treasurer

Contents



MOON PHASES

New Moon	First Quarter	Full Moon	Last Quarter
Jul 6th	Jul 14th	Jun 22nd	Jun 29th

Start here ^

Viewing Nights

We are aiming, once daylight saving is over, to make observing at Friday meetings a priority if the weather permits.

New and Last Quarter moon phases are good times for Dark Sky Observing.

Observatory Report Mark Town

Current Status
The observatory is fully operational and can be used for both basic and more advanced activities. Integration of the observatory systems into a cohesive whole is progressing with the system control program – called N.I.N.A. – able to exercise reliable control over the CEM120 mount, the dome/shutter and the cameras. SharpCap is also available for those who prefer that program. If you have a preferred program that could benefit other members, please let the observatory managers (John Gould & Mark Town) know so it can be assessed.

Remote Access
With the assistance of the UOW network engineers, remote access to the observatory – so you can operate the observatory systems from the comfort of a warm room, either on campus or in your own home – has been tested successfully.

If this capability is of interest to you, please take the time to let me know either in person or via email to marktown@shoal.net.au so your committee will know the level of interest within the association. For you to be able to access the observatory remotely you will need to:

1 Get an account with UOW – this lets the UOW know you are a legitimate user…

2 Have the capability to send and receive SMS messages – typically using a smartphone - this provides power control so you can remotely turn equipment On and Off.

3 Install the "Cisco Secure Client" application on your PC/ laptop/device – this gets you access to the UOW network…

4 Install the Microsoft "Authenticator" application on your device – typically a a smartphone – this allows for 2 Factor Authentication capability… i.e. yes, it's really me and not a hacker/robot….

5 Install the "TeamViewer" application on your PC/laptop/ device – this gets you access to the observatory PC…

It sounds complicated but once setup it is far easier than it sounds! Assistance and training will be provided to get you setup and operational.

Observatory Report Mark Town

Cont...2

Training
If you are concerned that the training you have done has departed your brain since you completed it - don't worry! We are running some dedicated training sessions – both during the day and in the night hours – so you can have some practical experience to refresh your memory and give you the confidence to operate the observatory. Future sessions will be advised by email.

The training is easy to do and done in the observatory in small groups so each person gets some practical experience of using the systems - in the meantime you can accompany an SA member who has done the training so you become familiar with the observatory equipment and how to operate it.

Observatory Access
The observatory is locked and the key is stored in a lock box at the door. You will need the current access code (available on the website) to open the lock box. To avoid disappointment, check the access code before going to the observatory!

Time on the observatory can be booked via the Members Area / Observatory Activities page on our website. You will need a username and password to login to the website so message or email myself for that information.

Best regards,
Mark Town
M: 0474859788 **Email:** mark-town@shoal.net.au

Observation Report Andrew Wood

What's on in the Cosmos June-July 2024

Our June 21 meeting will be just before Full Moon. The club's viewing night at the Shoalhaven Observatory on June 22 will see sunset about 5:30PM with full darkness by 7PM. We will, however, be accompanied by a Full Moon.

Moon Phases

Full Moon	22nd June	The Strawberry Moon – from native American culture
Last Quarter	29th June	Dark before midnight
New Moon	6th July	Dark all night
First Quarter	14th July	Dark after midnight

Planets

Mercury Returns to the evening sky in July for an "as good as it gets" view of the little planet; higher in the early evening western sky each day during this observing period. July 7 will see Mercury in the same line of sight of M44, the Beehive Cluster in the constellation of Cancer. During July Mercury's disk goes from 6" to nearly 8" in diameter; and its phase changes from gibbous to less than half illuminated. During that time its magnitude fades from -0.4 to 0.3.

Venus Will become visible in the early evening sky by mid-July. It is at nearly full phase and magnitude -3.9.

Mars Rises about 3am during this observing period. Its magnitude is 1.0 with a diameter of around 5-6", even smaller than Mercury in apparent size.

Jupiter Rises around 5:30am in June and 4am by mid-July. It is 33" in diameter and magnitude -2.

Saturn Rises around 11:30pm mid-June, rising earlier each night. On the 27th June, the Moon occults Saturn. Sydney time this occurs very low above the eastern horizon at 10:56pm. Saturn reappears from behind the Moon's dark limb at 11:41pm, with the Moon at an altitude of 12°. Interesting, but difficult, although the reappearance should be observable with a clear eastern horizon.
By mid-July, Saturn will be rising around 9:30pm. The ring system is very narrowly inclined to us. The Cassini division and other detail will be hidden from our view. Saturn during this observing period will have a diameter of 18" and a magnitude of 1.

Uranus rises about 5am mid-June and 3am mid-July. Its diameter is 3.5" with a magnitude of 5.8.

Neptune Rises about midnight mid-June, rising earlier during July. Its diameter is 2.3" and magnitude 7.9.

Beyond the Solar System

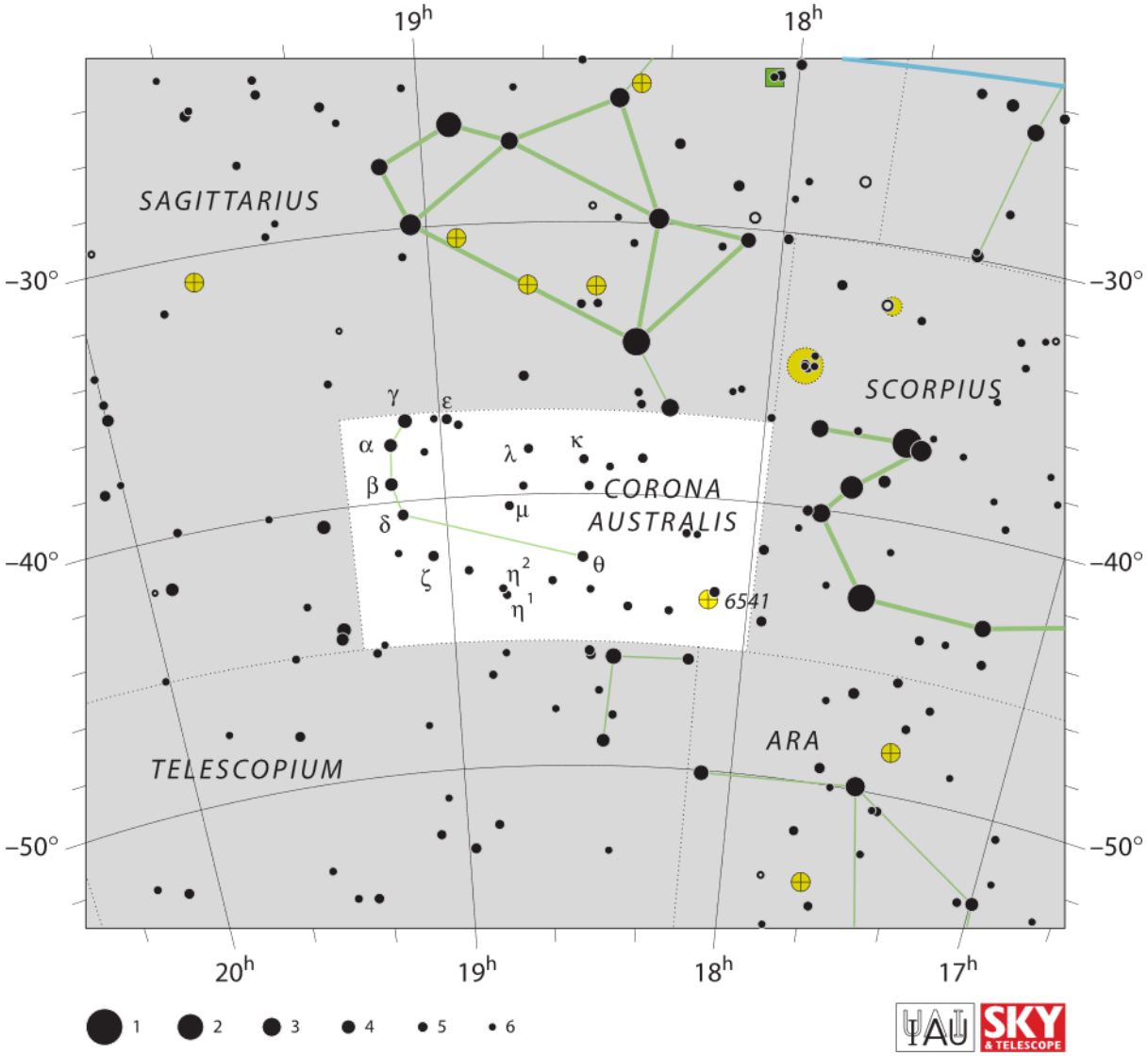
Peak observing time this time of year is the realm of Scorpius and Sagittarius, with a multitude of Open and Globular clusters, and some very bright nebulae. Nearby is also the small constellation of Corona Australis, the Southern Crown. This roughly semi-circle of faint stars, the brightest or alpha star, common name Meridiana, is only magnitude 4.1, stands out in a dark sky. Corona Australis contains one bright globular cluster, NGC 6541. At magnitude 6.6 and a diameter of 13 minutes, it is easily visible in binoculars and is a very well resolved cluster through a telescope.

Also within the constellation is a complex of emission and reflection nebulae: IC 4812 and NGC 6726/6727/6729. I have seen this complex through a 250mm telescope from a dark site using a UHC filter, though distinguishing the different components of the complex was difficult. The keen astrophotographers amongst us should be able to take fine images of these nebulae. For all observers and imagers, the map below shows many more nearby objects; and there are many more beyond this small area.

Winter, with long nights and the Milky Way overhead, is a great time for viewing all kinds of deep-sky objects. If we can get some clear skies.

Observation Report Andrew Wood

Cont...2

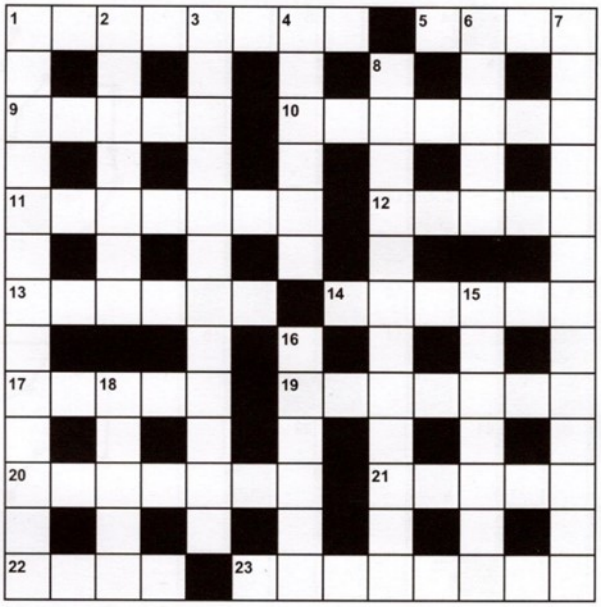


Always great to read and hear reports of observations of Solar System and Deep Sky Objects made by members, either visual descriptions or via images. Write a report of your observations for the *Astroflyer* or request a spot to speak at meetings.

Astro Quiz Andrew Wood

Cont...4

Crossword June



Across

1 Short negligee (8)
5 Aim or target (4)
9 Small 1 Down between Ara and Lupus (5)
10 Sarah Frances ___ : US astronomer 1847-1927 (7)
11 Large ships (7)
12 Entice to do something (5)
13 Hate (6)
14 NASA's second human spaceflight program (6)
17 High up (5)
19 Strong embrace (4,3)
20 Separated; remote (7)
21 Underground enlarged stem (5)
22 US space agency (4)
23 Introduced fluid into (the body) (8)

Down

1 Group of stars that appear to form a shape or pattern (13)
2 Moon of Uranus (7)
3 Vehicle that can journey away from Earth and back several times (5,7)
4 Towels (anag) (6)
6 Widespread dislike (5)
7 Prone to steal (5-8)
8 Chatter (6-6)
15 Live in (7)
16 Second-largest moon of Uranus (6)
18 Fertile area in a desert (5)

Solution to May Crossword

Astro Events from Frank Gross

Jupiter's violent moon Io has been the solar system's most volcanic body for around 4.5 billion years

By Robert Lea published 18/04/24

"Io represented a big mystery because its surface doesn't hold a record of its history the way that the surfaces of less active moons do."

The solar system's most volcanic body, the Jovian moon Io as seen by the Galileo spacecraft. (Image credit: NASA/JPL-Caltech)

The solar system's most volcanic body, the moon of Jupiter Io, has been in turmoil for at least 4.57 billion years, right back to its birth and the infancy of the sun.

Those are the findings of a team of scientists who examined Io with the Atacama Large Millimeter/submillimeter Array (ALMA) to track sulfur and chlorine in the Jovian moon's atmosphere.

Scientists have understood that the gravitational tug-of-war between Jupiter and the neighboring Jovian moons Europa and Ganymede generates immense tidal forces within Io that cause its intense volcanism. What wasn't clear until now was just how long the influence of Jupiter and its moons had been wreaking havoc on Io. That's because the constant flow of lava from this extreme volcanism across its surface keeps this moon looking fresh."Io's surface is very 'young,' meaning that the lava flows and volcanic plume deposits cover up any features that are more than around 1 million years old," Katherine de Kleer, team leader and Assistant Professor of Planetary Science and Astronomy at Caltech, told Space.com. "Therefore, it has not previously been possible to learn anything about Io's volcanic history beyond the past million years, which is very recent from a geological perspective.

"Io represented a big mystery because its surface doesn't hold a record of its history the way that the surfaces of less active moons do."

Astro Events from Frank Gross

Cont...2

Thousands of strange white rocks found on Mars. Will they ever be brought to Earth?

By Sharmila Kuthunur published April 4, 2024

"These are very unusual rocks and we're trying to figure out what's been going on."

NASA's Perseverance Mars rover used its dual-camera Mastcam-Z imager to capture this image of "Santa Cruz," a hill within Jezero Crater, on April 29, 2021. (Image credit: NASA/JPL-Caltech/ASU/MSSS)

Mars' rusty red surface may have given it its famous "Red Planet" status, but it would also appear that thousands of white rocks are strangely littered on the Martian ground.

NASA's Perseverance rover, a robotic geologist that has been exploring the Jezero Crater since early 2021, puzzled scientists when it delivered images of over 4,000 light-toned, pebble-sized rocks scattered all over the crater floor.

"These are very unusual rocks and we're trying to figure out what's been going on," Candice Bedford, a planetary scientist at Purdue University in Indiana and a member of the Mars 2020 science team, said at the Lunar and Planetary Science Conference (LSPC) last month.

The announcement comes as NASA wraps up an architectural review of returning Martian rocks to Earth as part of the agency's ambitious Mars Sample Return (MSR) program.

The imaged white rocks are what scientists refer to as "floats," meaning they have been removed and transported from their original habitats; some are smooth with pits while others appear to be an amalgamation of multiple layers. Initial analyses, conducted with Perseverance's onboard instruments, revealed the rocks are dehydrated — not only in water content, but also in other minerals including iron, magnesium, calcium and sodium. "These are pretty depleted in a lot of things," Bedford said.

The team is particularly interested in the origins of these unusual rocks as their sources can reveal clues about the Red Planet's past, including precisely when water would've flooded the Jezero crater, which we see as an arid stretch of land today. Despite spotting more than 4,000 such rocks, Perseverance hasn't managed to see even a hint of what's known as an "outcrop" related to the rocks, which is essentially a bedrock of similar properties that'd jut out of the Martian surface.

The rocks' dehydrated nature suggests they were heated and metamorphosed by either lava flows or asteroid impacts elsewhere on Mars and later dumped onto the crater floor, said Bedford. Whatever the specific process may have been, she and her team suspect it would have occurred relatively recently in terms of Jezero Crater's geologic history.

Gerard Keyzer's Astro events

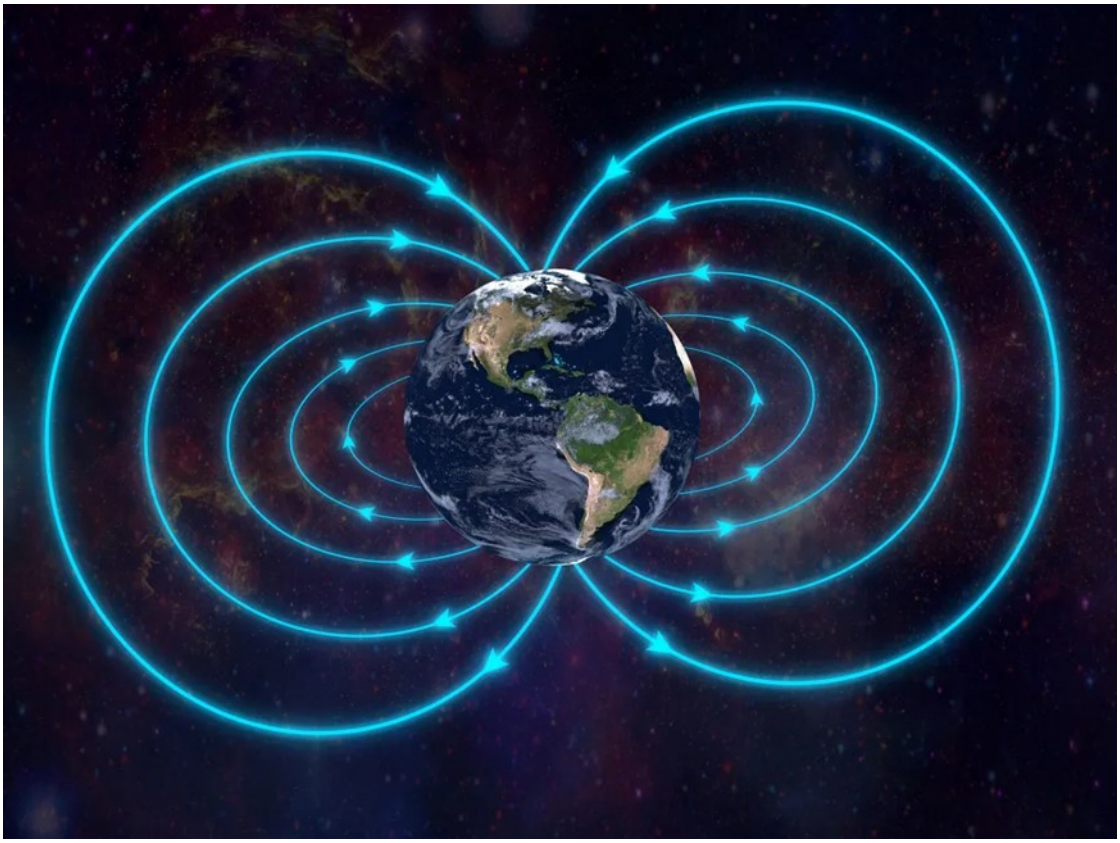
Aurora Australis

On May 13th millions of people across the south of the Australian continent were treated to magnificent views of the Aurora Australis. This phenomena is caused by energised particles ejected from the Sun arriving at Earth and exciting different chemical atoms in our upper atmosphere. Oxygen atoms characteristically"glow" green while nitrogen (which makes up 60 plus percent of our gaseous atmosphere) will glow "pink" . Earth is protected by a huge magnetic field that acts as a shield protecting us from the harmful effects of these particles.

If you can picture an uneaten apple you will visualise the shape of Earth's magnetic field. At the two poles the lines of magnetism draw in and this causes enregised particles which are repelled by the field to be drawn in towards the poles.

This is the precise reason the aurora is usually only visible in far northern or far southern latitudes. It has become a real bucket list item for people to travel to far northern latitudes to see the "Northern Lights" . For example, the city of Lulea (Sweden) is at the northern end of the Gulf of Bothnia, a popular route for cruises 400 klms north of Stockholm. The latitude is 65 degrees north!

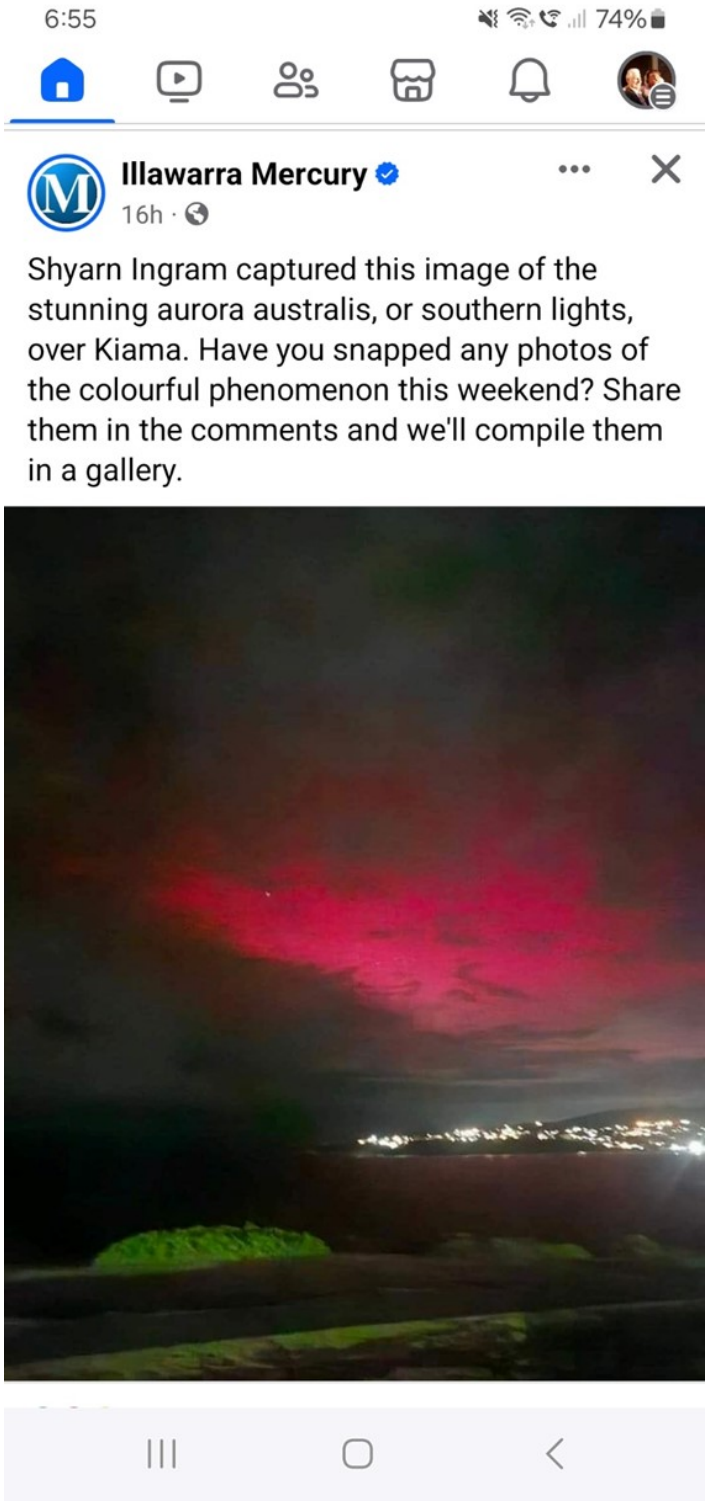
Opportunities for viewing are far less so in the Southern hemisphere as there is very little habitation equally far South, for example Dunedin on New Zealand's South island is 45 degrees south latitude. Lulea is 2,218 klms closer to the North pole than Dundedin is to the South pole.



Cont...2

As you will see from the Instagram post below, sent in by Intan, this occurrence was seen by people as far North as KIAMA.

Please note that there is a mountain of cloud in the foreground, typical of the weather around here since early April! Kiama is roughly 34 degrees south. If Kiama was in the northern hemisphere it would be 3,449 kilometres south of Lulea or level with Casa Blanca in Tunisia, Africa.



Sky Conditions

In other local news there has actually been one or two clear nights (barely) in our area and I managed to take the two images below on Monday 10th. Sadly the sky was beset by water vapour to some extent and the reflective nature of this moisture in the atmosphere meant clear, longer exposures weren't possible.

Gerard Keyzer's Astro events

Cont...3

I have taken an image of NGC 5128 Centaurus A (Galaxy) and M4 in Scorpius Globular cluster).
The Centaurus A was 3 minutes. It is a good indicator of the seeing which appeared very clear but the moisture in the atmosphere caused stars to become bloated and misty.

M4 above

Gerard Keyser's Astro events

Cont...4

NGC 5128 below

Clear skies
Gerard

Gerard Keyzer is an astronomer from Kangaroo Valley who has allowed us to publish his work from his newsletter. Gerard was a member of the Shoalhaven Astronomy Club for many years. Thankyou.

Club News

The AGM was held at the July 2023 monthly meeting. Elected officials for 2023- 2024

Executive
President: Frank Gross
Vice President: Laurence Wakelin
Secretary : Andrew Wood
Treasurer: Frank Gross
Public Officer; Frank Gross

Andrew Wood
Mark Town
John Gould
Ian Scott

Operation Positions
Website Manager: Steve Holloway
Observation Officers: Andrew Wood, Mark Town and John Gould
Editor: Kaye Johnston
Librarian: Chris O'Hanlon
Equipment Officer: Andrew Wood

Committee General Members:
Laurence Wakelin
Frank Gross
Andrew Wood
Mark Town
John Gould
Ian Scott

Club Notices

Astronomy yearbook and calendar

This year, we will not be ordering these publications to sell to members. For anyone wanting to purchase them, the details are as follows:
Astronomy 2024 can be purchased through Quasar Publishing https://quasarastronomy.com.au/ . This publication, once it becomes available, can also be found in bookshops and newsagents.
Astronomy Calendar 2024 can be purchased through Astrovisuals https://astrovisuals.com/ .
National Australian Convention of Amateur Astronomers (NACAA)
NACAA will be held in Parkes over the Easter weekend of 2024. See https://nacaa.org.au/2024/programme .

Dear Members of Shoalhaven Astronomers
This is a reminder to members who paid last year, and have not yet paid membership for 2023-4, that fees are due. My apologies if there has been a mistake. If you have paid let me know and I will check with our treasurer Frank Gross. I know that in some cases illness may be a factor at the present time.

Payment ($30) can be made at club meetings.

Or Pay by direct deposit into the club IMB account – Please ensure your name is in the reference section. BSB 641800 Account 009135475

Hoping for your continuing membership – the Shoalhaven Observatory is now open and functional!

Kind Regards Andrew Wood Secretary

Check out the Astro Flyer on the web site: www.shoalhavenastronomers.asn.au

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The deadline for Articles for the Astro Flyer is The First Friday of the Month.

Editor Kaye Johnston