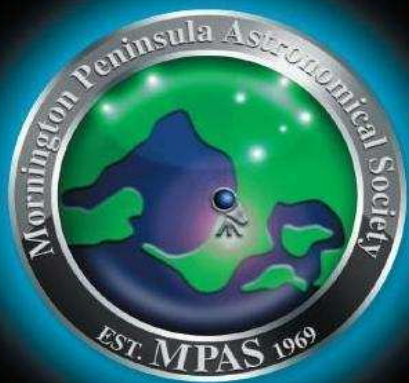


Cover image - Lunar eclipse by *Dominic Lucarelli*

SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

Reg No: A268 ABN: 34569548751 ISSN: 1445-7032

Vol. XXVI, No. 4 (July / August) 2021

The Mornington Peninsula Astronomical Society (formerly the Astronomical Society of Frankston) was founded in 1969 with the aim of fostering the study and understanding of astronomy by amateurs and promoting the hobby of amateur astronomy to the general community at all levels.

The Society holds a focused general meeting each month for the exchange of ideas and information. Regular public and private observing nights are arranged to observe currently available celestial objects and phenomena. In addition, the Society encourages the service of its members for on-site or off-site educational presentations and observing nights for schools and community groups.



Dominic Lucarelli

MPAS - <https://www.facebook.com/mpas0/>

MPAS Members - <https://www.facebook.com/groups/MPAS1/>

Scorpius MPAS - <https://www.facebook.com/Scorpius-MPAS-1694951307446763/>

Mornington Peninsula Astronomical Society

facebook

SOCIETY NEWS



Our COVIDSafe Plan is in place, and therefore there are rules we must all follow when visiting the site.

Here are the basic rules which are required and are mandatory for all MPAS Members: **NOTE - These rules may change at anytime.**

- 1) **BOOKING.** No site entry unless you have a confirmed email booking (welcome@mpas.asn.au) showing date/times, name and phone of all persons.
- 2) **SICK.** If slightly unwell or with cold/flu symptoms DO NOT enter the site any further. Go home.
- 3) **SIZE.** Max of 100 people outdoors. Max of 50 people or 1 per 2m² (plus speaker/usher) in auditorium, and other areas as sign-posted.
- 4) **CHECK-IN.** All attendees must check-in using the MPAS QR code (or log book as last resort) upon arrival to assist with contact tracing.
- 5) **CLEANLINESS.** All touched surfaces and handles must be carefully cleaned after your use. Wipes and cleaning agents provided. Cleaning checklist on site.
- 6) **DISTANCING.** Min 1.5 metres between people anywhere on-site.
- 7) **HANDS.** Wash often. Never assume someone else has already cleaned the surface. Hand sanitiser provided.
- 8) **MASKS.** Masks must be worn inside the observatory, kitchen, reception & auditorium.

Here's an update of confirmed outreach events for your diary. All are in need of member help with telescopes/speakers as shown. Freshly updated entries are ** asterisked. Please enter them in your diary and post back here for those where you can help. Those who did the presenter training last year are encouraged to help with the speaker role. *Regards, Peter Skilton*

JUNE

**Wednesday 30th, 6:30pm YMCA Carers at Camp Manyung, 35 Sunnyside Road, Mount Eliza. 53 booked. Speaker Peter Skilton.

JULY

Friday 2nd, 8pm Briars. Public stargazing night. Speaker needed.

**Saturday 3rd, 8pm Briars. Public stargazing night. Speaker Trevor Hand. 50 anticipated.

Friday 30th, 8pm Briars. Scouts/Guides/Cubs night. Speaker Peter Skilton & duet with another member. No bookings yet.

AUGUST

**Thursday 5th, 7:30pm Naranga Senior College at Merricks Lodge, 3670 Frankston-Flinders Road, Merricks. 50 Year 10 pupils booked. Speaker Peter Skilton.

Friday 6th, 8pm Briars. Public stargazing night. Speaker Trevor Hand. 50 people anticipated.

**Tuesday 10th, 6:30pm. Baden Powell Joeys at their Scout Hall, NE corner Baden Powell Drive and

Humphries Rd, Frankston. 50 cubs anticipated. Speaker Peter Skilton.

**Wednesday 11th, 6:30pm. Mornington Cub Scouts at the Briars. 50 scouts anticipated. Speaker Katherine McCoy.

Friday 20th, 8pm Briars. Public stargazing night for National Science Week. Speaker Trevor Hand about Shooting Stars.

SEPTEMBER

Friday 3rd, 8pm Briars. Public stargazing night. Speaker Katherine McCoy. 50 people anticipated.

**Tuesday 14th, 7:30pm at Mount Erin Secondary College, Robinsons Rd, Frankston. 70 Year 9 pupils booked. Speaker Katherine McCoy & Peter Skilton.

OCTOBER

Friday 1st, 8pm Briars. Public stargazing night. Speaker Trevor Hand. 50 people anticipated.

Friday 29th, 8pm Briars. Scouts/Guides/Cubs night. Speaker Peter Skilton. No bookings yet.

NOVEMBER

Friday 5th, 8pm Briars. Public stargazing night. Speaker Manfred Berger. 50 people anticipated.

DECEMBER

Friday 3rd, 8pm Briars. Public stargazing night. Speaker Trevor Hand. 50 people anticipated.

Society meeting April 17th - For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, the April meeting has been uploaded for viewing. It features a talk about The Geology of the Mornington Peninsula by Geologist, Mike Cleeland.

If subscribed, you should be notified of this automatically, all being well with YouTube of course.

You can also watch it here by clicking on this link and going to the most recent video on the channel:

<https://www.youtube.com/channel/UCm6XOkIcIflt4y0XRBXpXuw>

or watch it on the MPAS site once it's refreshed for this month:

<https://www.mpas.asn.au/meeting-recordings/>

Regards, Peter Skilton



School viewing night May 5th - We had 66 Year 5/6 pupils, plus about 9 teachers, from St. Augustines Primary School at Camp Manyung last night. The evening started with the stargazing up on the camp's oval, just in case cloud encroached. Operating the telescopes were Ben Claringbold, Chris Kostokanellis, Nerida Langcake, Guido Tack, Greg Walton, Simon Hamm and Fred Crump. The Moon and planets were all absent in the sky, but there was plenty to see with the various nebulae, clusters, galaxies and the odd satellite and meteor, and the sky was clear and conditions fairly cool. Following the viewing, everyone reassembled inside the main hall to hear Peter Skilton speak about the solar system, and Fred Crump had set up on the stage his Apollo 11 gold poster, freshly updated to mention the recent passing of Michael Collins, and of course Neil Armstrong some years ago, and his shoulder height Saturn V model rocket next to it, which did look impressive. With the eta-Aquarid meteor shower due to peak the next morning before dawn, there were some of the kids and teachers promising to get up at 5am to see them, but that remained to be seen since this was their first night on camp and they might feel a little differently when the alarm actually went off! *Regards, Peter Skilton*

Public viewing Night May 7th - The May public stargazing night last Friday at the Briars saw 63 visitors and members in attendance and went ahead with the telescope usage up-front due to the threat of encroaching cloud and light drizzle from the west. Even at that stage, about two-thirds of the sky was clear, enabling several deep sky objects to be seen. This was then followed by Manfred Berger giving his debut Solar System talk indoors, punctuated with the sound on the roof of light rain at one stage. The talk went smoothly, with a very happy bunch of people leaving the auditorium at the end. One high school teacher in the audience came up to me afterwards and shared how much she'd enjoyed it. The cloud did increase during the talk, making the decision to go outside early a wise one in hindsight. Photo: Manfred immediately after the talk on Friday. Helping with operating the telescopes and COVID-marshalling the crowd, were Nerida Langcake, Guido Tack, Peter Skilton, Simon Hamm, Fred Crump & Bonnie Cass, Chris Kostokanellis, Jason Heath, Alan Predjak, Dave & Jamie Rolfe, Mark Stephens, Jamie Pole, Bob Heale, Greg Walton, Anders Hamilton, Ben Claringbold, Vijay & Akshaj Kulkarni, Mary, Clive and Alexander Bailey. *Regards, Peter Skilton*



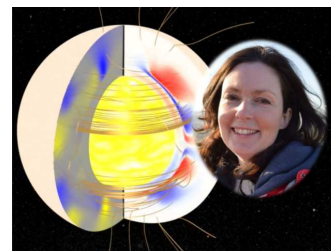
Observatory and Telescope Training night 12th May - The sky was perfect with no Moon, but fairly cool. We only had a small turn out: Kit Penfold, Fred Crump, Pascal, Pia and myself. We used the new sky charts finding many deep sky objects. *Greg Walton*

School viewing night May 18th - There were 155 in attendance. MPAS visiting once again to Parkdale Secondary College for an evening of astronomy for the Year 7s. We've been doing these nights for many years now with their STEP programme, and the students and teachers are always pumped up and super keen. Due to rapidly building cloud cover, it was decided to have the outside viewing through telescopes done first, followed by the talk indoors in the warm in their theatre. Helping outdoors with instruments in the field were Nerida Langcake, Jamie and Joshua Pole, Ben Claringbold, Chris Kostokanellis, Greg Walton, Pia Pedersen, Kit Penfold, Fred Crump and Guido Tack. It was mostly cloudy, but the students and families were able to see the Moon (which is always impressive), Jewel Box cluster and Omega Centauri, before the fast moving cloud interfered too much to continue. Despite the weather, and absence of planets visible in the sky, the students were very happy with what they saw, with lots of ooooohs and woowows! They then moved inside to hear Peter Skilton give a solar system talk, supported by Fred Crump with his travelling Apollo display and shoulder-high Saturn V rocket. Lots of questions followed, especially about meteorites, planet formation and life in general. *Regards, Peter Skilton*



Nerida Langcake

Society meeting May 19th - 22 members in attendance. Peter Skilton showed videos of Mars helicopter and images taken by the Perseverance Mars rover. The feature video was on the Sun's coronal mass ejection and magnetic fields. After, Mark Stephen did sky for the month, then more videos on auroras. The meeting finished just before 11pm. For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, the May meeting has been uploaded for viewing. It features a talk about **15 Million Degrees: A Journey to the Centre of the Sun** by Prof. Lucie Green. If subscribed, you should be notified of this automatically, all being well with YouTube of course.



You can also watch it here by clicking on this link and going to the most recent video on the channel:

<https://www.youtube.com/channel/UCm6XOkIcIflt4y0XRBPXuw> or watch MPAS site: <https://www.mpas.asn.au/meeting-recordings/>

Members BBQ & Working Bee May 22nd – Good turnout to help with the working bee. Lawns were cut, a new heated eyepiece cabinet was installed in the observatory along with some new eyepieces. A beautifully clear night at the observatory, following a productive working bee and delicious BBQ (with heaps of desserts)! 'Twas quite cold though. Many thanks to all who helped on the day. *Nerida Langcake*

School viewing night May 25th - Mount Erin Secondary College, Robinsons Rd, Frankston, for 70 Year 9 pupils, was cancelled due to Covid restrictions.

Lunar eclipse viewing night May 26th - Had a good turnout at the Briars considering we were again on the edge of another Covid lockdown. Many members set up telescopes on the field with cameras attached or mobile in hand. Ben Claringbold single-handedly manned the observatory helping many new members. Special thanks to Dave Rolfe and Jamie Pole for manning the BBQ. In attendance Peter Skilton, Simon Hamm, Nerida Langcake, Mark Stephens, Jamie Pole, David Rolfe, Guido & Monika Tack, Paul Albers, Steve Mohr, Ben Claringbold, Manfred Berger, Jason Heath, Alan Predjak, Gavin Curnow, Greg Walton, Pia Pedersen, Katherine McCoy, Ben Cashman, Fred Crump, Bonnie Cass, Ray Johnson, John & Marj Cleverdon, Michael Scott, Carmen Williams, Tristan and Lila Williams, Carmen and Amber Ridley, Heath Lewis & family, Sandy and a few other whose names I can't remember. *Greg Walton*

Photos below - Guido Tack setup his a 10-inch Newtonian telescope on his EQ6 equatorial mount on the top slab and snapped this image of the lunar eclipse.



Guido Tack



Photos below - Dave Rolfe used BIG BLUE the Society's 8inch refractor telescope on old equatorial mount at the lower slab to snap this image of the Moon using his Pentax full frame DSLR camera.



David Rolfe
26-5-2021



Photos below - Mark Stephen set up his 6inch Celestron GoTo AZ with a Nikon DSLR on the lower slab to snap this image of the Moon.



Right - I have 100's of photos to go through to create a collage of the whole sequence, but here is one image during the lunar eclipse tonight taken with my phone through a 10" Dob. *Nerida Langcake*



Left - This image of the Moon was captured using Canon 6D MkII on the 127 refractor in the observatory. *By Ben Claringbold*



Right - Eclipse with my Canon 5D Mark2 and 300mm with 1.4x teleconverter on tripod, I can just feel my fingers again. It's sitting just in the Scorpius constellation and it's surrounded by lots of stars which surprisingly I captured along with the Moon. *By Nik Axaris*



Lunar eclipse imaged from the Briars Mt Matha Victoria

26th May 2021 By Greg Walton

Star 6.5 mag ----->



Above - To image the eclipse I used my ED80 refractor telescope with 0.85 x field flattener and 2x converter with a Pentax K30 DSLR; this gave me a focal length of about 1300mm. It gave me a bit of leeway as the Moon tends to drift across the field of view. Also this time I remembered to change the tracking to Lunar rate on the HEQ5 GoTo mount. If you watch the time-lapse you will see background stars moving past the Moon. If I did not change the tracking, the Moon would move out of the field at the same speed the stars are moving. I had to increase the ISO and shutter speed as the sky darkened. The clouds moving past also affected the time lapse. *Greg Walton*

Link to time-lapse video - <https://youtu.be/2yU2-Pqbbg>

Below left cover image - Here's my contribution to last night Lunar Eclipse. Taken mid eclipse with a Celestron C11 it is a stack of 10 x 4 second exposures stacked and then sharpened in Photoshop. Do yourself a favour and zoom in! There's lots of detail to see on the surface including mares (dark areas - dark, basaltic plains formed by ancient volcanic eruptions) and of course craters. *Dominic Lucarelli*



Right - We were kept away due to illness today... so we're having our own eclipse party!
(Yes, Acacia has space pyjamas)
By Sarah Cottrill



Below - A few of my shots from last night from my front yard. Had some neighbours keep me company for a while. I found watching it naked eye very satisfying. *Chris Kostokanellis*



Right - Last night's Moon - through the 12" Dobsonian and my Canon 6d. A stack of about 4-6 raw files, this version is accidental as I over cropped on my phone.

By Russell Smith

Scouts/Guides/Cubs night May 28th - was cancelled due to Covid restrictions.

School viewing night June 2nd - Mount Eliza Secondary College, at the Briars, was cancelled due to Covid restrictions.

Public Viewing night June 4th - was cancelled due to Covid.

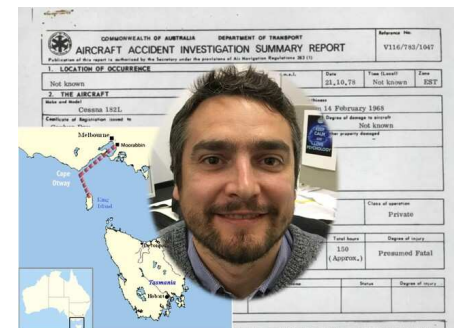
Society meeting June 16th -For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, this month's meeting has been uploaded for viewing. It features arguably the biggest UFO story that Victoria has experienced to date in the media, and it all happened locally. The talk is about "The Disappearance of Frederick Valentich", compiled by local researcher and Melbourne Marvels local story teller, Eamonn Gunning, using the most recently released government documents of the case. This is then followed by a debriefing interview with Past President, Peter Lowe, who shares his personal link to this case and provides further insight into what is believed to have happened. If subscribed, you should be notified of this automatically, all being well with YouTube of course.

You can also watch it here by clicking on this link and going to the most recent video on the channel: <https://www.youtube.com/channel/UCm6XOKIcIfl4y0XRBXpXuw> or watch it on the MPAS site once it's refreshed for this month:

<https://www.mpas.asn.au/meeting-recordings/>

Members BBQ & Working Bee June 19th – seen about 20 members in attendance under a mostly cloudy sky. It was very cold outside, but nice and warm inside the clubroom as we had both heaters running. Dave Rolfe run the BBQ while Nerida and Guido served up the food. Good to see a few new faces. The Moon broke through the clouds so we setup a 8 inch Dobsonian telescopes on the upper slab. New member Alan and I opened the observatory and had clear skies for 1/2 a hour. We looked at a few star cluster and the Moon before the clouds moved in again. Special thanks to the members who arrived early to tidy the garden and plant a few native tree on the slope behind the clubroom.

By Greg Walton



Regards, Peter Skilton



Subject to coronavirus restrictions, new members are welcome to come along to these outreach events as follows:

Public nights - members can attend without booking, provided they QR code check-in on the night (either themselves or via someone else present on their behalf). These members generally stay outside and mingle according to current restrictions in place on that date, and they can help muster the public, and also help to show the public the night sky through the telescopes once they feel confident enough, either with the society telescopes or their own one.

If they wish to sit inside with the public to listen to the talk live, then we do set aside a handful of seats for this purpose on a first-come, first-seated basis on the night. We are constrained by the COVID density limit for the auditorium. However, during the pandemic we also endeavour to try to record the newer talk topics and will play those back at the monthly Wednesday night meetings in later months, so no member should unduly miss out.

School or Scout/Guide nights - only members with a current Working With Children Check card can attend these. To apply for this card (it's free for volunteers), go here: www.workingwithchildren.vic.gov.au/. When you receive the OK, just let the Secretary know your card details, and then you can attend.

New members with a card can come along to help show the kids the night sky through their own telescope, or a spare one might be able to be brought along for members who don't have one to use. You are welcome to "work shadow" a more seasoned member on the night, to see what they do and what they point out to the visitors. To attend these, you must post your intention to attend to this e-scorpis email group, or to the general public one of welcome@mpas.asn.au. This not only allows us to know if we'll have enough telescopes on the night to match the expected crowd size, but also for contact tracing purposes.

Kind regards, Peter Skilton

MPAS members please consider a position on committee, as we have much work to be done for the year ahead.

MPAS - Society AGM

The AGM is in July each year.

Current Committee

President: Peter Skilton

Vice President: Mark Stephens

Secretary: Nerida Langcake

Treasurer: Jamie Pole

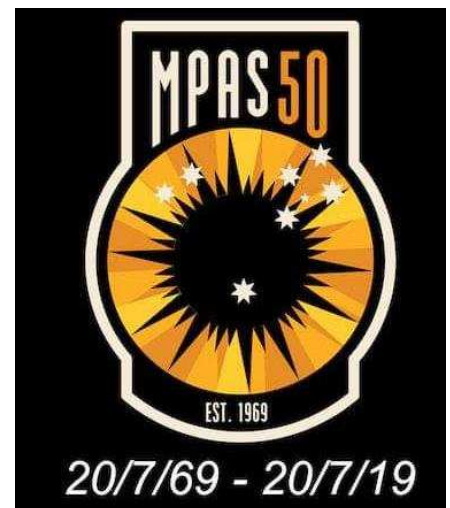
General Committee: Anders Hamilton, Trevor Hand, Simon Hamm, Guido Tack & Peter Lowe.

AGM Invitation

21st July 2021 at 8PM
The MPAS Briars site
Don Leggett Astronomy Centre
Nepean Hwy, Mt Martha
(Melway ref. 151/E1)

Agenda

1. Apologies
2. Confirm Minutes of previous AGM
3. President's Report
4. Treasurer's Report
5. Election of Incoming Committee
6. Special Business (Constitution updates – details to follow)
7. Other Thanks
8. Close of AGM.



We hope to get more members on committee.

If you feel you would like to get involved in the society business or have a particular skill you think would be useful to the society as a whole please give some thought to becoming an Office Bearer or committee member.

The Annual General Meeting will be held on Wednesday 21st of July, 2021. In this edition of Scorpis there is a 'Committee Election Form' that can be used for the submission of nominations for the next committee. This can be posted to MPAS. PO Box 596, Frankston 3199. Alternatively, nominations can also be submitted electronically to welcome@mpas.asn.au, stating which position on the committee you would like to nominate for.

2021 AGM Committee Position Nomination - (Leave blank if not applicable)

I
..... would like to nominate for the position of (circle)

- PRESIDENT VICE PRESIDENT
- SECRETARY TREASURER
- GENERAL COMMITTEE

for the Mornington Peninsula Astronomical Society committee of 2021/2022.

Seconded by

.....
..... Dated/...../ 2021

Both the nominee and the seconder need to be financial members of MPAS at the time of the AGM. Nominations must reach the Secretary by the 14th July 2021.

Planning is well under way for this year's Astrophotography workshop in September. After a few drinks we have some new and exciting topics on the card this year. *Dave Rolfe*

You can find the link on the MPAS website or use link below.

APW - <https://www.trybooking.com/events/landing?eid=305620&>



Astrophotography Workshop 2021

Smartphone photography
Aurora & nightscape imaging
Astronomy Apps
Video astronomy
Time-lapse
Meteor showers

Suitable for beginners & experienced photographers



SEPT 12th 2021

(c) MPAS - Photo: Alex Cherney

★ New Members Welcome ★

Yvonne Hsu
Simon, Sue, Oliver & Henry Kerley
Istvan & Ethan Laszlo
Sandy McGuinness
Simon Meyer

Mary, Clive & Alexander Bailey
Carmen, James & Amber Ridley
Bill Sandwith
Linda & Samuel Germana
Richard Lye

MPAS SUBSCRIPTIONS 2021

Each ticking over of the New Year also means that Society fees are due to be paid. The committee has worked hard to ensure that 2021 fees are still the same as the previous many years' prices. So to assist the society in maintaining the facilities and services we provide and share, we appreciate your prompt payment for each and every year ahead. As a reminder, the following structure of the 2021 fees is:

Subscriptions can be paid in a number of ways:

- On-line (preferred, see at right)
- Cash payments to a committee member
- Send a cheque, made out to "Mornington Peninsula Astronomical Society", to MPAS, P O Box 596, Frankston 3199
- Make a direct electronic payment into the society working bank account (state your name clearly).

The account details are BSB 033-272 Account 162207. Remember to add your name and details to the transfer so we can identify the payment in the bank records. If you have any concerns please talk to a committee member.

Click on the link for further information - https://drive.google.com/file/d/0ByvkxzZG19g_NXZ4cWxHbERTdEE/view?usp=sharing

SOCIETY FEES

\$50 – Full Member
\$45 – Pensioner Member
\$65 – Family Membership
\$60 – Family Pensioner Membership
See more options on-line



| | |
|----------------------------|------|
| Full Member | \$50 |
| Pensioner | \$45 |
| Family | \$65 |
| Family Pensioner | \$60 |
| \$30.00 joining fee | |

You can now renew your membership online. See link below. Click on Members then JOIN NOW at the bottom of the page. Then just fill in your detail on Try-booking. <http://www.mpas.asn.au/members.html>

| CALENDAR | | July / 2021 | | | | | Red Days indicate School Holidays |
|---|---|---------------------------------------|---|---|---|--|-----------------------------------|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | |
| 24th evening Io shadow 10:40pm S Io transit 11:19pm S Io shadow 11:02pm F Io transit 11:48pm F | 30th morning Ca shadow 2:00am S Ca shadow 6:40am F | | | 1 Jupiter right of the Moon midnight Io shadow 10:30pm S Io transit 11:33am S | 2 Last Quarter Public night 8pm Io shadow 12:45am F | 3 Public night 8pm | |
| 4 Ga shadow 12:41am S Ga shadow 4:18am F Ga transit 4:55am S | 5 | 6 Moon at 405,341km | 7 Eu shadow 11:12pm S | 8 Mercury right crescent Moon dawn Eu transit 1:04am S Eu shadow 1:57am F | 9 Io shadow 12:25am S Io transit 1:20am S Io shadow 2:40am F Io transit 3:35am F | 10 New Moon | |
| 11 | 12 Mars and Venus above a thin crescent Moon | 13 Mars and Venus 1/2 degree apart | 14 | 15 Eu shadow 1:45am S Eu transit 3:23am S Eu shadow 4:31am F | 16 Io shadow 2:19am S Io transit 3:07am S Io shadow 4:34am F Io transit 5:22am F | 17 First Quarter Io shadow 8:48pm S Io transit 9:33pm S Io shadow 11:02pm F Io transit 11:48pm F | |
| 18 | 19 | 20 | 21 Society Meeting AGM 8pm Moon at 364,520km | 22 Venus near Regulus Eu shadow 4:18am S Eu transit 5:04am S | 23 Io shadow 4:12am S Io transit 4:54am S Io shadow 6:28am F | 24 Full Moon Members night society dinner 6pm | |
| 25 Jupiter below Moon Io shadow 12:57am F Io transit 1:33am F | 26 Jupiter above Moon | 27 | 28 | 29 | 30 Scouts Guides Cubs night 8pm Mars near Regulus | 31 | |

Monthly Events Jupiter shadow transits can now start to be seen. Times in brown

Public night - 8pm to 10pm on the 2nd and 3rd @ the Briars

Society Meeting AGM - 8pm to 10pm on the 21st @ the Briars

Members Night Society dinner - 6pm on the 24th @ the Briars (will need some help setting up)

Scouts/Guides/Cubs night - 8pm to 10pm on the 30th @ the Briars

Jupiter moon code
Io = Io
Eu = Europa
Ga = Ganymede
Ca = Callisto
S = start
F = finish

| CALENDAR | | August / 2021 | | | | | Red Days indicate School Holidays |
|--|--|--|--|--|--|--|-----------------------------------|
| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | |
| 1 Io shadow 12:36am S Io transit 1:03am S Io shadow 2:52am F Io transit 3:20am F | 2 Saturn opposition Moon at 404,410km Io shadow 7:04pm S Io transit 7:29pm S Io shadow 9:20pm F Io transit 9:45pm F | 3 | 4 | 5 School viewing night 7:30pm College at Merricks Lodge | 6 Public night 8pm | 7 | |
| 8 New Moon Ga shadow 8:42pm S Ga transit 9:54pm S Eu shadow 10:43pm S Eu transit 11:18pm S | 9 Ga shadow 12:18am F Ga transit 1:27am F Eu shadow 1:32am F Eu transit 2:04am F | 10 Mars left a thin crescent Moon Scouts viewing night Baden Powell Joeyes | 11 Venus above a thin crescent Moon Scouts viewing night Mornington Cubs | 12 | 13 | 14 NSW | |
| 15 NSW Ca shadow 8:17pm S Ca transit 9:24pm S See 16th morning | 16 NSW First Quarter Io shadow 10:52pm S Io transit 10:57pm S | 17 NSW Moon at 369,124km Io shadow 1:10am F Io transit 1:15am F | 18 NSW Society Meeting 8pm | 19 NSW Mercury and Mars close Jupiter opposition | 20 NSW Public night 8pm Saturn below Moon | 21 NSW Members BBQ & W/Bee 4pm | |
| 22 NSW Full Moon Jupiter left of the Moon | 23 Eu shadow 3:44am S Eu transit 3:52am S Ga shadow 4:27am S Ga transit 4:42am S | 24 Io shadow 12:42am S Io transit 12:47am S Io shadow 2:58am F Io transit 3:04am F | 25 Io shadow 9:25pm F Io transit 9:34pm F | 26 Scorpius Deadline Eu shadow 7:39pm F Eu transit 7:58pm F | 27 | 28 | |
| 29 | 30 Last Quarter Moon at 404,100km | 31 Io transit 2:27am S Io shadow 2:42am S Io transit 4:43am F Io shadow 5:00am F | 1st evening Eu shadow 8:08pm S Ga shadow 8:18pm F Eu transit 9:04pm S Ga transit 10:09pm F Eu shadow 10:57pm F Eu transit 11:52pm F | 8th morning Io shadow 2:30am S Io transit 2:48am S Io shadow 4:46am F Io transit 5:03am F | 9th evening Io shadow 8:57pm S Io transit 9:13pm S Io shadow 11:15pm F Io transit 11:30pm F | 16th morning Ca shadow 12:45am F Ca transit 1:47am F Ga shadow 12:44am S Ga transit 1:13am S Eu shadow 1:18am S Eu transit 1:32am S | |

Monthly Events

Southern Comets website - <http://members.westnet.com.au/mmatti/sc.htm>

Public night - 8pm to 10pm on the 6th @ the Briars

Society Meeting - 8pm to 10pm on the 18th @ the Briars

Public night - 8pm to 10pm on the 20th @ the Briars - **NSW = National Science Week** 14th to 22nd

Working bee & Members Night BBQ - 4pm on the 21st @ the Briars

THE BRIARS SKY

By Greg Walton



Now is the time to start viewing Jupiter's moons and their shadows crossing the face of Jupiter. I selected the best of them:

On 1st August @ 8:12pm you can see Ganymede's and Europe's shadows crossing the face of Jupiter, see below.

BRIARS-3
File Edit View Options Labels LiveSky Favourites Window Help
1/08/2021 AD 8:12:28 PM 1x Near Frankston, Australia

Time viewing window
Europe shadow 8:08pm start
Ganymede shadow 8:18pm finish

1st August 2021
Europa shadow 8:08pm Start
Ganymede shadow 8:18pm Finish
Europa transit 9:04pm Start
Ganymede transit 10:09pm Finish
Europa shadow 10:57pm Finish
Europa transit 11:52pm Finish

This view 8:12pm - 1st August 2021
Produced on software Starry Night

On 8th August @ 11pm you can see Ganymede's and Europe's shadows cross the face of Jupiter, see below.

BRIARS-3
File Edit View Options Labels LiveSky Favourites Window Help
8/08/2021 AD 11:00:28 PM 1x Near Frankston, Australia

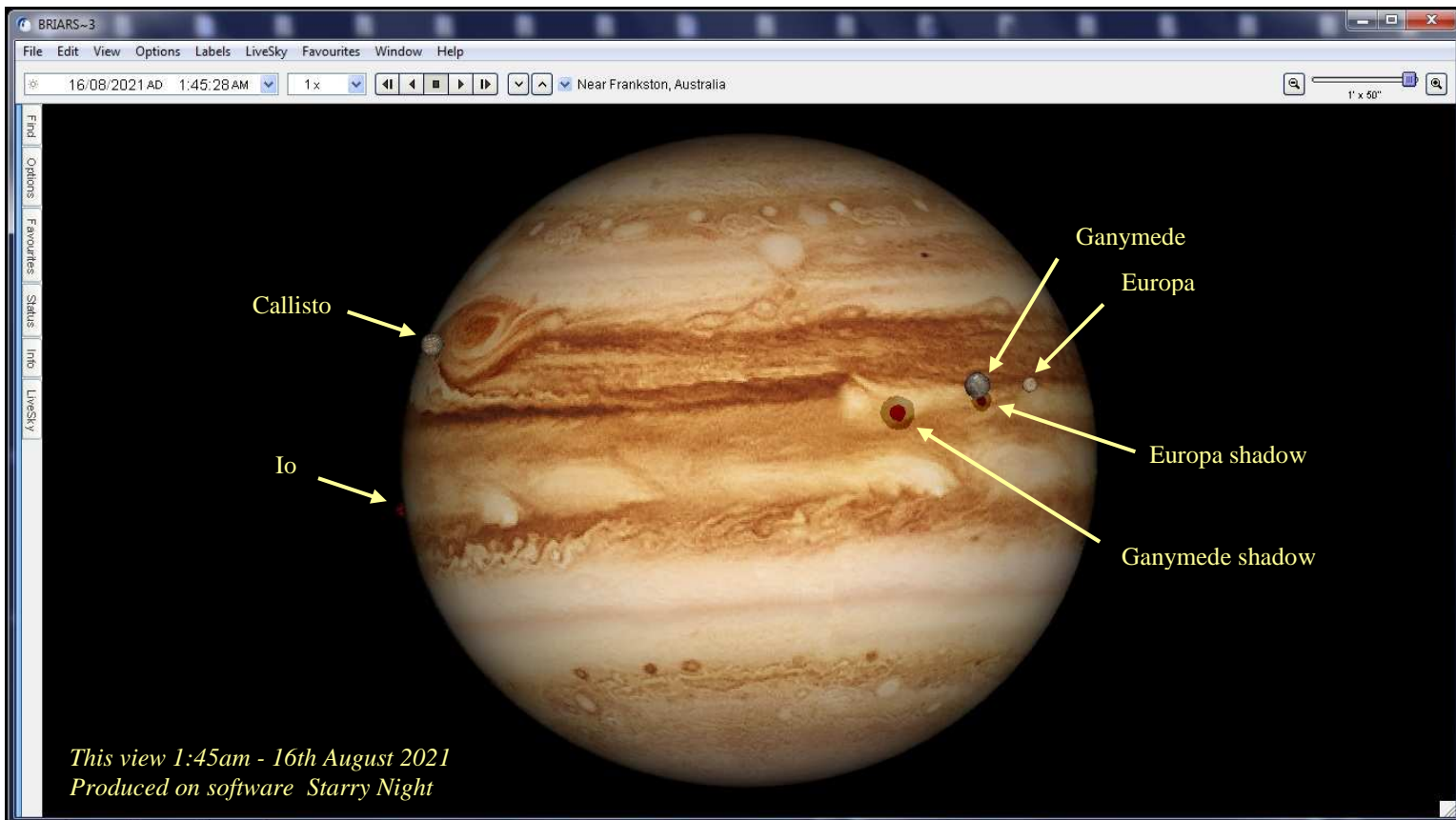
Time viewing window
Europa shadow Start 10:43pm on 8th August
Ganymede shadow Finish 12:17am on 9th August

8th August
Ganymede shadow 8:42pm S
Ganymede transit 9:54pm S
Europa shadow 10:43pm S
Europa transit 11:18pm S

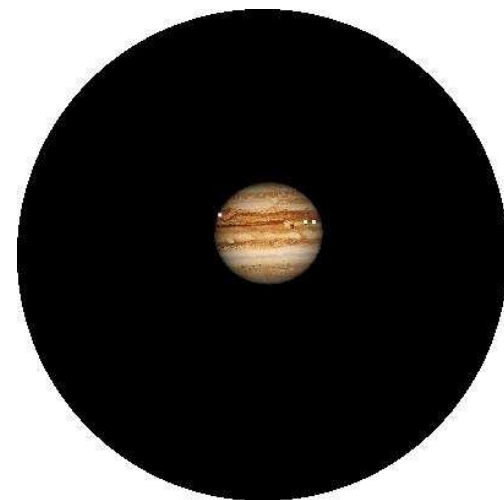
9th August
Ganymede shadow 12:18am F
Ganymede transit 1:27am F
Europa shadow 1:32am F
Europa transit 2:04am F

This view 11:00pm - 8th August 2021
Produced on software Starry Night

On 16th August @ 1:32am you can see Ganymede & Europa shadows crossing the face of Jupiter together. Maybe more interesting is at 1:45am Ganymede, Europa & Callisto will be in front of Jupiter and Io will be behind Jupiter. At first glance you won't see any of Jupiter's Moons, which rarely ever happens. See below.



You will need a telescope with a magnification of 100 to 150 times and Jupiter will need to be more than 30 degrees above the horizon for the best seeing conditions. I often stop my 12-inch Dobsonian telescope down to a 4 inch which helps greatly to see detail on its surface. You can just place a piece of cardboard over the front of the telescope, with the 4-inch hole towards the bottom (as heat rises). Also wait for the telescope to cool as this also helps. Image at right is what you can expect to see through your telescope on the 16th August. The moons are harder to see than the shadows. Europa can be seen as a bright white spot as its surface is made of ice and is highly reflective. Ganymede usually can be seen when it first starts to cross Jupiter, but quickly disappears as it blends into Jupiter's cloud belt. The shadow will be much easier to see looking like an inky black spot. Ganymede's shadow is the largest being twice the size of Europa's shadow and 4 time the size of Io's shadow, also Io's shadow is very dark as it's closest to Jupiter.



Also try to remember where to look for the shadow by using the computer generated images above.

At the beginning of August the shadows cross Jupiter ahead of their moons. But as August ticks on you will notice the shadows getting closer to their moons. Till on the 19th August when Jupiter is at opposition, when any shadows would be almost hidden by their moons. After opposition Jupiter's moons transit before their shadows.

Viewing Jupiter's shadow transit should be on everyone's bucket list. As it's one of the few opportunities where you get to see something happening on another world.

See Bi-monthly calendar on previous pages for more of Jupiter's shadow transits and moon transit times.

First New Images of Ganymede in Over 20 Years

The last time we saw Jupiter's largest moon Ganymede up close was over two decades ago. Now NASA has released new closeups of the moon, taken on June 7, 2021, by the Juno orbiter. The stunning images reveal Ganymede's icy surface in striking detail. They show the moon's craters, bright and dark terrain and long linear features that may be similar to tectonic faults on Earth.

This is the closest that any spacecraft has come to the giant moon since the Galileo spacecraft's close flyby on May 20, 2000. Juno flew past Ganymede and came within 1,038 km of the surface at closest approach.

The images provide our first good glimpse of this mysterious world in over two decades. One image was taken by Juno's JunoCam imager and the other is from the Stellar Reference Unit (SRU) star camera.

Juno was able to capture almost an entire side of Ganymede with JunoCam, with a resolution of 1 km per pixel. Right now most of the images are in black-and-white, but other pending photos will be in colour.

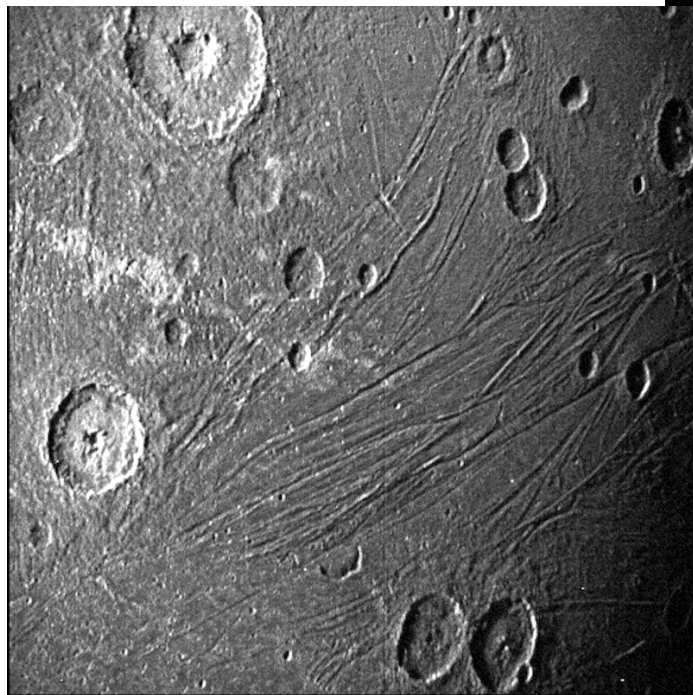
The SRU camera looked at Ganymede's dark side, illuminated only by dim sunlight reflecting off Jupiter. The resolution in that image is 600 to 900 meters per pixel.



A great view of Ganymede's complex surface. Image via NASA/ JPL-Caltech/ SwRI/ MSSS.

Ganymede is not only Jupiter's largest moon, it is the largest natural satellite in the entire solar system. It is even larger than the planet Mercury. It is also the only moon to have its own magnetosphere. A magnetosphere is a bubble-shaped region of charged particle around a body such as a planet or moon.

Like Jupiter's other large moons Callisto and Europa, Ganymede has an icy surface and outer ice shell. That surface features craters, unusual light and dark regions and long cracks similar to tectonic faults on Earth. These are evidence of active geology on the moon in the past, and perhaps still on-going.



A closer view of Ganymede's surface, showing craters and long linear features that may be tectonic in origin. Image via NASA/ JPL-Caltech/ SwRI.

Juno's primary mission has been to study Jupiter itself, examining its clouds, storms, and deep interior. But the spacecraft is also well-equipped to look at some of its moons as well. The probe also used other instruments to study Ganymede, including the Ultraviolet Spectrograph (UVS) and Jovian Infrared Auroral Mapper (JIRAM). The Microwave Radiometer (MWR) instrument can also better determine the composition and temperature of Ganymede's water-ice crust.

The spacecraft has been orbiting Jupiter since 2016, studying the giant planet's deep atmosphere, clouds, storms, auroras and hidden interior. It also previously captured some beautiful images of active volcanoes on the moon Io. Juno will send back more images from the flyby over the coming days and raw images are available on the JunoCam website.

Our Moon. *By Greg Walton*

As astronomers we often curse our Moon as it washes away the night sky making it impossible to see the faint stars, nebulas and galaxies. But it's the easiest object to find and view surface feature on another world.

How did the Moon get its name? Its believed to have come from the old English word *mona* meaning the measure of a month. In Latin *metri* to measure and *menis* means month.

Where did the moon come from? It's thought that a Mars-size planet crashed into the Earth not long after it had formed along with the rest of the planets in our solar system. The collision tore a large part of the Earth's surface out and flung it into space, there it circled the Earth and eventually come together to form our Moon. Another evidence is there is no magnetic poles on the moon, as it was made up from the outer layer of the Earth which had little iron.

How big is the Moon? The Moon is 3,474 kilometres in diameter, but only one percent of the Earth's mass. About the same size an Australia.

How old is the Moon? 4.5 billion years old, almost the same age as the Earth.

What is it made of? Apollo astronauts brought almost 500kg of samples of the Moon, mostly Silicon (glass).

Where is the balance point between the Earth and the Moon? Centre of gravity between the Earth and Moon is 4700 km from the centre of the Earth. That's 1670 km beneath the surface. This makes the Earth wobble from side to side each month as it travels around the Sun. The wobble can be measured by the most accurate telescopes which show the stars are slightly out of position.

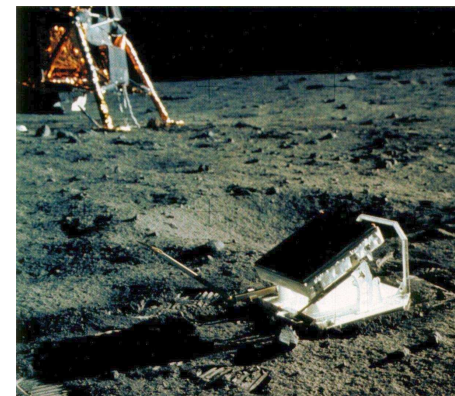
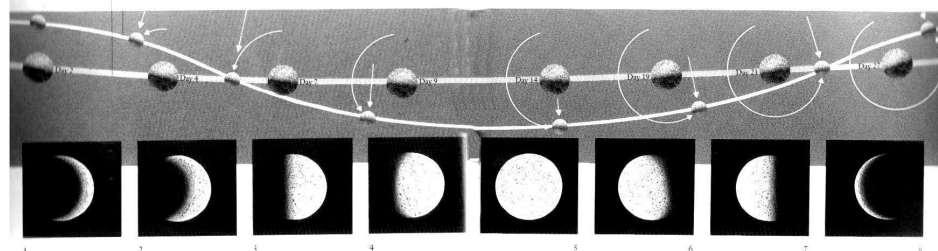
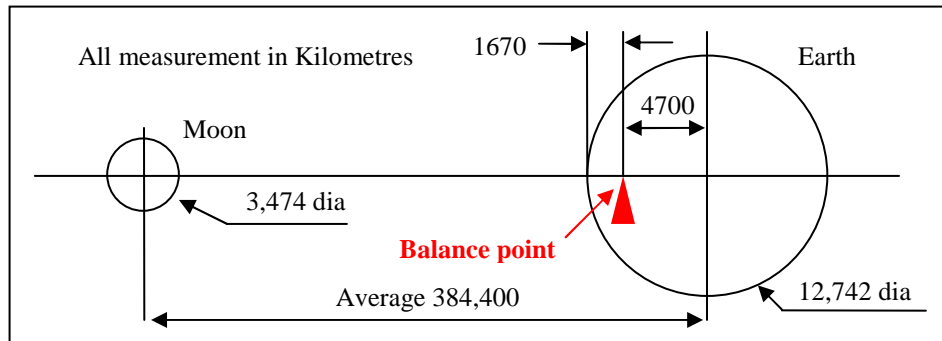
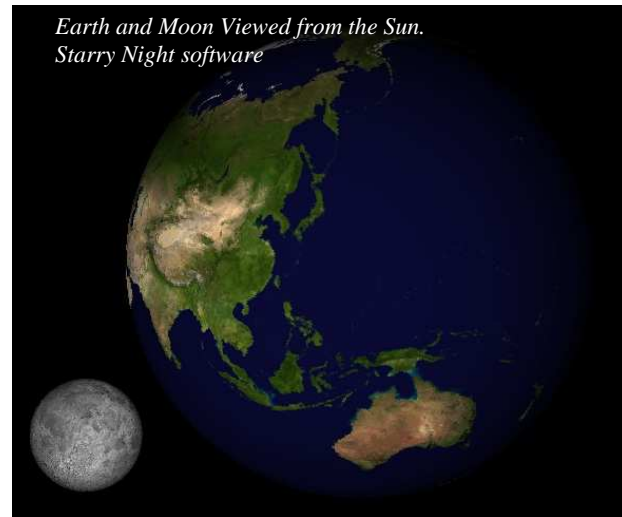
What is the true path of the Moon? From Earth we see the Moon go around the Earth in a circle. But viewing the Earth and Moon from space far above the Earth's north pole, you would see the Moon travels a wave shaped path around the Sun. This makes the position of the Moon one of the most mathematically complicated objects to predict in the solar system.

Why does the Moon keep the same face towards the Earth? Over billions of years the Earth's gravity has lifted the surface of the Moon towards the Earth and this tidal bulge moved around the surface of the Moon every month. To move this tidal bulge around the Moon would have consumed a lot of energy from the spin of the Moon. Eventually this bulge would have ground to a stop, so today the shape of the moon is slightly egg shaped with the pointy end always facing the earth.

Is the Moon moving away from the Earth? Yes! The Apollo astronauts left prisms on the Moon in 6 locations. By firing a laser at the prisms on the Moon from Earth, we can measure the length of time it takes for the light to return to the Earth, from this we have been able to work out that the Moon is slow moving away from the Earth at the rate of about 40mm per year. As the Moon moves to a higher orbit the extra energy comes from the Earth's motion, which must slow down by the tiniest amount due to tidal effects of the Moon.
See NASA image at right

How high does the Moon's gravity lift the seas on Earth? As the Moon passes overhead each day the sea rises only about 1 metre, but in some places on Earth the sea rises as much as 15 metres because of the sea squeezing between land masses. The Moon also lifts the land, raising it 300mm along the equator and at Melbourne's latitude the land raises about 140mm every day. The Moon also lifts the Earth's atmosphere which increases the air pressure slightly, but we don't feel this because the Sun's effects on the atmosphere are much greater.

What's the temperature on the surface of the Moon? Sun's rays are much stronger and more dangerous on the Moon. X-rays and gamma rays would cook you if you didn't have a space suit. The temperature on the Moon varies from 127 Celsius in sunlight to minus 173 Celsius in the night. The Apollo space suits worn on the Moon were made of 6 layers, one of which was made up of small water tubes that pumped water around, moving it from the sunny side at plus 127 Celsius to the shady side at minus 173 Celsius to equalize the temperature.

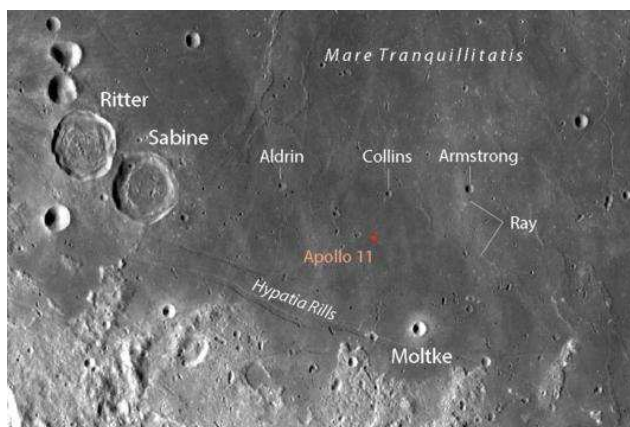


Does the Moon have Moon quakes? No! Apollo tested this by leaving a seismometer on the Moon. After the Apollo astronauts had climbed back into the command module, they jettisoned the lunar module towards the Moon. NASA heard the lunar module crash into the lunar surface and noted it sounded like a bell ringing. This also proved that the Moon was solid with no liquid core. After the ringing stopped NASA only heard gas leaking out of the metal frame of the landing module for 2 weeks then nothing.

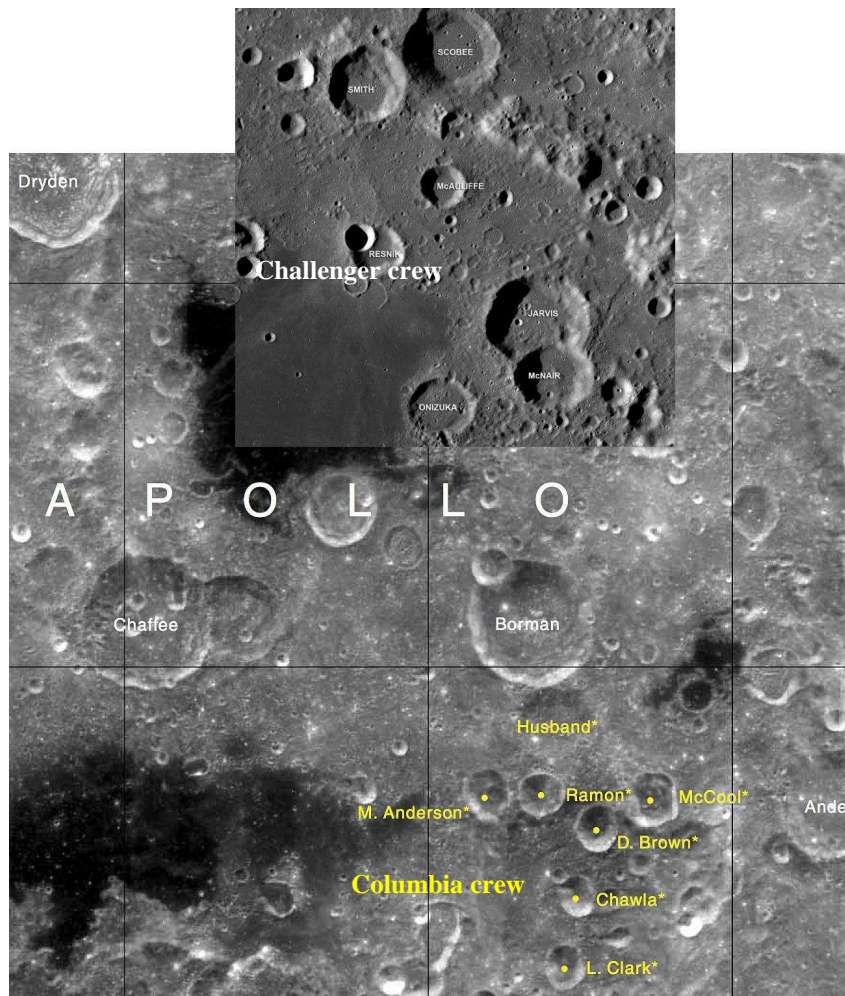
How much would you weigh on the Moon? Standing on the moon you would only weigh one 6th of your weight on Earth.

Who named the surface features on the Moon? Most of the craters are named after deceased scientists and explorers and mares were given sea-like names, which was started by Giovanni Battista Riccioli in 1651. The 2 brightest craters named after Copernicus and Tycho were kept far apart as they didn't get on. Today the International Astronomical Union has named all craters since 1919. Craters named after deceased American astronauts and astronomers are on the side facing the Earth. Space shuttle Columbia and Challenger deceased astronauts craters are all on the Apollo basin.

Apollo 11 astronauts are on the Mare of Tranquillity which strangely including Buzz Aldrin who is still alive.



Tsiolkovskiy crater is the largest on the far side of the Moon named after a Russian rocket scientist. Yuri Gagarin and other Russian astronauts craters are also on the far side of the Moon away from our prying eyes. For the first time in 1959 Soviet Luna 3 space probe photographed the far side of the Moon and then the Soviet Academy of Sciences published a map of the far side in 1960.



List of people with craters named after them: https://en.m.wikipedia.org/wiki/List_of_people_with_craters_of_the_Moon_named_after_them

It took 3 days for the Apollo spacecraft to travel the Average 384,400 kilometres distance to the Moon. How long would it take to get to the Moon using other means? If you walk it would take 9 year, if you drive your car at 100 kph it would take 165 days, if you took a modern jet plane it would take 20 days.

Can we see the Apollo spacecraft from Earth? Not with any telescope on Earth! The best camera on the best telescope would show the Lunar Lander as only 6 pixels on a large camera sensor.

How bright is the Moon? The surface of the Moon only reflects 7% of the sunlight at first quarter and about 5% at second quarter due to the larger mares. The Sun is 400,000 times brighter than the Moon.

Is it safe to look at the Moon though a telescope? Yes! Best way to view the Moon is to use a 100mm telescope or stop down a large telescope by placing a cover over the front with a 100mm hole cut off to one side and kept to the bottom edge, as this is less affected by hot air rising from the telescope. Polarizing, grey or dark coloured filter can help cut back the brightness of the full Moon.

What is the highest point on the Moon? Mons Ampere at 6,500 metres tall was the highest mountain located on the far side. But more recently NASA's Lunar Reconnaissance Orbiter mission found the highest point on the Moon is 1938 metres higher than Mt Everest at 10,786 metres and located near the south pole on the Aitken basin. It was formed by volcanic activity 4 billions years ago and its sides have an incline of only 3 degrees.

What is the largest feature on the Moon? Oceanus Procellarum at 2600 Kilometres wide, best seen when the Moon is 12 days old.

Would a compass work on the Moon? Yes, but will not point north or south as the Moon's iron core is very small and is not liquid like the Earth's, so can't produce a strong magnetic field. There are many places on the surface of the Moon that have a magnetic field, some hundreds of kilometres across. These are caused by large iron meteorite impacts.

Is there any water on the Moon? Famous telescope designer and builder Russel Porter crater is near the south pole and could have some frozen water in the bottom as sunlight never reaches there. In December 2020 NASA found water on the Moon for the first time.

See right: Moon, highlighting the Moon's Clavius Crater with an illustration depicting water trapped in the lunar soil there, along with an image of NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) that found sunlit lunar water. *Credits: NASA/Daniel Rutter*
 NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) has confirmed, for the first time, water on the sunlit surface of the Moon. This discovery indicates that water may be distributed across the lunar surface, and not limited to cold, shadowed places.

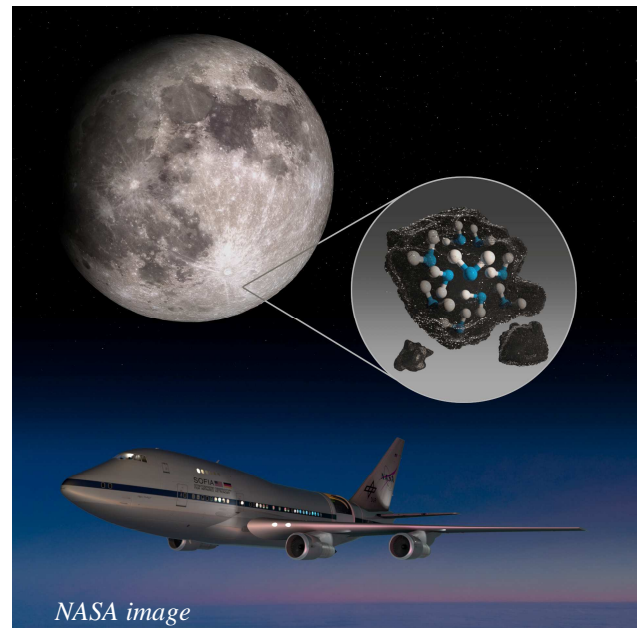
SOFIA has detected water molecules (H₂O) in Clavius Crater, one of the largest craters visible from Earth, located in the Moon's southern hemisphere. Previous observations of the Moon's surface detected some form of hydrogen, but were unable to distinguish between water and its close chemical relative, hydroxyl (OH). Data from this location reveal water in concentrations of 100 to 412 parts per million – roughly equivalent to a 12-ounce bottle of water – trapped in a cubic meter of soil spread across the lunar surface. The results are published in the latest issue of Nature Astronomy. Sahara desert has 100 times the amount of water.

(Article is from NASA website)

B-roll footage: <https://go.nasa.gov/2TnDWSd>

Learn more about SOFIA at: <https://www.nasa.gov/sofia>

SOFIA Discovers Water on Sunlit Surface of Moon: <https://www.nasa.gov/press-release/nasa-s-sofia-discovers-water-on-sunlit-surface-of-moon>



NASA image

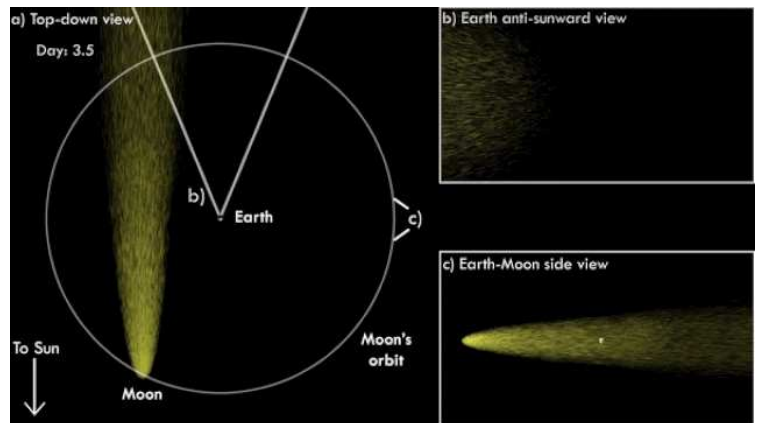
Why is there no atmosphere on the Moon? Gravity is only 1/6th of Earth's, any atmosphere has been lost to space by the solar wind.

Recently it's been found that the Moon has a comet tail made of sodium. Meteors rain down on the lunar surface as they do on Earth; as there is no atmosphere on the Moon, when a meteor hits the surface it can send material flying high and sodium being so light creates a very thin fog around the Moon. This fog is picked up by the solar wind and carried away, creating a comet-like tail.

Moon has a comet tail - <https://youtu.be/Clw5s6zRd3s>

Source:

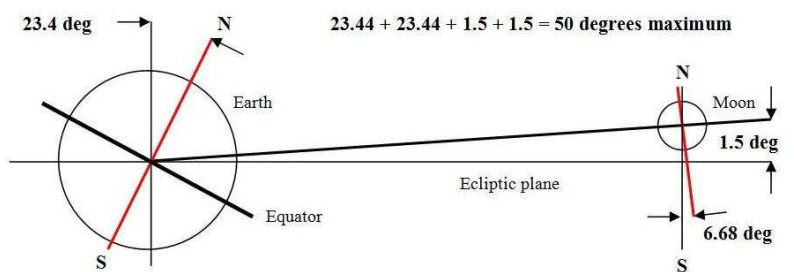
<https://www.nytimes.com/2021/03/04/science/moon-tail-beam.html>



Why does the Moon rise in a different place each month?

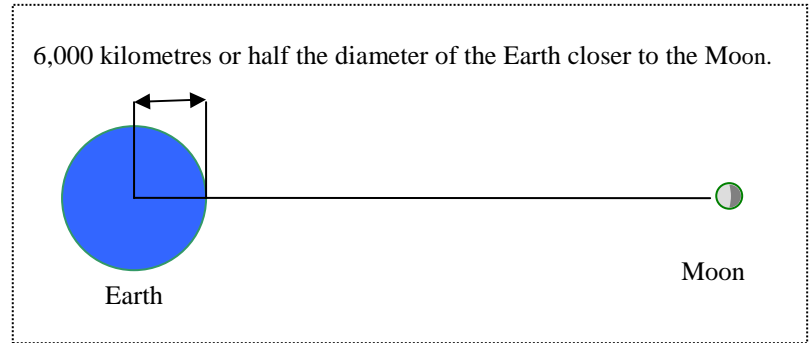
The orbit of the Moon is very complicated to predict. Sometimes you will see the Moon rise in the northeast and 6 months later it rises in the southeast. This is due to the 23.44 degree tilt of the Earth and the 1.5 degrees tilt of the Moon's orbit. Adding them all together and you get a positional variations up to 50 degrees.

You can see in the 2 images below where the Moon rises in the east 6 months apart, generated on Starry Night software.



Why does the moon look larger on the horizon?

The Moon does look larger on the horizon, but it's just an illusion. The same illusion can be seen when looking at 2 ships the same size and distance, the ship near the coast looks larger than the ship out at sea. It's because you have something to compare the size of the ship or Moon against. In fact the Moon is larger when it's directly overhead as you are 6,000 kilometres or half the diameter of the Earth closer to the Moon. This has been tested by amateur scientists photographing the Moon when on the horizon and directly overhead, then comparing the photos by counting the pixels.



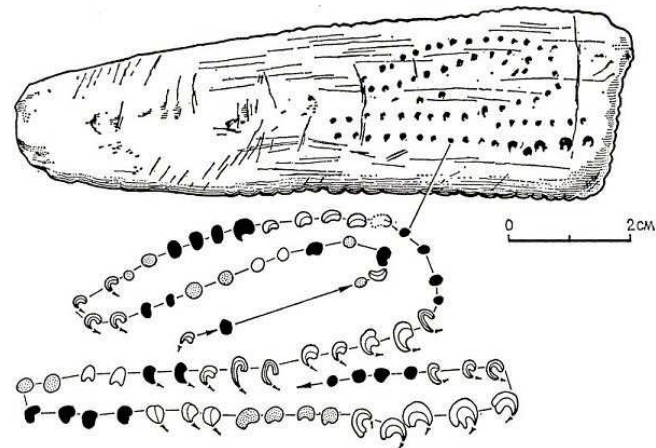
Why can we see the part of the Moon that is not illuminated by the Sun?

Light from the Sun reflects off the Earth and illuminates the Moon, its called **Earthshine**.

Does the Moon's surface ever change? The mountains and craters were formed not long after the Moon was formed and with no wind or water to wear down the mountains, the view from Earth never changes. During meteor showers amateur scientists have videoed the Moon and captured the moment meteors have struck the surface of the moon, which threw up a cloud of dust or even seen as a flash of light. NASA made a crater for Sally Ride when the Grail twin gravity space probes crashed into the Moon near Goldschmidt crater. Not to mention all the footprints and wheel tracks left by Apollo astronauts.



Why does the Moon appear to change its shape? As the Moon orbits the Earth we see more or less of the illuminated surface each day. If you draw an imaginary line through the brightest part of the Moon, the line will point to the Sun. The crescents always point away from the Sun. At first quarter the Sun and the Moon are at 90 degrees to the Earth.

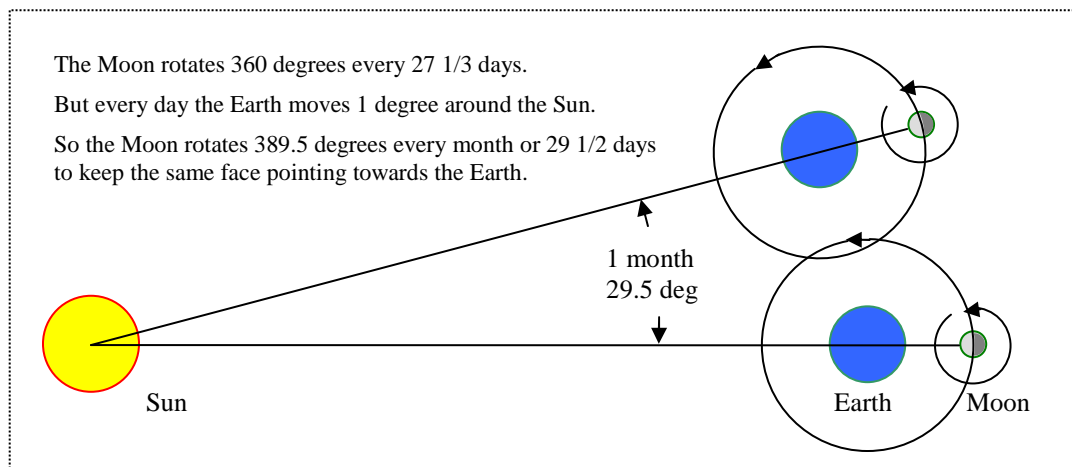


Above and right - Believed to be the oldest record of the lunar cycle made by human. Carved in animal bone it recorded the lunar cycle over a 2 month period and made in 32,000 B.C., Late Upper Paleolithic Cultures of Europe. It's thought it could have been used as a traveller's guide to help workout how many days have past since they left home.

Source: <http://www.environmentalgraffiti.com/featured/oldest-lunar-calendar/15204>

How much of the Moon's surface can we see from Earth? We can actually see 59 percent of the Moon surface due to the fact that the Moon wobbles. Each month the Moon speeds up as it moves closer to the Earth and then slows as it moves further from the Earth. Also depending on where you are standing on the Earth it will give you a different view of the Moon. The Moon's orbit is tilted at 5 degrees to the Earth axis, therefore we can see more of the Moon's polar regions.

The Moon rotates once every 27 1/3 days, so why does it appear to takes 29 1/2 days to orbit the Earth? This is because in one month the Earth has moved 29.5 degrees around the Sun. Meaning the Moon needs to turn an extra 29.5 degrees each month to keep the same face pointing towards the Earth. So each month the Moon turns 389.5 degrees.



Time for a Lunar Synodic Clock. *By Peter Skilton*

Synodic is derived from the Greek word *synodos*, meaning a "coming together"

For those who are handy enough to try a little project at home, you can make your own quartz clock with a difference. Lunar phase mechanisms are available again, powered by a single 1.5volt AA battery, after being really, really difficult to source for many years now.

The one below comes from the UK, so will take a couple of weeks to arrive. And you need to buy the hand separately from the mechanism as it doesn't automatically come with one. The cost is about \$20 for the mechanism unit and \$6 for the hand, then postage extra, though you'd be able to combine that postage cost in the one package to save some money.

Unlike your ordinary clock at home this mechanism has only one hand, and that hand turns around once every 29.53 days. This is the so-called synodic period from New Moon to New Moon in the sky. Strictly speaking it's 29.530587981 on average, but 29.53 is very close for a mechanical simulation.

So instead of numbers 1 to 12, your lunar clock face ought to have the phases of the Moon as they progress during the month. In other words,

- New Moon (12 o'clock position),
- Waxing Crescents (1 and 2 o'clock positions), (for us, the lit part of the Moon is on the left)
- First Quarter (3 o'clock),
- Waxing Gibbouses (4 and 5 o'clock),
- Full Moon (6 o'clock),
- Waning Gibbouses (7 and 8 o'clock),
- Third Quarter (9 o'clock),
- Waning Crescents (10 and 11 o'clock) (for us, the lit part is on the right), and back to
- New Moon (12 o'clock).



It is possible to buy an already made small clock online, but alas it always shows all the Moon phases upside down, being that it's made in the northern hemisphere. But if you make it itself, you can show the Moon as it actually appears in the sky for us. If you really wanted to get clever, you could photograph the Moon over a period of a month on your smartphone and use those images to make the "numbers" on the clock.

Mechanism - ebay item #184732617733 Hand - ebay item#174702865218

mechanism: <https://www.ebay.com.au/sch/i.html?from=R40&trksid=p2380057.m570.11313&nkw=174702865218&sacat=0>

hand: https://www.ebay.com.au/sch/i.html?from=R40&trksid=p2334524.m570.11313&nkw=184732617733&sacat=0&LH_TitleDesc=0&osacat=0&odkw=174702865218

The one shown above has the gold threaded spindle 6mm long, meaning the clock face board on which to mount it can be up to about 3mm thick. Longer spindles are available from the same place also, for use on much thicker board.

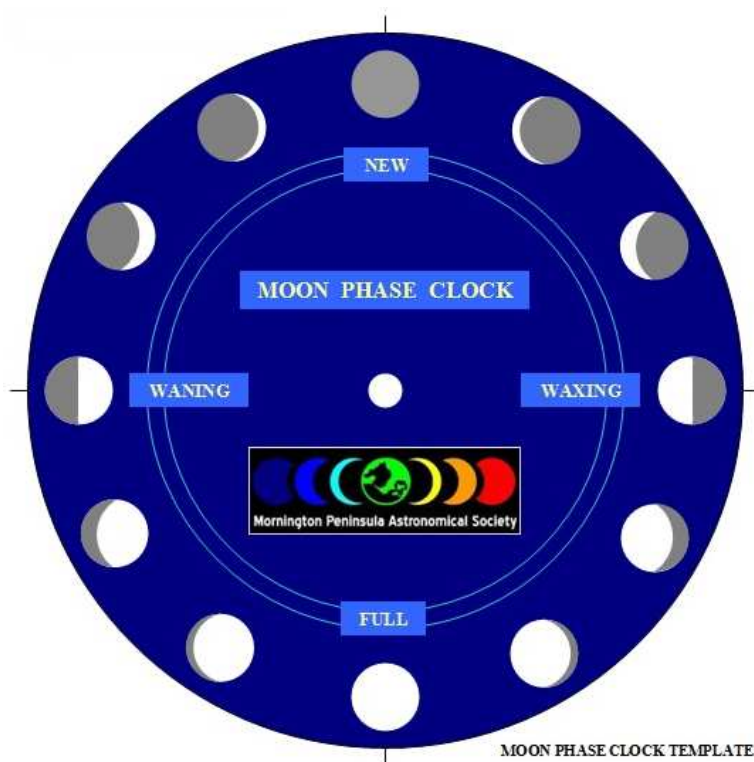
To see what the Moon looks like during the month, simply go to www.moonpage.com, but be sure to turn the image upside down for how we see it in the sky. Template Link: Moon folder https://drive.google.com/folderview?id=0ByvkkxzZGI9g_MEFPeEc2NjZFWjQ

For those taking photographs instead, because the Moon is 3 dimensional and approximately spherical, it won't simply illuminate proportionally to its position in its orbit around Earth. So the position of the numeral 1 (and 11) won't be 16.67% lit (1/6 of 100%), and of numeral 2 (and 10) won't be 33.33% lit, and of numeral 4 (and 8) won't be 66.67% lit (4/6 of 100%), and of numeral 5 (and 7) won't be 83.33% lit (5/6 of 100%). But that is an OK first approximation.

Something more accurate is given in this table below:

Ultimately this mechanism won't predict the Moon with ultra high accuracy over long periods of time due to the complicated motions involved. But it is a pretty good attempt, and your new lunar synodic clock will undoubtedly make an impression on your visitors, if you care to try building it.

| Clock Numeral | Age of the Moon | % lit |
|---------------|-----------------|-------|
| 12 | 0 days | 0 |
| 1 | 2.46 days | ~5 |
| 2 | 4.92 days | ~24 |
| 3 | 7.38 days | 50 |
| 4 | 9.84 days | ~76 |
| 5 | 12.30 days | ~95 |
| 6 | 14.76 days | 100 |
| 7 | 17.23 days | ~95 |
| 8 | 19.69 days | ~76 |
| 9 | 22.15 days | 50 |
| 10 | 24.61 days | ~24 |
| 11 | 27.07 days | ~5 |
| 12 | 29.53 (0) days | 0 |



MOON PHASE CLOCK TEMPLATE.

MEMBERS GALLERY



NGC2070 | Tarantula Nebula | LRGBHaOIII - The Tarantula Nebula, also known as 30 Doradus and Caldwell 103, is a massive emission nebula with one of the most active star forming regions known within our Local Group of galaxies. This image only captures part of the entire object, with the Tarantula Nebula spanning some 600 light years in diameter and containing more than 800,000 stars and proto stars. It lies outside of our Milky Way galaxy in the satellite galaxy called the Large Magellanic Cloud. At a 180 thousand light years away, its size is so massive that if it were as close as is the Great Orion Nebula is from Earth it would brightly light up half our night sky. This has been a complicated target to process and I admittedly struggled in processing it. *Steve Mohr*

Information about the image:

Center (RA, Dec): (84.552, -69.192)

Center (RA, hms): 05h 38m 12.440s

Center (Dec, dms): -69° 11' 32.261"

Size: 44.4 x 32.2 arcmin

Radius: 0.457 deg

Pixel scale: 0.732 arcsec/pixel

Orientation: Up is 330 degrees E of N

Instrument: Planewave CDK 12.5 | Focal Ratio: F8

Camera: STXL-11000 + AOX | Mount: AP900GTO

Camera Sensitivity: Lum, Ha, OIII: BIN 1x1, RGB: BIN 2x2

Exposure Details: Total: 62 hours | Lum: 31 x 900 sec [7.75hr], Ha: 102 x 1200 sec [34.0hr], OIII: 43 x 1200 sec [14.33hr], RGB 16 x 450sec each [6.0hrs]

Viewing Location: Central Victoria, Australia.

Observatory: ScopeDome 3m

Date: May 2020 - April 2021

Software Enhancements: CCDStack2, CCDBand-Aid, PS, Pixinsight

Below - It's been a while since we observed the southern aurora with the naked eye. I was able to see it from my veranda too. Aurora Australis 12th May 2021. Taken along Westernport Bay. Canon 6D iso3200 Sub 20sec Samyang 14mm@2:8
Processed with PS CS. By *Paul Albers*



"Celestial Celebrations"

Astrophotography By Paul Albers

Right - The planet Jupiter back from Friday morning under very good seeing at 5.45am. Imaged with C11 and a ZWO ASI071MM. I'm still a bit rusty with the old processing skills so it took a while to get this one out! *Dominic Lucarelli*



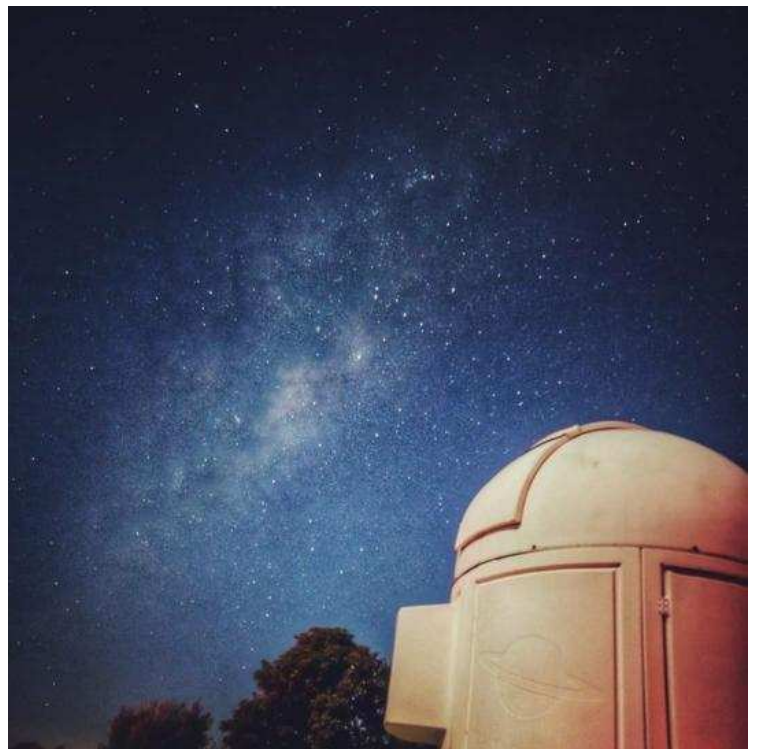
Above left - Jupiter from last Saturday morning, 6am. You can see the Great Red Spot (GRS) and the shadow of the moon Io. Also the moon Ganymede is transiting in front of the planet. So there is quite a bit going on! Also, in case you don't know, the GRS is larger than Earth's diameter! Imaged with Celestron C11 and a ZWO ASI071MM. *Dominic Lucarelli*

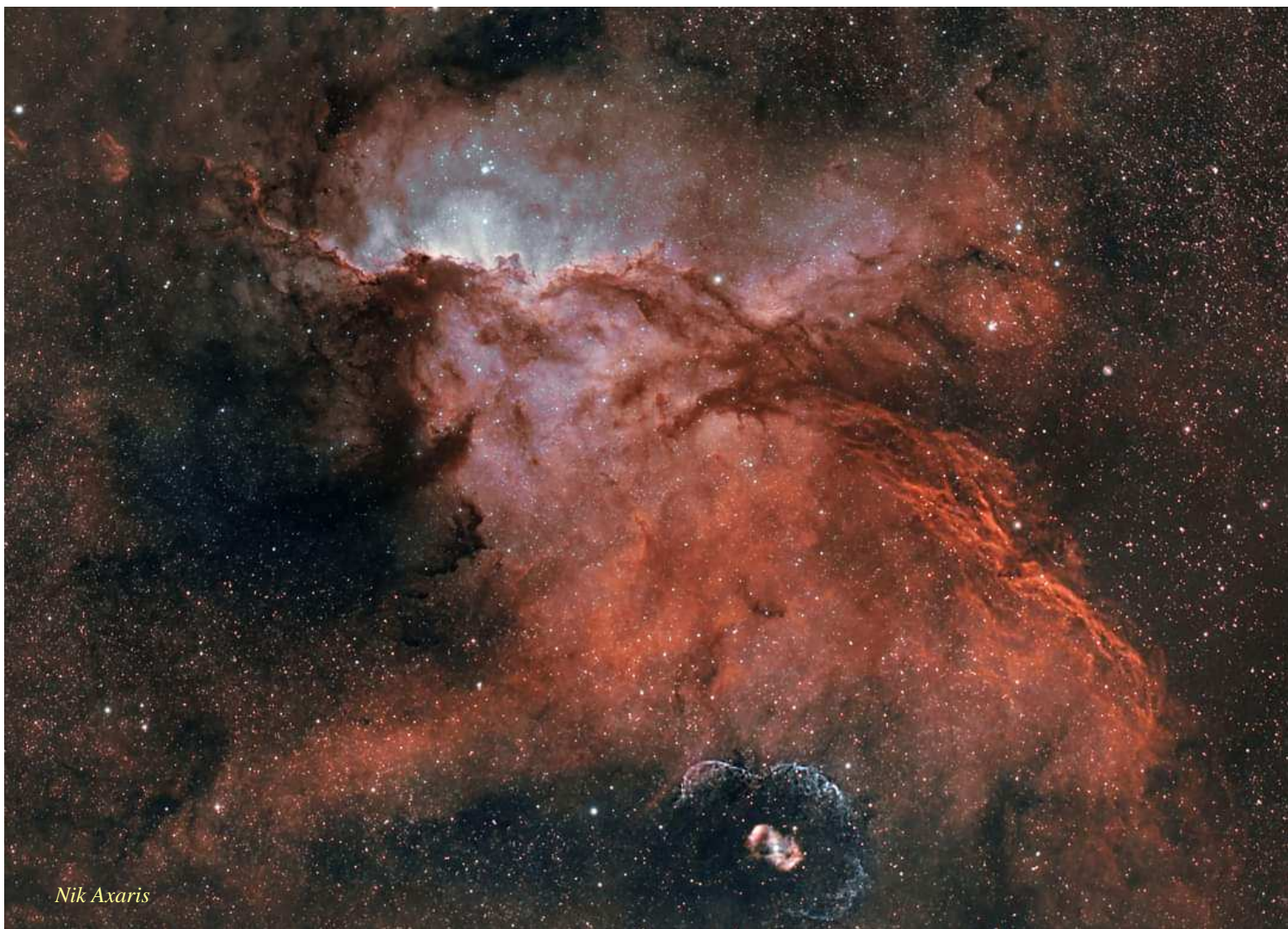
See bimonthly calendar for Jupiter's moons and shadow transit times.



Above - Celestial paw - NGC6334 / Gum64 - Located in Scorpius. *By Russell Smith.*
 ZWO6200mm, EQ8, TS Photoline 130mm @f/5.53 SHO about 40 mins data. Equipment used: Skywatcher 250PDS Newtonian on an AZ-EQ6 mount, Canon EOS 700D at prime focus, two images at ISO 1600, 0.3s and 0.8s, manually stacked and post processed in GIMP.

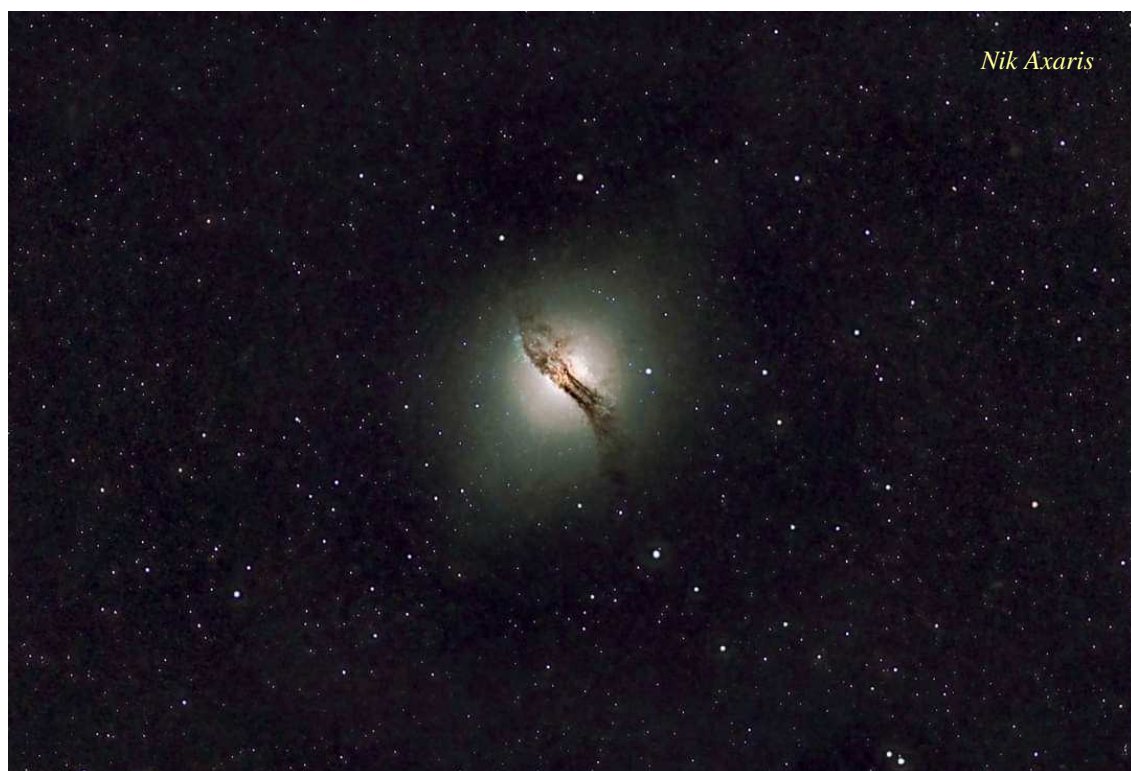
Below - It was freezing out there last night. Looking towards Sagittarius, taken with my Samsung Note20 Ultra smart-phone from home. Image at right was taken on the members BBQ, *By Nerida Langcake.*





Nik Axaris

Above - Ok here's a much better version of the Dragons and the Egg. I experimented with Astropixel processor and combined 2 stacked and calibrated images in HA and O3. One image from my Skywatcher ED72 and one from my TS130 so I then let Astropixel processor do its things and it combined them both into one giant image I then had to downsample. The result is a much better version. I combined them in Photoshop and processed and voila. About 3 hours and a half of 10-minute total integration per image. All with the 294mc pro and the optolong L-eXtreme on the Skywatcher NEQ6 mount. *By Nik Axaris*



Nik Axaris

Right - Centaurus A NGC5128 last night under some very trying conditions, it was a clear day and was supposedly a clear night but smoke haze from burn offs and a gibbous moon made it difficult to get a decent image. This is nearly 4 hours of 5-minute subs with the L pro filter.
By Nik Axaris

Collection of images - By Chris Kostokanellis



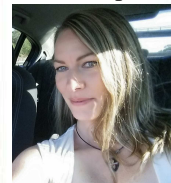
SOCIETY INFORMATION



Peter Skilton



Mark Stephens



Nerida Langcake



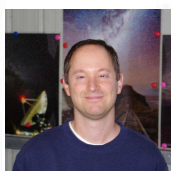
Jamie Pole



Anders Hamilton



Trevor Hand



Simon Hamm



Peter Lowe



Dave Rolfe



Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

President: Peter Skilton
Vice President: Mark Stephens
Committee: Anders Hamilton, Trevor Hand, Guido Tack, Simon Hamm, Dave Rolfe, Peter Lowe & Ian Sullivan

Secretary: Nerida Langcake
Treasurer: Jamie Pole
Web master: Guido Tack
Scorpius editor: Greg Walton
Librarian: Fred Crump

SOCIETY MEETINGS

Meeting Venue: MPAS Astronomy Centre
 The Briars, Nepean Hwy, Mt Martha
 (Melways ref. 151/E1)

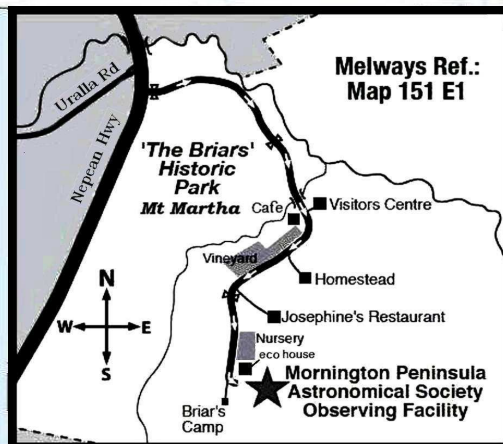
Society meetings: Don Leggett Astronomy Centre
 8pm on the third Wednesday of the month
 (except December)
 (See map at right & Below)



For addition details:
 Internet: www.mpas.asn.au
 email: welcome@mpas.asn.au

Phone: 0419 253 252

Mail: PO Box 596, Frankston 3199, Victoria, Australia



Guido Tack



Fred Crump

The Society also has books & videos for loan from its library, made available on most public & members nights at The Briars site. Contact Fred Crump or Lara Conway

LIBRARY

E-SCORPIUS NEWSGROUP

M.P.A.S. main line of communication is the online newsgroup called E-Scorpius. Here you will be kept up to date with the latest M.P.A.S. news & events information as well as being able to join in discussions & ask questions with other members. To join, email welcome@mpas.asn.au say that you want to join E-Scorpius & you will be added to the E-Scorpius list.

facebook MPAS members - <https://www.facebook.com/groups/MPAS1/>
 MPAS - <https://www.facebook.com/mpas0/>

VIEWING NIGHTS - MEMBERS ONLY

Viewing Night - Members only any night, at The Briars, Nepean Hwy, Mt Martha, starting at dusk. Members visiting The Briars for the first time must contact Greg Walton on 0415172503 if they need help getting to The Briars site. Upon arrival at the site, remember to sign the attendance book in the observatory building.

For additional details:
 Internet: www.mpas.asn.au
 email: welcome@mpas.asn.au

Phone: 0419 253 252

Mail: PO Box 596, Frankston 3199, Victoria, Australia



Members please write a story about your astronomy experiences and add some pictures. Send them to the editor: Greg Walton gwpas@gmail.com

MPAS newsletters online - https://drive.google.com/folderview?id=0BvykxzZGI9g_SUNmZVhkZTFGWTA

SCORPIUS The journal of the Mornington Peninsula Astronomical Society

Newsletter Disclaimer - The Scorpius Newsletter is published online, once every two months for its membership, by the Mornington Peninsula Astronomical Society, for Educational Purposes Only. As a newsletter, this publication presents news spanning a spectrum of activities, reports, and publications in order to keep society members abreast of a variety of events and views pertaining to astronomy. While prudent, reasonable effort has been utilized to verify factual statements made by authors, inclusion in this newsletter does not constitute or imply official MPAS endorsement. All materials (except previously published material, where credited) are subject to copyright protection © 2021, Mornington Peninsula Astronomical Society