Cover image - The NilAdh Bubble, *by Nik Axaris*

SCORPIUS

THE JOURNAL OF THE
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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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.

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

SOCIETY NEWS

School Viewing Night March 4th - March 4th saw the Society visit 143 year 7 students at Parkdale Secondary College as part of their annual STEM programme, which is always a highlight on our MPAS outreach calendar.

After some IT wireless connection issues in the theatre were ironed out, the talk was given by Katherine McCoy and Peter Skilton, who proceeded to answer many questions indoors, waiting for the clouds to clear. Everyone was on their best behaviour, of course, because the Principal was also sitting in the audience.


Phil Peters

The low level clouds cleared to about 50% extent, so everyone saw the rising gibbous Moon, Jupiter, Orion Nebula, Jewel Box and other objects between clouds.

Other members helping with the telescopes included Chris Kostokanellis, Fred Crump, Jamie & Josh Pole, Sylvie Grandit, Greg Walton & Pia Pederson, Adrian Boschetti, Phil Peters, and Ben Claringbold. *Regards, Peter Skilton*

Public Viewing Night March 6th - With clear skies all evening, the March public night saw 79 visitors, plus lots of members, in attendance. The talk indoors was given by Manfred Berger, and the telescopes were kept very busy for the rest of the evening, with some keen visitors staying until quite late.

John Cleverdon

Other members present and helping included Greg Walton, Ally Midwood, Phil Peters, Simon Hamm, Peter Skilton, Chris Kostokanellis, Mark Stephens, Michael & Elliot Gonsalvez, John Cleverdon, Leigh Hornsby, Stuart Lees, Sarah & David Galloway, Adrian Boschetti, Aaron & Ethan Yuen, Ben Claringbold, Fred Crump, Jamie Pole, Karo Hohlweg, Manfred Berger, Sofia Itingof & Taras Ryman, Ria Gulshan & Oscar Moye, and Dave Rolfe. *Regards, Peter Skilton*

School Viewing Night March 11th - Saw 50 year 6 pupils, plus 6 teachers, from Strathaird Primary School on camp at the Briars. We've had this school visit several times over the years, and they never fail to impress with their degree of questioning from young minds. The sky started the evening very cloudy, with the promise of a large hole opening around 8pm, followed by more cloud in the hour thereafter.

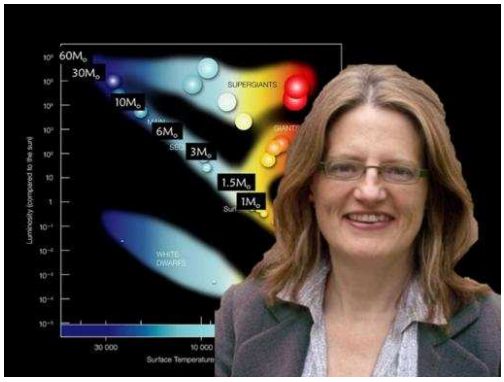
The talk indoor was given by Katherine McCoy and Peter Skilton and only managed to get up to the Moon in the sequence of slides due to the extent of interrogation from the audience. There was a huge interest in Black Holes and White Holes and meteorites, and heaps of discussion around this. One particularly fascinating question came from a shy girl who was sitting in the front row and patiently waited her turn, and who wanted to know if you could talk to someone next to you if you were inside the Event Horizon, assuming you survived spaghettification, had an air and temperature environment conducive to human existence, were shielded from the infalling material, and existed for long enough to try to communicate. The gist was that light might not be able to fight against the gravity or move through the dense material falling to the singularity, but could sound waves move through the medium like happens with earthquakes?

I thanked her for a very thought-provoking question that I've never been asked before, and that I didn't know the answer for sure, but I told her she might be right, thinking of the science of helioseismology inside our own Sun, which is just that. Perhaps a discussion question for the Cosmology Discussion Group to mull over one Saturday?

The clouds cleared pretty much as predicted, and the group then moved outdoors to see Jupiter and its moon, plus a few deep sky objects before the clouds returned. There was a predicted pass of the Chinese Space Station at 9:12pm, but alas the clouds had closed in by then so observation wasn't possible, and the kids returned to camp. But not before one of the teachers bought some patches, and I think a meteorite as well that she'd been eyeing, and might be keen enough to join as a member.

Other members helping on the night included Cathie Dethick with her telescope's outreach debut, Adrian Boschetti, Ben Claringbold, Chris Kostokanellis, Fred Crump, and Sylvie Grandit. *Regards, Peter Skilton*

Cosmology meeting March 14th - went ahead at 1:45pm as usual at the Briars.



Society Meeting March 18th - The main topic was about "The Lives of Stars", covering their lifecycle from birth to death to rebirth, presented by Emeritus Professor Carolin Crawford from Gresham College in London. This renowned college is a tertiary educational institute that is over 400 years old, yet has neither students nor degrees.

Chris Kostokanellis presented the Astrophotographic challenge this month, and Guido Tack presented Sky for the Month. Then Paul Albers explained about practical defibrillation for astronomers, given we have a defib. unit next door at the Briars Eco Living Display Centre, helping to demystify its use in emergencies. He has kindly offered to give an encore performance at the April members' working bee/bbq for any members who attend the Briars that Saturday.

A Science video then followed about how the Apollo missions to the Moon traversed Earth's Van Allen radiation belt en route for the first time.

Closure showed the violin cover of Rey's Theme from Star Wars, played simultaneously from orbit aboard the Polaris Dawn mission in 2024, in concert with some ground-based youth orchestras in different countries. The footage is from SpaceX and the Polaris Program.

For those of you who are not yet subscribed (it's free) to the MPAS YouTube channel, the monthly meeting has been uploaded.
If subscribed, you may be notified of this automatically by YouTube. 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

Greg Walton

Gippsland Star Party Friday 13th to 16th - Was held at Echo Bend Camping Park, Glenaladale (near Bairnsdale). This was the third time this event was run and hosted jointly by MPAS, LVAS and ASV. It is not a public event, so everyone was asked to bring their own equipment. But there was a few who brought visual telescopes for anyone to look through, me being one of them. And because we are all amateur astronomers and we all know how to behave around the telescope, there shouldn't be any problems.

On Friday, Pia and I were first to arrive and found a beautiful, very quiet campground with manicured lawns. We were greeted by the owners, who said we can setup camp anywhere. Coffee shop would be open after 3pm and there are walks through the surrounding bushland to the river. We found all the campsites were very large with nice scenery views.

Once we had set up camp, we made lunch and sat back and enjoyed the view. After a couple of hours everyone started to arrive, most driving from Melbourne.

Last year's event was a wash out, so on the law of averages, we should get some clear skies this year and we did. I checked the weather before setting up. The weather forecast was good for Friday night, some patchy cloud for Saturday night and 100% cloud for Sunday night.

At 3pm I moved my car to the viewing field and started unloading and setting up telescopes, which can take 2 hours. My 21 inch Dobsonian (Sky Dancer) weights in at 100 kilos, so I was hoping for clear skies for at lest 2 nights. I also set up my 6 inch F 6.5 refractor (Klarer Himmel) on a HEQ5 mount and readied my 100mm bino-chair. Many others were also setting up their equipment at this time. Then it was back to camp for nibbles and wine while chatting with friends. Then cooked dinner and an hour of rest ahead of a big night.

At Echo Bend the sun sets 12 minutes earlier than in Melbourne and because we were in a valley the sun sets even earlier. Around 7:30pm I headed to the viewing field and started firing up my equipment, adding the GPS co-ordinates for Echo Bend to my computer and GoTo mount. I had already switched on the cooling fans on Sky Dancer, as this telescope needs a few hours for the mirror temperature to stabilize. I found the eyepieces and deep sky filters I would be using for tonight. Then I switched on the dew heaters on my 6 inch refractor and started doing a polar alignment. I was very lucky as the alignment stars were in the field of view, meaning I only had some minor adjustments. The dark location also made seeing the South Pole alignment stars much easier than back in Melbourne.

It was a very quiet start to the evening, as most were busy firing up astrophotography gear and finding targets. I swung Sky Dancer around to the second brightest globular cluster in the sky, 47 Tuc - NGC104, the stars were pin sharp, proving the seeing conditions were good. 47 Tuc was much brighter here than from Melbourne, and it also looked great in my 6 inch refractor. I punched in NGC3372 sending the 6 inch refractor to Carina Nebula and fitted a 40mm Tele Vue eyepiece which gave 25 times magnification, and showed the whole Carina Nebula. This 6 inch refractor shows lots of contrast bringing out the dark lanes that almost looked 3D. By then a few fellow astronomers had arrived hoping for a look. I could see that no one had ever seen a nicer view of the Carina Nebula before. I'm very happy with this telescope.

Next we moved both telescopes to the Tarantula Nebula NGC2070. The refractor also captured other nebulas around the Tarantula, wherea Sky Dancer running at 100 times magnification could see only the Tarantula Nebula. I attached my filter slider to Sky Dancer and as we slid through the different filters, we could see more detail in the nebula and at the same time make the stars smaller. Sometimes a nebula that was completely invisible would suddenly spring into view, which amazed my fellow astronomers. Image at right shows my filter slider between Para core coma corrector and 22mm Panoptic eyepiece. Deep sky filters are LPR, UHC, O3, Hydrogen beta (Horsehead filter) and 4 coloured filters for viewing the planets.

And that was the way it was for the rest of the night, with fellow astronomers popping in for a look through the telescopes. We visited all the usual suspects, M42, NGC104, NGC4755, NGC3532, NGC3293 and NGC5139.

As the night quietened down, we started to track down the fainter less visited objects, M46 an open cluster with a planetary nebula or dying star at its heart. At first glance you could miss the planetary nebula, but once the O3 filter was slid in, the planetary nebula jumps out. Then I usually get “what is that?” Well, it’s a star that had got to the end of its life and become unstable, blasting its outer shells of material out into the surrounding space. Next, we found Thor's Helmet NGC2359 and again we slid the filter through to find the best one for this object.

Normally from the Briars, this object is almost imposable to see. Then we found the Banana Nebula or Smiley crescent NGC3199 which is the post code for Frankston. *See eyepiece views at right.*

M46 NGC2359 NGC3199

After we had found a few more nebulas, we changed to finding galaxies. Filters generally don’t work on galaxies in dark sky locations. Only the LPR filter can help in light polluted skies. We started with NGC55, a bright edge on galaxy, which looks like a beam of light crossing the whole width of the eyepiece in Sky Dancer, and still surprisingly visible in the 6 inch refractor. Then we found the Hamburger galaxy NGC5128 with its dark lane across its centre. This galaxy has a very strong radio sauce at its centre. Then we found another edge-on galaxy NGC4945 which also looks like a beam of light crossing the whole eyepiece. *See eyepiece views at right.*

NGC55 NGC5128 NGC4945

Next we found the Sombrero Galaxy M104, The Ring Tail Galaxy NGC4038 and a bright pair of galaxies M66 & M65.
See eyepiece views at right.

It was getting quite late and Scorpius was getting high in the east. We looked at the butterfly cluster M6, Ptolemy Cluster M7, the tail of the Scorpion NGC6231, and many other deep sky objects.

M104 NGC4038 M65 & M66

The legs were giving out at 2am, so I sat in my bino-chair and did a lap around the sky. Eta carina was directly overhead which looked great against the starry background. Omega Centauri and 47 Tuc were fantastic. I could pick out some of the brightest galaxies.

The sky was still clear, but it was time to cover up everything and go to bed.

Saturday was a time to sleep in, with most emerging around lunchtime. After lunch we slowly did the walk in the bush, then on return watched the goanna going through the camps looking for leftovers. There was an aurora predicted for tonight and some were readying their cameras. But the most important thing on my mind was to rest ready for tonight.

Jamie Pole

The Mexican food truck cooked us dinner, while we did the group photo as 2 Sun dogs appeared just before sunset.

At dusk there was some thin high level clouds in the sky, we could only hope it'd clear. I switched the telescope on and found Jupiter. The Great Red spot was dead centre in the lower cloud belt and there was a black spot nearer the edge. This was an Io shadow transit which would finish around 9pm. Jupiter is one of the few planets that you can see things changing in real time. By then there was quite a crowd around the telescopes. But as the sky darkened the clouds got heavier. I did my best to find as many objects as possible before the clouds shut us down. All I could do was sit back in my chair and wait. Around 11pm the sky started to clear. I attached my DSLR camera to my 6 inch refractor and found my first target and started imaging.

Soon the whole sky had cracked open and there was a glow in the sky to the south; as there were no cities there, it could only be an aurora. Some people started to come back to their telescopes and before long the viewing field was buzzing. I revisited some of the bright objects we had seen on Friday night. Then we tracked down more less-visited objects. Spindle Galaxy NGC3115, the Ghost of Jupiter NGC3242, M86 & M84 galaxies in the Virgo constellation, to name a few.

I checked that my camera was still running, before finding Chris Morley using a Smart-eye digital eyepiece on an 80mm refractor. Looking in this eyepiece was something special. I could see the great Orion Nebula was in colour, something you would never see in an ordinary eyepiece. At first the view had a lot of coma around the edge of the field, but with a bit of trial and error, I found I could position my eye to remove most of the coma. The LVAS acquired this digital eyepiece for there public nights. I can see we will probably be seeing a lot more digital eyepieces being used in the future and something MPAS should probably look at purchasing, but they're around $3,000.

I returned to my telescopes to find a small group waiting for me to find some more deep sky objects. As Orion set, the Southern Cross was directly overhead and Scorpius was climbing in the east. We finished up around 3am, being very happy with what we had seen.

Sunday was another day with a very slow start. We checked the weather forecast for the night and it didn't look good with 100% cloud cover forecast. After lunch we all slowly packed up the telescopes, rested and cooked dinner. Then we prepared nibbles and wine for the night. As there was no viewing, we lit the campfire. I think it would have been very hard on us all if we had spent another night under the stars.

Monday was time to pack up camp and head home.

Inverloch Equinox Festival stargazing Friday 20th to 21st - Public viewing with MPAS in collaboration with LVAS and tourist body.

This was the second annual Inverloch Equinox Festival held, and this year MPAS collaborated with LVAS to provide telescope viewing on two nights, plus a short presentation prior. During the day there was live music, lots of stalls and food vans. We setup our equipment in a small fenced-off park just a short walking distance from the bowls club where the talk was held. When the sky was clear the views were stunning!

Nerida Langcake

Friday – 25 for the talk, 60 for viewing – 0% cloud for 15mins of the session, then 100% cloud for the rest of the night.

Saturday – 53 for the talk, approx 80 for viewing (with extra comebacks from the night before for the second night). Started with 100% cloud, had a couple of big holes after 10pm (start time 9pm).

Most got to see something on both nights, some did both, some did viewing only, some did talk only and some did talk one night, viewing the next.

Photos right - from Inverloch & Chris Morley doing their version of the solar system talk to approx 54 people on Saturday night.

Dinner with LVAS (Latrobe Valley Astronomical Society) before Saturday night talk & viewing night at the Inverloch Equinox Festival 2026.

Left to Right : Me, Jamie Pole, Paul Odgers, Chris Stockdale, Chris Morley (LVAS President) & Nerida. LVAS also had 2 other members – Mark Jarred & Andrew Fraser.

Chris Morley gave the talk to about 50 people each night at the bowls club and the viewing was next to the Rotunda on the foreshore. Both nights we had some viewing between the clouds to a very polite and understanding crowd (About 60 attendees Friday night / 80 on the Saturday).

Dave Rolfe

Below left : Chris Morley (LVAS) mid presentation in the bowling club.

Below right : Some public attendees looking at Jupiter through Nerida's 12" dob

Telescope Learning day, BBQ & Buy/Sell/Swap March 21st (public & members) - Many members arrived early to start setting up. There's always a long lists of jobs to be done with any event. Like putting fresh water in the urns and a quick check and clean of the toilets. Put out the welcome sign and switch on the red lights. Clean the BBQ and setup tables for the Buy/Sell/Swap. Open up the 3 observatories and roll out the many large telescopes. In the small dome we setup 2 solar telescopes, one with a white light filter to view sun spots and the societies 60mm Lunt which uses a hydrogen alpha filter to view surface detail and prominences. Unpack supplies in the kitchen and start buttering bread and cooking sausages. Simon brought the bins in, manned the sales counter and started to check the public in. There was over 100 public booked in, but only about seventy turned up.

With no time to rest we started helping the public with their telescopes. Which usually meant point the mount south, balancing the telescope, setting the declination to 38 degrees. Then explaining how to calculate the magnification for there telescope, which is the length of the telescope, divided by the length of the eyepiece. If your telescope is 1,000 mm long and you were using a 20mm eyepiece, you would have 50 times magnification. Then we pointed the telescopes to the large water tank on the distant hill at Mt Eliza, it's easy to spot because its covered in phone towers. Usually at this stage, most people are amazed to see a distant object in their telescope and comment on the phone towers and also say wow the telescope works. Then we adjusted the finder scopes so the cross hairs are over the water tank. Now when the sky darkens we should be able the find Jupiter. We also did many running repairs to the telescopes; usually we find that important screw is missing. And the finder scope is usually loose in its mount and requires a few layers of electrical tape to take up the sloppiness.

We rounded up everyone for the talk given by Guido Tack, which was broken into 2 halves. This gave everyone a chance to look through the solar telescopes, which showed one medium sized sunspot and prominence on and around the Sun. While others inspected the observatories, look at the Buy/Sell/Swap tables, pick up a sausage in bread or make tea and coffee. Also at this point we also gave away 2 surplus old telescopes and sold a better telescope with accessories.

Then we rounded up everyone for the second half of the talk and by the time the talk finished, the sky had started to darken and most of the society's telescopes were pointing at Jupiter. Member did the rounds; check on how the public were doing with their telescopes. I was surprised to find many had found Jupiter without help.

Early on around 8pm, we did have some clouds moving through in the south, at times even blocking out Jupiter. After ½ an hour, the sky became perfectly clear till 9:30pm, then the clouds started moving in again, and the public slowly left. So it was an early night with everything packed up around 10:15 pm. But it was a very busy night for the experienced members who worked tirelessly adjusting repairing and explaining to the public how their telescopes worked. I was glad to get home and sit down and have a port or 2.

Helping out, Fred Crump, Chris Kostokanellis, John Goodall, John Cleverdon, Andrew McCauley, Mark Stephens & Michelle, Guido Tack, Simon Hamm, Adrian Boschetti, Stuart Lees, Andrew Marshall, Anne & Geoff Danne, Sheryl Brown, Ben Claringbold, Greg Walton, Sylvie Grandit, Catherine Dothrelt, Karoline Hohlweg, Dilpreet Singh & Jasreen, Manfred Berger, Andrew Parson's and Michael Benton.

Sorry if I missed anyone, *Regards Greg Walton*

Photos By John Cleverdon

Observatory open for viewing March 23rd - Last night at the Briars, it was only Fred Crump and myself. I thought more members would have shown, as the sky was clear, and seeing conditions were perfect, even though the air temperature was warm. A thin crescent Moon wasn't bright enough to stop us from viewing faint objects.

I stayed till 1am. Did some imaging with the 100mm refractor in the small dome. Used the newly acquired field flattener and my old Canon 60D. Objects imaged were galaxies M66, M83, ngc5128, nebulas M42, Carina Nebula, ngc2070 and globular cluster ngc5139. The images look surprisingly good. *See right*

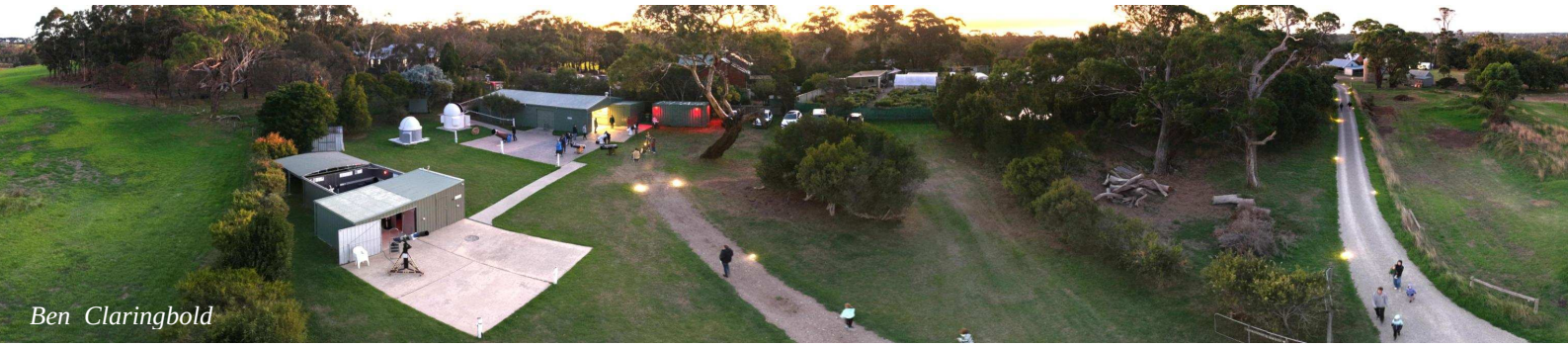

NGC5139 imaged 100mm Refractor F6.5 FF HEQ5 Canon 60D 20x30seo iso6400 Briars 23Mar2026 by Greg Walton

I also had the 4 telescopes in the observatory running. I had them all pointing at the same object. Just to see which telescope had the most pleasing views. The Meade won with the 8 inch Newtonian a close second.

All in all, it was a very enjoyable night under the stars. The weather forecast for the rest of the week looks poor. *Regards Greg Walton*

Public Viewing Night April 3rd - The sky was 60% clear when we arrived at 7 pm. We cleaned the toilet and put out the sign, then switched on all the red lights and filled the urns. Then I opened the Sirius dome and found Jupiter in the 11" Celestron. Then we open the main observatory and started up the telescopes just as the clouds moved in, covering the whole sky. Making it imposable to see Jupiter in any of the telescopes. Around 7:30pm the public started arriving. Trevor setup and the talk started 10 past 8, and by then, it was 100% cloud for an hour. Then Jupiter and the moon pecked out between the clouds. Most people only got a glimpse of the Moon or Jupiter. We did our best to entertain the public, explaining how the telescopes worked. We had 90 public booked in, with about 80 showing up. Due to the clouds, we were all packed up by 10:15.

Members helping out who signed the book, Simon Hamm, Greg Walton, Julie McErlain, Trevor Hand, Mark Stephens, Ben Claringbold, John Goodall, Isaac and Greg Markowsky, David Rolfe, Fred Crump, Stuart Lees and Mike Smith. *Regards Greg Walton*


Ben Claringbold

Shire moon performance & moon gazing Night April 4th - We were very lucky to have a clear night. The moon performance took place behind the old Josephine's restaurant. At 7:15 p.m., the public headed our way along the rear access track which was lined with lanterns to the clubroom where Manfred Berger gave a short 15 minute talk on the moon. There was 120 booked, but 1 family didn't show, apparently they all just fitted in for 1 talk with standing room only for a few. Some families came out of the talk early with restless children. By this stage, we had Jupiter, Sirius, and Alpha Centauri in the telescopes the observatory for them to look at. On the top slab, we had 6 Dobsonian's set up in redness for when the Moon rises at 8:10pm. At 7:45 p.m., the families were out, and it was all hands on deck. Jupiter didn't disappoint, which kept everything entertained till the moon appeared on the horizon. Many staying till after 9pm. Some said they had come from the other side of Melbourne. Others said they lived just next door and didn't know about the astronomy club. We were all packed up around 9:30pm. It was a very successful night, and maybe this could become a regular event? *Regards Greg Walton*

Members helping out, Sylvie Grandit, Ally Midwood, Phil Peters, Elliot and Danielle Gonsalvez, Margaret Reuioug and family, Stuart Lees, Jessica Lees, Julie McErlain, Manfred Berger, Nerida Langcake, Greg Walton, Cathie Dethick and .

From the Briars organizers. Hi MPAS, I wanted to send a big thank you to you and the other members of the MPAS for sharing their passion and time with our event visitors on Saturday evening. What an incredible night under that moon. We received some wonderful feedback from those who attended about how much they enjoyed looking through the telescopes and learning more about the MPAS. I know many were definitely interested in coming back for one of your public stargazing events.

I've sent onto all who attended, where they can find information on your upcoming events and details regarding membership for those who would like to discover more. Again, please pass my thanks onto everyone, it was greatly appreciated. *Warm Regards, Renee*

Indigenous Astronomy Public Viewing Night April 10th - Our second Indigenous Astronomy themed PVN was help on Friday 10th April. Our regular presenter, Tim Patston, was unable to attend due to a foot injury, but fortunately for us, Professor Duane Hamacher graciously agreed to step in and do the talk. There was some concern early on that Duane's car may also have suffered an injury on the way to the Briars, with a tyre pressure sensor showing low air pressure after hitting a pothole.

Many of you would recall Duane was our guest at the August 2025 Members BBQ when he gave a very insightful presentation on Indigenous Astronomy.

51 visitors braved the cold, wet and windy conditions to attend the presentation. They listened to Duane talk about the Astronomical knowledge held by Indigenous Australians, including their record of Variable Stars, and how they encoded that knowledge and passed it down through generations in their myths, songs and dances.

There were plenty of questions during and after the presentation, with several attendees waiting to speak to our guest presenter after the talk.

There was almost 100% cloud cover at the end, with a couple of stars making a brief appearance in some fleeting gaps, bur nothing to point a telescope at. A tour of the observatory was given, and several of the younger attendees made use of the microscopes to check out some of the minerals we have, as well as getting a close up look of a biscuit they were snacking on.

At the end of the night, it was time to check on Duane's injured car. Looks like it was nothing more than a minor bruise. A quick top up of some air with a small compressor, and he was good to go.

A big thanks to Duane Hamacher for stepping up and making sure the event went ahead as scheduled.

Members attending and helping on the night were Greg Walton, Simon Hamm, Chris Kostokanellis, Peter Skilton, Fred Crump, Ben Claringbold, Adrian Boschetti, John Goodall, and Jamie Pole. *Clear Skies, Chris Kostokanellis*

Society Meeting April 15th - The main topic was about "The Magnetic Universe", covering the basics of magnetism here on Earth, including the Van Allen Belts, and out to the most distant Magnetar neutron stars in the Universe, presented by Astrophysicist and Astronomer, Professor Katherine Blundell, from University of Oxford and Gresham College in London. One very knowledgeable MPAS member after the talk commented that it was the clearest and most easily understood explanation he'd ever encountered about what can easily be a baffling topic to understand.

Chris Kostokanellis presented the Astrophotographic challenge this month, and Guido Tack presented Sky for the Month from Hamburg Observatory in Germany.

A Science video then followed explaining the basics of orbital mechanics as applies to all space flight, introducing Kepler's and Newton's laws and explaining all about orbits and transfers, of direct relevance to Artemis and all other space missons.

Closure showed the SAMPEX and Van Allen Probe missions and what they found out about Earth's radiation belts. The footage is compiled from NASA and University of Iowa.

This months video: https://www.youtube.com/channel/UCm6XOkIcIflt4y0XRBXpXuw
MPAS site once it's refreshed for this month: https://www.mpas.asn.au/meeting-recordings/ *Regards, Peter Skilton*

Working bee & members Night BBQ April 18th - Saturday's working bee was held on a beautiful sunny Autumn day of 17 degrees. It was a very busy day indeed, with over 30 members attending, included some from the Cosmology group which started earlier at 1.45pm.

I arrived early and mowed the members' car park before Cosmo started. Brian Stephens then presented 'What Was There Before the Big Bang – Part 3'. It was very popular with 22 members attending, and a great way to catch up and chat. Greg Walton also arrived early and started pruning the trees on the east boundary. I'm not sure about Greg's technique though, as he has a tendency to cut them back quite hard. It'll grow he says!

Phil Peters


Phil Peters

Once Cosmology had finished at 4pm some of the members decided to stay, and we were soon joined by many others. Dennis Cooke and Ingrid Pinkerton did an amazing job of thoroughly cleaning the auditorium in preparation for dinner, while outside Wayne Redpath jumped on the ride on mower and Stuart Lees started whipper snipping in earnest. David Green did a great job cleaning the BBQ shed.


Phil Peters

There was a rush to grab Greg's pruning's to let the mower through, so it was all hands on deck as we moved them to the paddock next door, where our friends from the Briars will deal with them. Greg and Manfred Berger were now busy on the south boundary, planting some new trees to block light out from the camp next door, and were joined by John Goodall on watering duty. While all this was going on, Adrian Boschetti was busy cutting holes in the new dome. This was to install 2 air vents to allow for circulation. I'd also like to mention that Greg, Jamie and Adrian fitted the David Murray - Girling plaque last week, in memory of him.


Phil Peters


Phil Peters

Up in the kitchen, Anne Danne and Sylvie Grandit started getting things ready for dinner. Jamie Pole soon arrived with the monthly shop, and the kitchen was a hive of activity. The BBQ was fired up, with Mark Stephens and Ben Claringbold doing the cooking, and the usual onlookers watching in anticipation. Once dinner was ready we all moved inside for a delicious meal, which included the usual excellent fare from members.

During dinner Paul Albers generously gave us an encore presentation on the use of AED's, which stands for Automated External Defibrillator. Thanks, Paul! In case of emergency, these can be found outside the Eco Centre front door and down at the Briars Visitors Centre. We then tucked into some yummy desserts before heading down to the observatory for some very clear seeing conditions!

Around this time, we were joined by a few students of Duanne Hamacher. They were keen to do some light measurements at MPAS, so we turned off as many lights as possible. It will be interesting to see the results! They also took the opportunity to look at the stars and were not disappointed. Greg stayed back until almost midnight for them and did some astrophotography. He tells me it was 5 degrees when he left!

A big thank you to everyone that attended! We had a great day with much getting done. I hope I haven't forgotten anyone. See photos!

Warm regards, Phil Peters

Sat 25th & Sun 26th April, 9-4pm - We had the pleasure of hosting just over 30 Seniors class girls and teachers from the Sterling Calisthenics Group on Saturday night. They were staying next door at the camp for the weekend and requested our auditorium to practice their dance moves during the day, as they needed 3 open spaces and only had 2 at the camp.

The weather was not looking promising on Saturday afternoon, with cloud on the way, but luckily at 7.30pm the sky opened up for a clear and quite unusually warm night for this time of year. As the girls came down the path, they all stopped at our dome with its now well-lit doorway of red lights, and couldn't help having a peak. Next stop was the Sky Drover 18.5 inch reflector focused on Jupiter and Katherine's own scope on the moon, then it was down to the main observatory area, where we had Jupiter, Omega Centauri, The Jewel Box, Orion and the Moon on show, to mention a few.

The girls commented that they were very impressed indeed, and asked lots of questions, including about the Southern Cross and how the telescopes worked in general. This was the first time for many of them looking through a telescope, and they just wanted to know more and more. Unfortunately, after about an hour they had to retire back to the camp in preparation for another busy day of dancing. I'm sure we'll see them again!

Members helping on the night were Greg Walton, Katherine McCoy, Mark Stephens, Chris Kostokanellis, Ben Claringbold, David and Jamie Rolfe, Peter Skilton and yours truly.

Warm regards, Phil Peters

HELPFUL HINTS

Mornington Peninsula Astronomical Society

- Saving your night vision - .

Setting your phone to red light is really easy - look it up!

I have an iPhone and I also have a shortcut to do the function above, so I don't have to go through the process each time.

iPhone:
On your iPhone, open Settings.
In the Accessibility tab, search for Display & Text Size.
Turn on Colour Filters and select Colour Tint.
Move Intensity and Hue to the far-right position for the full red-screen effect.
Then when you are done just turn the colour filter back off to make the screen go back to normal.

Kind regards, Karo

Android:
I tested out a few of the red screen android apps.
But none worked well enough for my liking.
The main problem was, you needed to select all the apps which you want to apply the red screen. This would take too much time.

I found the best solution, was to making the background black.

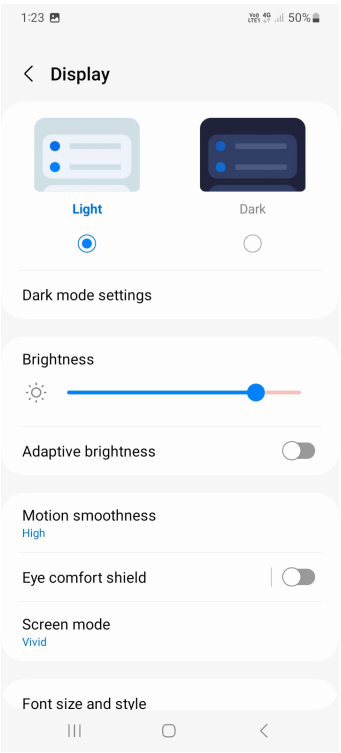
Goto - Settings.
Type in display.
Tap on display.
Tap on Dark.

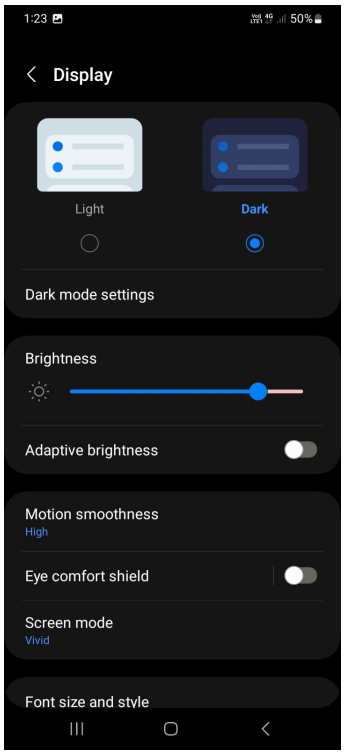
This negative view works across many apps including emails, Messages, Messenger, My Files, Chrome, Gallery, Notepad, Contacts, Google drive, Dropbox, Calender, Yr Weather, BOM, YouTube, etc, but doesn't change photos, icons or your wall paper.

It took a little while for me to get uses to the dark screen and for awhile I found myself changing the screen back to white background during the day.

But now I have the black background on all the time.

Regards, Greg Walton





2026 TIMETABLE OF PUBLIC EVENTS

MAY
Friday 1st, 8pm Briars. Public stargazing night. Speaker to be arranged. 90 booked.
Saturday 2nd, 5pm Briars. Eastern Region Lodge Freemasons. 30 anticipated. Speaker: Chris Kostokanellis. Date is changed.
Friday 8th, 8pm Victoria Pde, East Melb. Gregorios Lodge Freemasons. 20 anticipated. Speaker: Chris Kostokanellis.
Friday 29th, 8pm Briars. Scout, Cubs & Guides. Speaker to be arranged. 90 anticipated.

JUNE
Friday 5th, 8pm Briars. Public stargazing. Speaker: Manfred Berger. 90 booked.
Friday 12th, 8pm Briars. Public Indigenous Astronomy stargazing. Speaker Tim Patston. 90 planned. Members free.
Thursday 18th, 7pm Briars. 1st & 2nd Mornington Scouts. 50 cubs/scouts. Speaker Katherine McCoy & Peter Skilton.
Friday 19th, 5:45pm Briars. Public winter lantern making and stargazing for about 30 visitors. No talk.
Monday 22nd, 7pm Briars. Patterson Lakes Primary School 1 of 2. 100 pupils & parents. Speaker: Katherine McCoy & Peter Skilton.
Tuesday 23rd, 7pm Briars. Patterson Lakes Primary School 2 of 2. 100 pupils & parents. Speaker: Katherine McCoy & Peter Skilton.
Wednesday 24th, 7pm Briars. Red Hill Scouts, combined units of all ages. 100 anticipated. Speaker: Katherine McCoy & Peter Skilton.

To attend the school events and scout/girl guide events, these days you need to have a Working With Children check done first. It takes about a fortnight from the time you apply online to when you get the card in the mail. For volunteers it is free. It's essentially a check of police and justice records over the decades that sees if there might be anything in the past that would preclude participating in these sorts of outreach events involving kids. Once you receive your card, let the Secretary know your card number and expiry details as we are required as an organisation to record them.

https://www.workingwithchildren.vic.gov.au/ *Regards, Peter Skilton*

Call for articles.

Members please write a story about your astronomy experiences, subject of interest, tips and tricks, how you got into astronomy, and also please add some pictures.

Send them to the editor: Greg Walton gwmpas@gmail.com

New Members Welcome

Ria Gulshan & family
Sarah Kuskopf
Clair McKenna
Jan Kendall
Mark Hansen
Natalya Banks
John Hodge
Stephen McAndrew
Lucinda Shepherd and Marco Macelli

MPAS SUBSCRIPTIONS 2026

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 2026 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 2026 fees is:

SOCIETY FEES

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

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, The Briars, 450 Nepean Highway, Mount Martha VIC 3934 (The P.O. Box in Frankston is no longer used).**
- **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.

You can renew your membership online using the link included in the annual mailout email, which is sent near the end of each year. Please ensure to renew before Feb 1. Any late renewals may be required to re-join as a new membership.

CALENDAR — May / 2026

Red Days indicate School Holidays

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
31 **Full Moon**					1 **Public night 8pm**	2 **Eastern Region Lodge Freemason** **Full Moon**
3	4 **Aquariids Meteor shower**	5 **Moon at 405,839km**	6	7	8 **Gregorios Lodge Freemasons**	9
10 **Mother's Day** **Last Quarter**	11	12	13	14	15	16
17 **Moon at 358,075km** **New Moon**	18	19 **Venus left of the Moon**	20 **Society Meeting 8pm** **Jupiter above Moon**	21	22	23 **Working Bee 4pm BBQ 6pm** **First Quarter**
24	25	26	27	28	29 **SCAG**	30 **Cosmology 1:45pm**

Events

Public nights - 8pm to 10pm on the 1st @ The Briars
Society Meeting - 8pm to 10pm on the 20th @ The Briars (Public & members)
Working Bee - 4pm, **Members night BBQ** - 6pm on the 23rd @ The Briars
SCAG - Scout, Cubs & Guides - 8pm to 10pm on the 29th @ the Briars
Cosmology group meeting - 1:45pm to 4pm on the 30th @ The Briars

CALENDAR — June / 2026

Red Days indicate School Holidays

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 **Moon at 406,366km**	2	3	4	5 **Public night 8pm**	6
7	8 **King's Birthday**	9 **Venus and Jupiter close**	10 **Venus and Jupiter close**	11 **Last Quarter**	12 **Indigenous Astronomy 8pm**	13
14	15 **Moon at 357,197km**	16	17 **Society Meeting 8pm** **New Moon**	18 **Venus below the Moon** **Mornington Scouts**	19 **Public winter lantern making eco house and MPAS**	20 **Working Bee 4pm BBQ 6pm**
21 **Winter solstice**	22 **Patterson Lakes Primary School**	23 **First Quarter** **Patterson Lakes Primary School**	24 **Red Hill Scouts**	25 **Scorpius Deadline**	26	**27**
28 **Lunar Occultation of Antares 2:12 am** **Moon at 406,265km**	**29**	**30** **Full Moon**				

Events

Southern Comets website - http://members.westnet.com.au/mmatti/sc.htm
Public night - 8pm to 10pm on the 5th @ The Briars
Indigenous Astronomy Public night - 8pm to 10pm on the 12th @ The Briars
Society Meeting - 8pm to 10pm on the 17th @ The Briars (Public & members)
Working bee - 4pm, **Members night BBQ** - 6pm on the 20th @ The Briars

Watch your emails, as on any clear nights the Observatory may be opened for members-only viewing.

The Briars Sky

By Greg Walton

Mornington Peninsula Astronomical Society

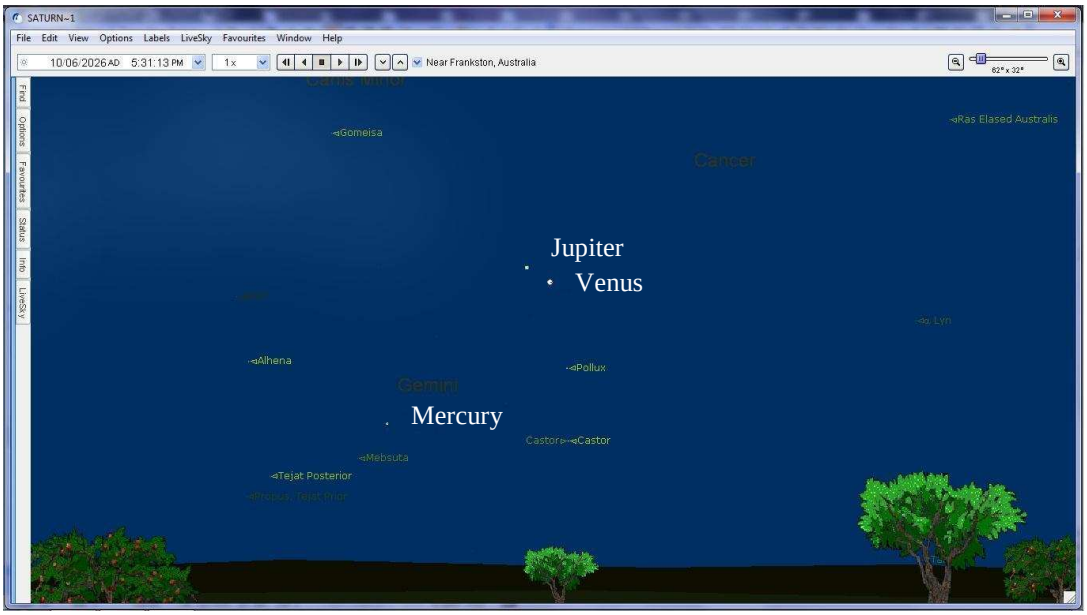
From the first of May, Venus will be visible on the western horizon just after sunset around 6pm. Shining at - 4 magnitude Venus will be the third brightest object in the sky, after the Sun and Moon. Over the next 6 months, Venus will climb higher each night and grow larger in your telescope, as it moves closer to Earth. Viewed in a telescope, you will also see that Venus will change its shape, starting small and round, then as it grows larger changing into a crescent and eventually becoming invisible as it passes between the Sun and Earth.

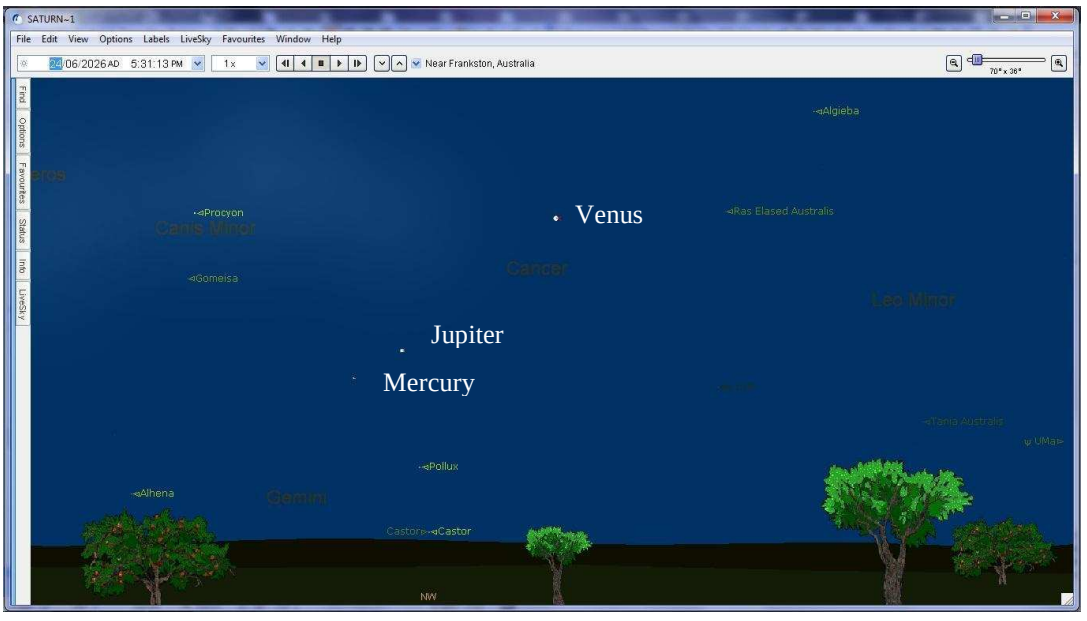
When I got my first telescope, Venus was the second object I looked at after the Moon. I was very surprised to see Venus wasn't round but a crescent like the Moon. I also noticed the crescent was the opposite way around to the Moon in the sky. This was because the telescope was a Newtonian which showed everything in mirror image. I could see that Venus had a moon, smaller than Venus with the same crescent. I then realized, this moon was a reflection within the eyepiece. This happened because the eyepiece was a cheap eyepiece without any antireflective coatings. But still, it was a very nice view of Venus and its imaginary moon.

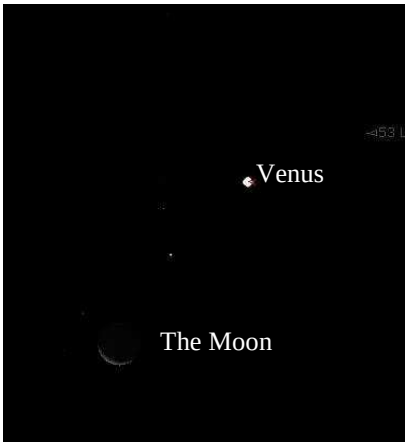
In the evening, on the 10th of June, Venus will pass just below Jupiter, with Mercury travelling close behind which can also be seen.

On the 24th of June, Mercury will be at its close approach to Jupiter, before reversing its direction and start moving away from Jupiter in the opposite direction, this is call retrograde.

In the north-west at 8pm on the 17th of July, Venus will be shining brightly just above a crescent Moon.







All views generated on Starry night software.

ASTRO NEWS

By Nerida Langcake

Mornington Peninsula Astronomical Society

Artemis 2 Australian connection

Projects in Motion ▸ ▪ Australian National University

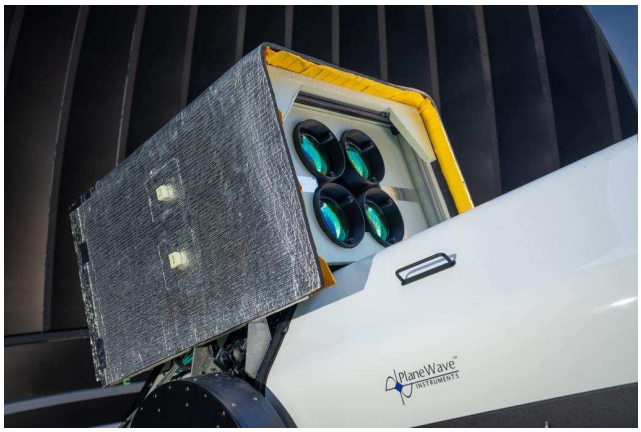
As NASA counts down to the historic launch of Artemis II. The Australian National University (ANU) is ready to play a part in the mission – and demonstrate the future of space exploration in the process. The Quantum Optical Ground Station (QOGS) at Mount Stromlo will use its laser capability to track, transmit, and receive communications from the Orion capsule as it flies the Artemis II astronauts around the Moon.

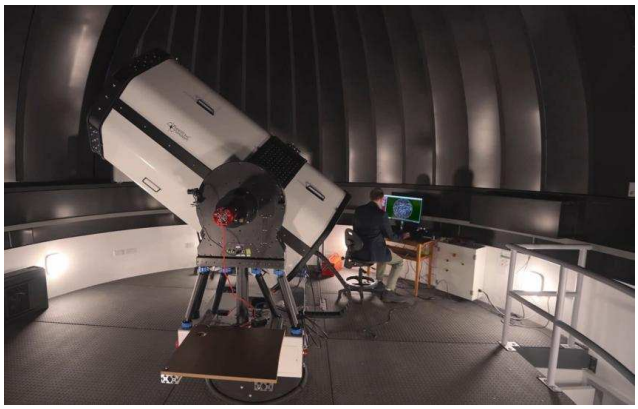
Using infrared light, laser communications can transmit data up to 100 times faster than traditional radio technology – including high-definition video, picture, voice, and scientific data. NASA has partnered with the ANU's world-leading expertise to create a Southern Hemisphere capability and demonstrate it as a communications method for more distant and ambitious human spaceflight operations. The Artemis II demonstration will be a world-first, as it's the furthest distance a crewed mission has ever attempted to transmit data via a laser system.

The lunar communications system enabling the demonstration is funded by our Moon to Mars Demonstrator Mission program, which provides a pathway for Australian enterprises to develop and launch products into space – creating new capabilities and building space heritage.

Canberra tracking station also play and big part in communicating with Artemis II

Read more about how Australian technology is supporting the Artemis program here: http://spklr.io/6185Ey507





Australia's support for NASA stretches back to the Apollo era, when Australian tracking stations helped relay the historic missions of the 1960s and 70s. That legacy continued through the successful Artemis I launch in 2022, with Australian facilities once again supporting mission tracking and communications.

NASA's latest milestone, Artemis II was launched on 2 April 2026 (Australian time) and returned to Earth on 11 April 2026, carrying humans around the Moon for the first time in more than 50 years.

Over its nine-day mission, Artemis II broke several records, including taking humans the furthest from Earth than ever before. The mission's lunar flyby also captured stunning images, including a rare solar eclipse, a historic 'Earthset' image, and never-before-seen views of the Moon's far side.

EXOPLANET EXTRAVAGANZA

Peter Lavelle

Mornington Peninsula Astronomical Society

Does the nearest exoplanet have a three-body problem?

What's the nearest exoplanet?
As far as we know, it's **Proxima Centauri b**, which orbits the red dwarf star Proxima Centauri (Alpha Centauri C), part of the triple star Alpha Centauri system.
The other two stars, Rigil Kentaurus (Alpha Centauri A) and Toliman (Alpha Centauri B), are both similar in size and colour to the Sun.
Proxima Centauri is not visible to the naked eye and the other two look like one star but can be seen as two through a modest telescope.
The pair Alpha Centauri A and B together, just referred to as Alpha Centauri, are the brightest of the Southern Pointer stars that point towards the Southern Cross.
Just to confuse things naming-wise a little more, the other Pointer star is called Beta Centauri, which is itself a triple star and much further away than Alpha.

What's the three-body problem?
A planet orbiting a star is an example of a two body system.
They actually both follow elliptical orbits around the common centre of mass of the pair. Because the star is much more massive than the planet this point is usually inside the star. They both follow elliptical orbits around this common centre of mass.
Things get more complicated when three bodies are involved, such as two stars and a planet. They are all gravitationally attracted to each other and constantly moving.
There is a 'zone of instability' close around the stars where the three-body problem applies. Within this zone even the slightest disturbance from inside or outside throws askew any attempts at calculating the orbits. For two stars of similar mass to the Sun this zone is about 10 to 50 AU (1 Astronomical Unit = average distance from Sun to Earth) around the stars.
If the stars are closer together than that, an exoplanet could actually be in a far-out stable orbit around both stars.
Even within the zone, an exoplanet can still be in a stable orbit if it is very close to one of the stars.
It's complicated.

A very brief history of our understanding of gravity.
The mathematical description for the orbits of planets in the Solar System was worked out by Johannes Kepler in 1609, based on earlier observations by Tycho Brahe. They move around the Sun in elliptical paths.
Isaac Newton provided a physical formula to describe the motion with his Law of Universal Gravitation in 1687.
It describes gravity as a force of attraction between two bodies with mass.
A very different, and even more accurate, physical formula was derived in 1915 by Albert Einstein with his General Theory of Relativity.
It describes gravity as the warping of spacetime around two bodies with mass so that their paths of travel are bent towards each other.
For practical purposes, using Newton's law is often good enough to send probes around the Solar System and calculate orbits well into the future. It's accurate to about one part in a million in situations not close to a very large mass like a star.
An exception to the 'good enough accuracy' is the GPS satellites used for navigation. Relativistic calculations need to be applied. If not, their clocks would drift by about 38 microseconds per day, which would quickly render their positioning accuracy useless.
After many physicists and mathematicians from Newton onwards had tried to find a nice simple formula for calculating the orbits of three bodies, Henri Poincaré and Heinrich Bruns in the late 1880s proved there was none.
Computers can accomplish the orbital calculations, at least for a short term, in non-realistic examples where, for instance, the bodies are perfect spheres and nothing such as another body or change in the system ever influences them. This is a 'brute force' calculation method, taking into account the positions, distances, and gravitational attraction of the three bodies at each instant.
In the real universe, for an exoplanet orbiting two stars, and all of them fairly close together, the exoplanet is liable to eventually either fall into one of the stars or be sling-shotted out of the system altogether to become a rogue exoplanet.

So, does Proxima Centauri b have a three-body problem?
No. It orbits Proxima Centauri, which is plenty far enough away from the other two stars that there is no problem.

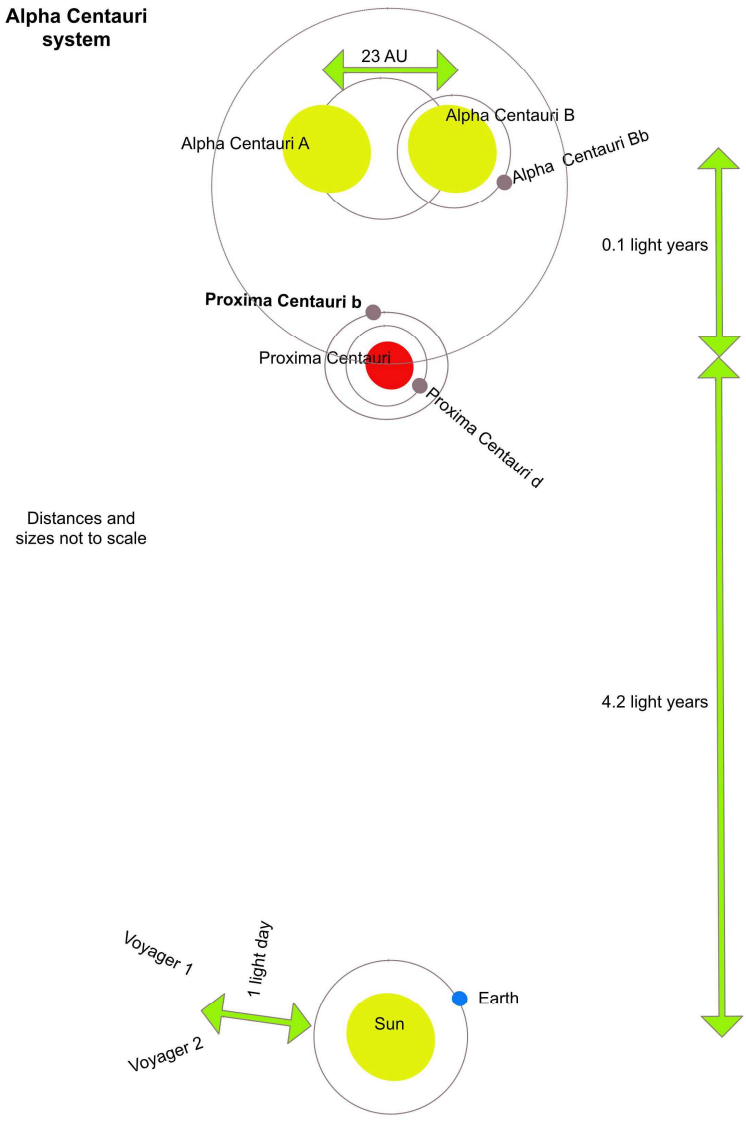
Why is the three-body problem topical?
The Netflix series *3 Body Problem* is based on a trilogy of books by author Cixin Liu (see References below).
It depicts a planet in the Alpha Centauri system which is scorched and frozen (to the extent that its atmosphere solidifies) at completely unpredictable intervals by its chaotic motion around the stars. This is not at all a happy situation for the alien race living there. Then they find out about nice, cosy, stable Earth, not so far away in the great scheme of things.
That's enough of the spoilers.

Since it's the nearest exoplanet, can we send a probe to Proxima Centauri b?
Proxima Centauri b is 4.24 light years away, roughly 40 trillion kilometres.
To picture that, let's imagine the Sun was the size of a soccer ball.
On that scale the Earth would be a coarse grain of sand about 25 metres away from it.
Proxima Centauri would be a ping pong ball roughly 6,300 kilometres away, with Proxima Centauri b another coarse grain of sand about 1 metre away from it.
It may be the nearest exoplanet but it is enormously far away by human standards.

Voyager 1 and 2 probes, launched in 1977 and still travelling and communicating back to Earth, would take about 75,000 years to get there, if they were going in the right direction. After 48 years of travel they are just approaching one light day away from Earth.
The Solar Parker Probe, launched in 2018, achieved the fastest velocity ever by a human-made object. It reached 690,000 km/hr as it plunged into a very close orbit of the Sun. That's roughly 690 times as fast as an airliner. Something travelling at even that speed would still take around 7,000 years to reach Proxima Centauri b.
There is a project called Breakthrough Starshot, founded in 2016 by Yuri Milner, Stephen Hawking and Mark Zuckerberg, to design and send a series of probes to Alpha Centauri. These would have a postage stamp size package consisting of battery, sensors, cameras, control, and communications devices, attached to a few atoms thin light-sail about 5 metres across. The sail would be hit in space by a massively powerful series of laser beam pulses to accelerate it up to 20% of the speed of light. At that velocity it would reach the Alpha Centauri system in around 20 years. As it hurtled through the system, unable to slow down, it would send back data and images to Earth, taking over 4 years to get there at light speed. The plan is to send many so that some will hopefully get there.
Sadly, even this technology appears to be considerably beyond what we can achieve in the near future at reasonable cost. The project seems to be in what might be described as a very early research and development stage, if it isn't completely stalled.

Could we ever send people to Proxima Centauri b?
Not with anything we might build any time soon.
People need air, water, food, waste disposal, exercise, medical care, entertainment, protection from radiation and impact of space dust at huge speed, and something resembling gravity.
They probably won't do well locked up in a small, highly dangerous environment for generations, with no hope of help from outside if anything goes wrong.
Project Breakthrough Starshot envisages sending a payload of a few grams, not the many tonnes needed for a human crew.
We will discuss possible future options more in a later issue.

What's a red dwarf (the thing that Proxima Centauri b orbits)?
It's a star that's smaller and cooler than the Sun, and reddish. It is the most common type of star in the universe.
In general, the more massive a star, the greater its gravity, the hotter its core gets through gravitational compression of all that mass, the faster it fuses through its hydrogen supply, even though it had more to start with, and the shorter it lives before its final stages.
The Sun will swell up into a red giant in about 5 billion years then collapse into a white dwarf in about 7 billion years.
We actually only have about 1 billion years before the slow brightening of the Sun towards being a red giant heats up Earth to the point where the oceans boil. That's not good news for Earthlings, but it's inevitable. Life on Earth has been around for roughly 4 billion years, so we are at about the 80% mark of the era of habitability for life on Earth. That is if some other catastrophe doesn't befall Earth beforehand. If humankind's distant descendants have not migrated further away from the Sun in time, or developed the technology to move the Earth or manipulate a star, then they will be in considerable trouble. At least they will have had plenty of warning.
By comparison, a red dwarf star fuses its hydrogen slower and will remain much as it is for several trillion years before slowly fading into a blue dwarf. The final state is thought to be a black dwarf, where the nuclear fires have died, composed of carbon, oxygen, and some heavier elements.



How many exoplanets are there?
Confirmed as at February 2026: 6,128
Estimated in the Milky Way galaxy: 1 x 10^{12} (1 trillion).
Estimated in the visible universe: 1 x 10^{24} (1 septillion).
The visible universe extends out to about 46 billion light years. At that distance the universe is expanding away from us at the speed of light so we cannot see anything beyond that.
If the universe is actually infinite then the number of exoplanets would be infinite.

Exoplanet example: Proxima Centauri b**:**

Name	Proxima Centauri b, Alpha Centauri Cb
Confirmed discovery	2016. This is the nearest known exoplanet.
Discovered by	Guillem Anglada-Escudé and team.
Detection method	Doppler spectroscopy. As the planet orbits the star it very slightly makes the star's position wobble. This can be detected as a tiny regular wavelength change (bluer approaching, redder receding) in the absorption lines in the spectrum of the star reaching Earth.
Distance from Earth	4.24 light years.
Star type	Red dwarf: Smaller and cooler than the Sun. Emits frequent intense X-ray flares.
Average distance from star	0.05 AU (Earth from Sun = 1 AU).
Estimated age	Unknown. Proxima Centauri may have been a passing star captured into orbiting the other two, which are about the same age as the Sun (4.6 billion years).
Orbital period around star	11 days (Earth = 1 year).
Length of day	Possibly tidally locked. In that case one side would always face the star and the other would be permanently dark.
Type	Rocky, Super-Earth.
Estimated radius	1.02 (Earth = 1).
Estimated mass	1.07 (Earth = 1).
Estimated atmosphere	Possibly thick, but unknown. It's possible that flares from the star may have eroded it away.
Estimated surface temperature	Average −39 °C, based on heat from the star and its distance. If the planet is tidally locked, the side facing the star would be permanently bright and warmer. The side facing away would be permanently dark and colder. If there is an atmosphere it would trap heat and there could be liquid water. There could also be strong winds between the two sides.
Habitability	Unlikely due to X-ray flares from the star.
Notes	1. There is another confirmed exoplanet, Proxima Centauri d, in the system. It is Mars- sized and orbits even closer to the star. 2. There may be another exoplanet, Proxima Centauri c, in the system. It is a Super-Earth or mini-Neptune, orbiting further out from the star. This is not confirmed. 3. Alpha Centauri A & B are both Sun-like stars. They orbit each other in a wide ellipse, varying between about Earth-Saturn and Earth-Pluto distance apart. 4. Alpha Centauri A may have at least one exoplanet. Alpha Centauri B has at least one confirmed exoplanet, Alpha Centauri Bb. 5. The exoplanets around Alpha Centauri A & B are close enough to the individual stars that they have stable orbits even though they are in the zone of instability.

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ASTROPHOTOGRAPHY

By Greg Walton

Mornington Peninsula Astronomical Society

Helpful hints when adjusting your images.

What adjusting can be made? Brightness, Contrast, Gamma, Colour balance, Saturation / Hue, Highlights, and Focus.

How much time could I spend on this? I found it can take 1 to 2 hours to stack and adjust an images.

Making adjustments. The main problems are, there is no set of adjustments for each image, whether it's a star cluster, nebula or galaxy, you would need to treat them differently. If the object is in the centre of the image, it will be easier to make adjustments.

Before we start. It's always best to copy the stacked images, because if you've made it worse you can return to a previous stacked image.

The biggest problem is knowing when to stop. It's very easy to add too much colour, making the image looks very artificial. We should be trying to achieve a very natural-looking image. I aim for something which looks more like what you would hope to see in the eyepiece of a telescope. On the internet, it's common place to see images with too much colour. Please don't imitate these images.

It's very easy to add contrast and get an instant results. You should try to limit the contrast as it often over brightens the already bright areas, while making the faint areas fainter or disappear all together. Sometimes I find that by reducing or removing the contrast at the very start before doing any other adjustments can help. As most images straight out of the camera are much brighter in the centre. So when you add contrast, you darken the corners and brighten the centre even more. If you were adjusting a globular cluster which is in the dead centre of the image, you may get away with it. But for everything else you would probably make it worse. Adding contrast also makes the stars larger or bloated and sometimes the stars will all merge together destroying the image.

Globular clusters, open star clusters and galaxies have little colour, making adjustments easier. It's the colourful nebulas where most struggle.

Adjusting nebulas. First reduce the contrast by 10% to 30%**.** This will help flatten the image making a more uniform brightness across the whole image. Then adjust the brightness and gamma levels. Best to look at your single images and take note of the colours, then try to adjust the stacked image to look the same. Then slightly increase colour balance by about 10%.
I use the word 'slightly' for a reason, as we can repeat this process several times.

Before doing more, you need to save and copy the image. Then work on the copy.

Now repeat the last set of adjustments, then save and copy the image. Remember to always work on the copy.

You can do this a couple more times. Then flick back through your adjusted images and ask yourself -are the images getting better?

Choose the best image and only now will I let you increase the contrast, but don't over do it.

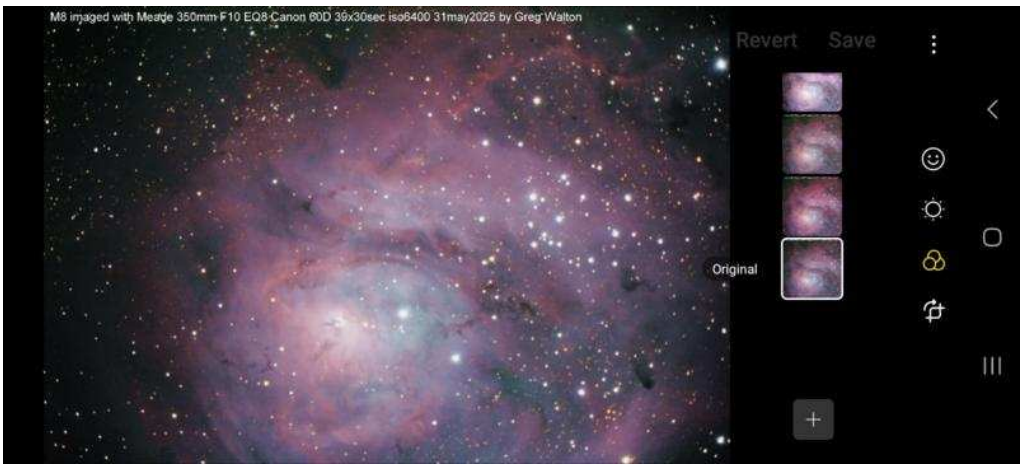
It's all about teasing out subtle details which can't be seen in the original image.

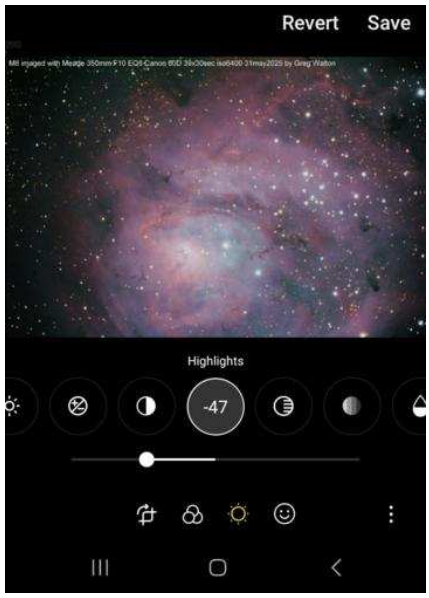
Attributes - Most astrophotographers try to achieve a black background, but most deep sky objects sit in a dusty background. So don't be too worried if you don't get a black background. We are also looking for small stars and natural colours.

There are many photo editing software products available. Use the one you are most comfortable with. Windows' Paint, Gimp, Photoshop, etc.

You can even use your smartphone to edit your images. Android gallery and Gimp image editor apps work remarkably well and are very convenient. If you are bored at work, you can play around with your astronomy images on your smartphone. Also these apps have features that aren't available on your PC software. Like being able to scroll through the preview for colour balance, which is much faster then doing this on your computer. *See below.* And the highlights adjustment works great to remove the over exposed areas, *See below right.*

I use a C mount to USB adaptor to copy images form a memory stick to my smartphone to see if I can improve them more. I also must admit, I often download members' astronomy images to my smartphone and adjust them to my liking.





Last winter, I imaged the Lagoon Nebula M8 with the 14 inch Meade in the MPAS observatory. The camera I used was a 15 year old Canon 60D. The settings were ISO 6400 at 30 seconds and the white balance was set to cloud. I used the 2-second shutter delay and the noise reduction was switched on, meaning each image took 62 seconds.

I took 41 shots, but had to delete 2 shots as the stars were not round. This often happens with the first and last images, as the tracking can take a moment to settle or because I touched the camera.

This gave me 39 good images that I could stack with Deep Sky Stacker.

See the original single image from the camera at right. As you can see, it's nothing special, with very little visible detail and not worthy of showing to friends.

In the last newsletter, I wrote about Deep Sky Stacker software. But I didn't write about processing your images after Deep Sky Stacker had done its job. I mentioned, before you close DSS you may wish to make more adjustments to the levels and save them in the same folder but with a different name. Best to make more adjustments and save them all, once you close DSS it's hard work to make more. You can always delete all the adjusted images that are not up to the standard you require.
Below, 5 saved adjustments of The Lagoon Nebula M8.

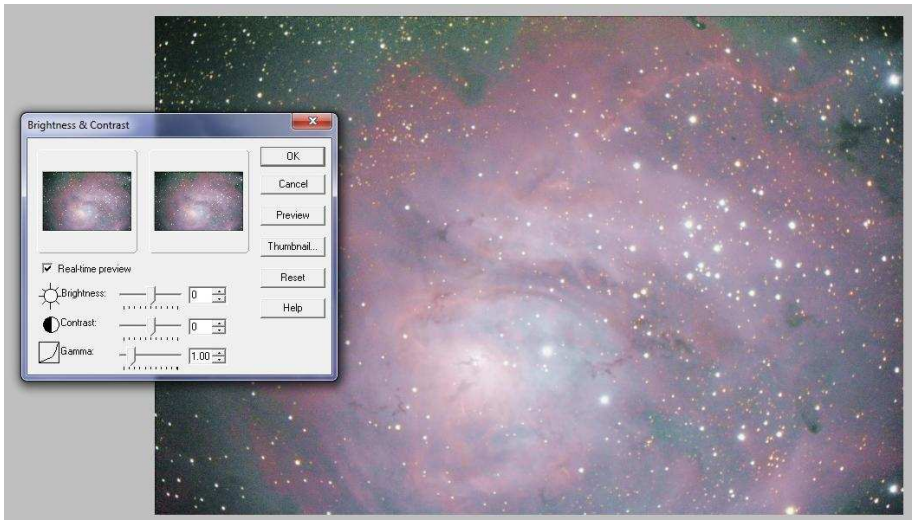
Once Deep Sky Stacker has stacked the 39 images and I had saved 5 different versions of the adjusted image. *See above*

I selected the 4th image to work on.

Using Paint on my windows computer, I saved the tiff file as a Jpeg.

I opened the image with my preferred editing software and was presented this. *See right*

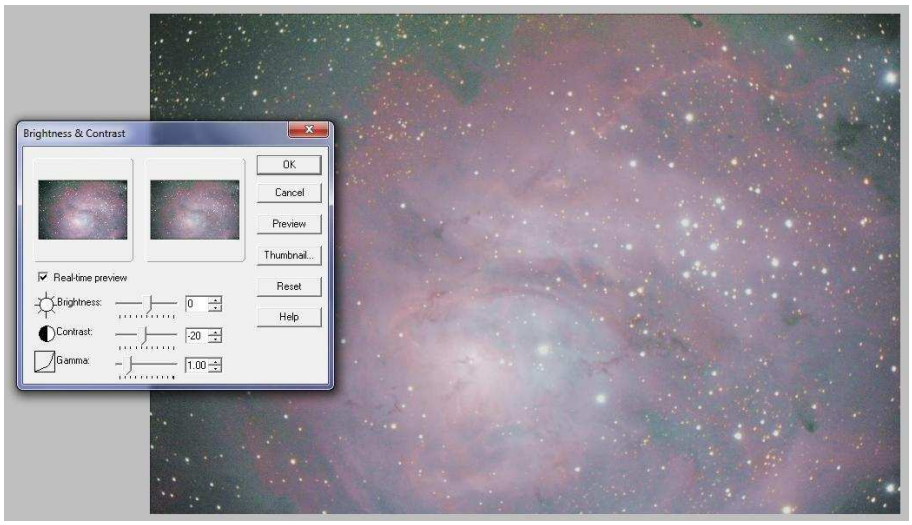
As you can see it looks pretty good.



I reduced the contrast by 20%**.**

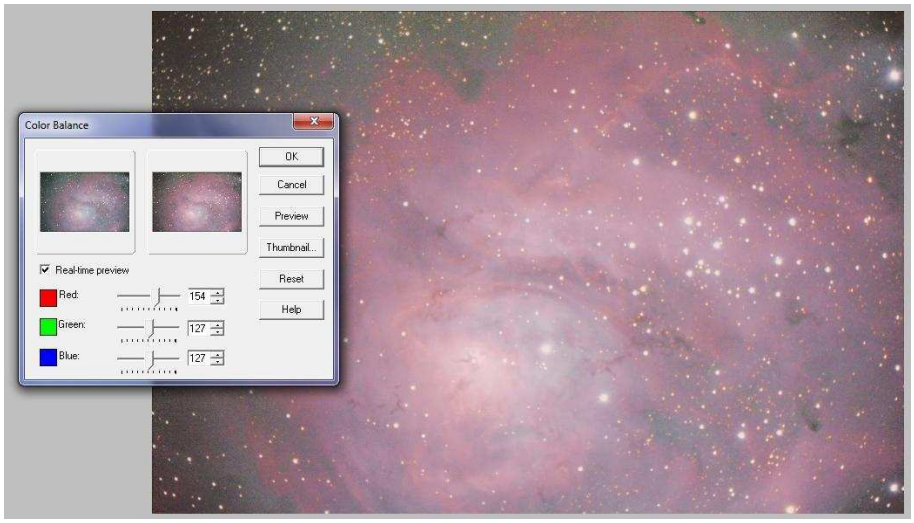
At this stage, the image appears to be getting worse. But don't worry.

This will help flatten the image making a more uniform brightness across the whole image.



Then adjust the colour balance.

I sightly increased the red here.

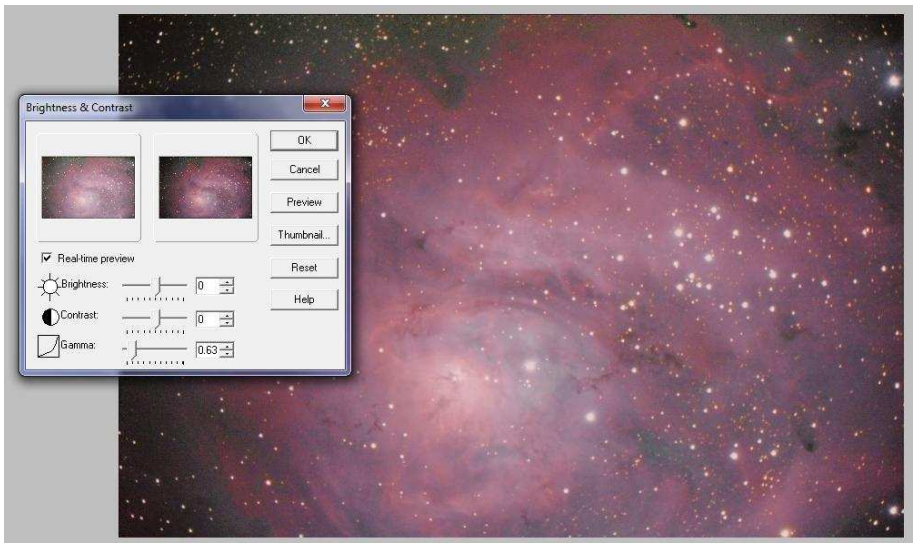


Then adjust the Gamma.

I reduced the Gamma to 63% here.

This also darkens the image.

If you don't have a gamma tool,
then use Brightness tool.

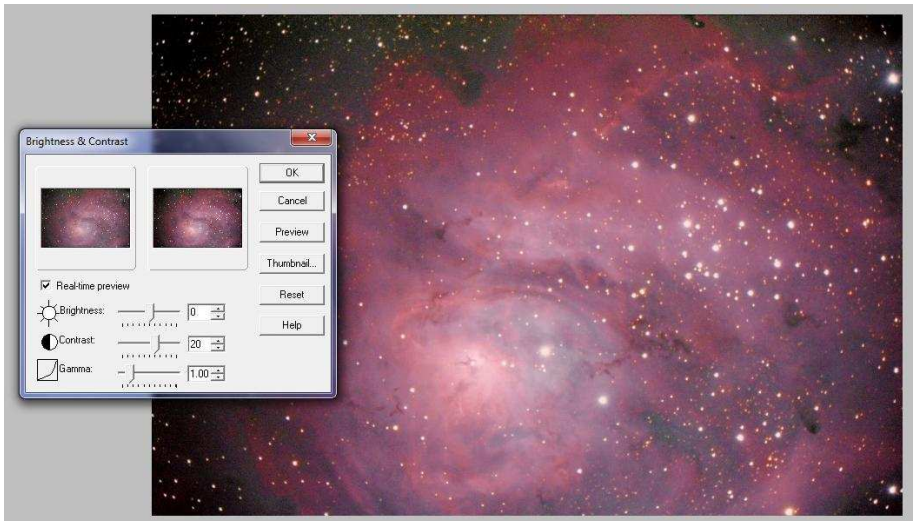


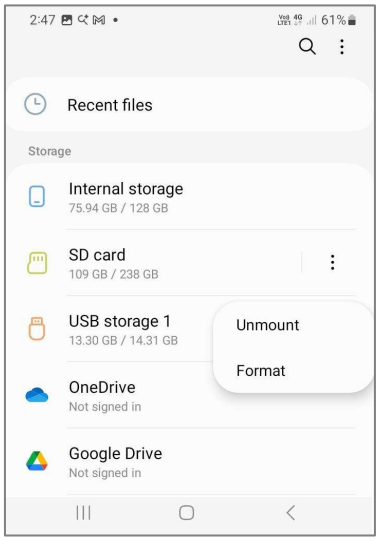
Only now we can increase the contrast,
but don't over do it.

I increased the Contract by 20% here.

When making adjustments to your astronomy images, it's all about your personal preferences, there is no wrong or right.

In this article I'm trying to show you what is possible.





For those who wish to have a go at adjusting your images on your android smartphone.

1. Buy a C mount to USB adaptor.
2. Copy your images to a USB memory stick and plug it into the adaptor.
3. Plug the C mount to USB adaptor into the charging port on your smartphone.
4. Open My Files - You should see it listed below your internal storage.
5. Tap on USB storage to open.
6. Select your images and copy to your internal storage.
7. You should see your images in the Gallery and can start making adjustments.

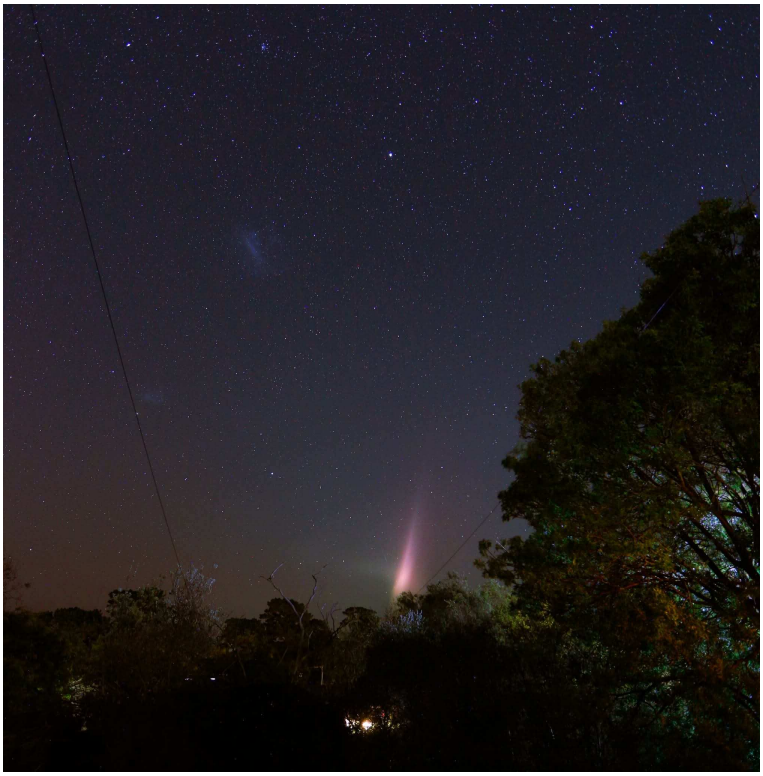
Before removing the C mount to USB adaptor. Remember to tap the 3 dots and then tap Unmount. Your smart phone should prompt you to remove the C mount to USB adaptor.

MEMBERS GALLERY

Right -

Actually managed to capture a “Steve”. A Steve is a rare atmospheric phenomenon appearing as a narrow, purple and white ribbon of light, often accompanied by green picketed aurora. Taken with my Canon 6D 20 Second exposure @iso 1600 - Len was a 14mm Prim focus USM Ver 2

By Paul Albers



Below -

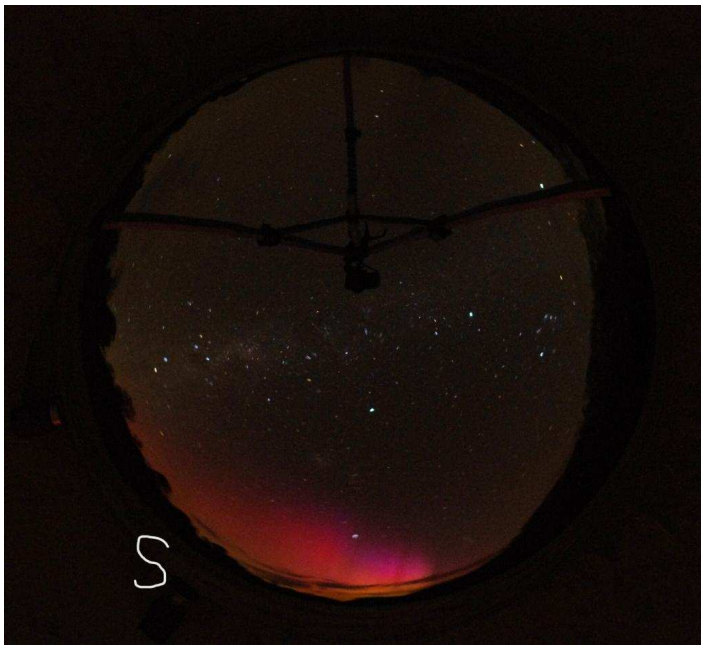
C/2024 E1 comet 19th February taken around 10pm.

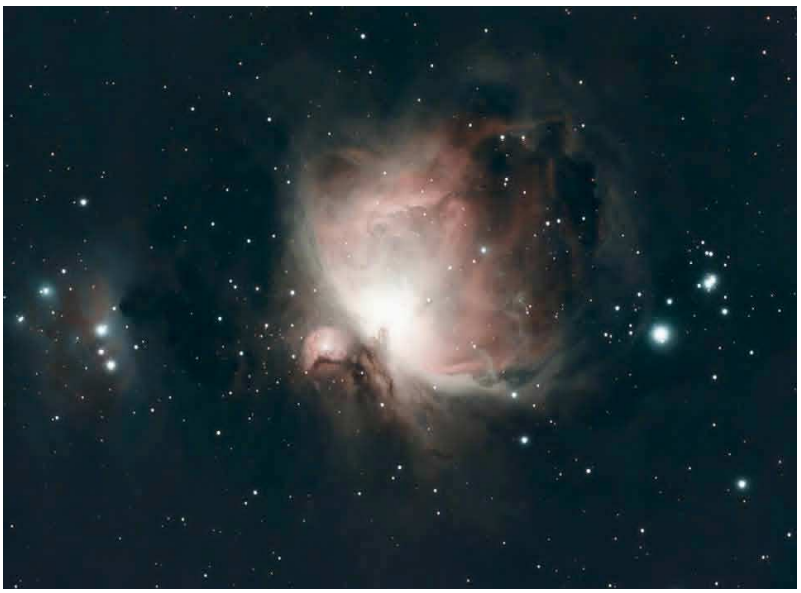
By Souren Harutyunyan

Right -

While camping at Wilson’s Prom I was testing the all sky hubcap camera and picked up a faint Aurora. This shot is from 21:25 AEDT, 15s ISO 3200. The image has been flipped to display the correct orientation, South is indicated. Rays were visible at this time. Some of our party managed to photograph it on their phones even several hours later. I don’t know if anyone saw or photographed it from the Mornington Peninsula.

By Phil Holt





Left -

Great Orion nebula
M42

Seestar S50 Mosaics 8th March.

By Sylvie Grandit

Here are a couple of captures of Jupiter from Thursday 26th February, conditions were quite poor, but I managed these 2 captures, 50 minutes apart, while Io was transiting.

Top right - The first is a full frame which shows Io and Ganymede to the left of Jupiter, and Europa to the right.

Bottom right - Io's shadow is visible in the first frame, but the moon itself isn't resolvable in front of the planet.

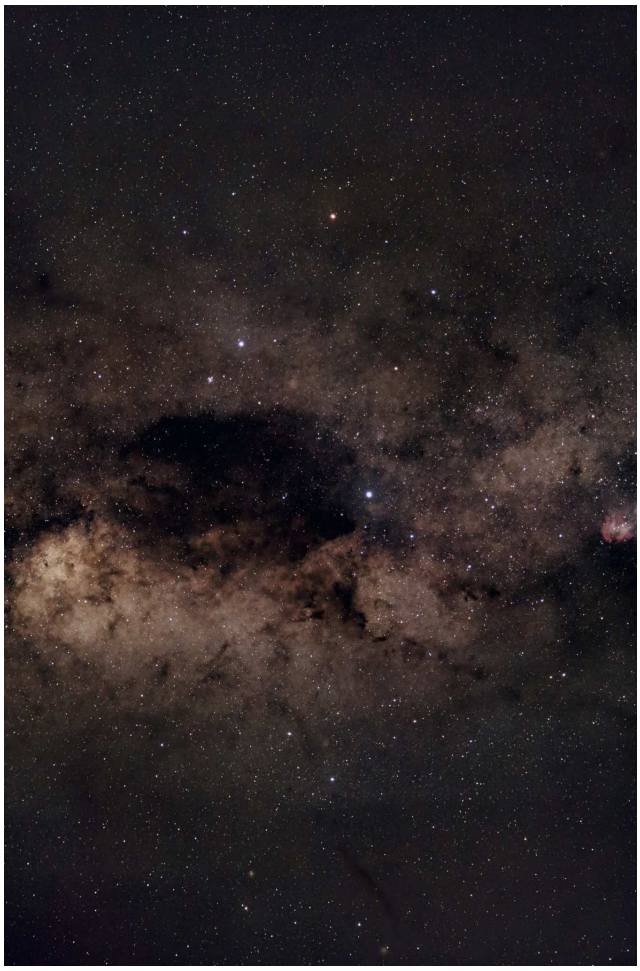
Below - This image shows Io just as it cleared the planet to the left of Jupiter, while its shadow is still transiting.

Both these images are cropped. *By Chris Kostokanellis*

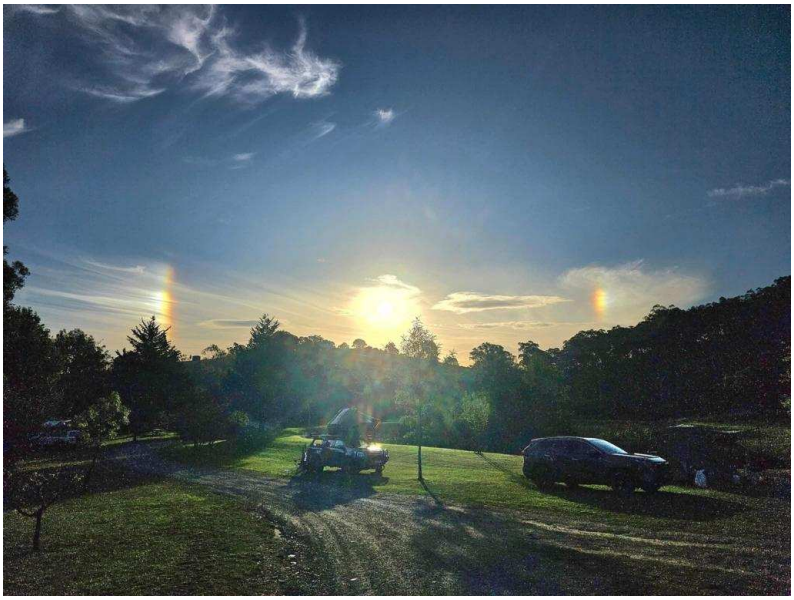
Right - My capture of the Coal Sack Nebula in Crux, from the Gippsland Star Party. This was a great weekend, with some terrific people, and an amazing venue (Echo Bend Caravan Park). We had 2 nights for viewing and imaging under Bortle 2 skies.

Imaged with my Canon 700D at 59mm FL, f/5, ISO 3200, on my AZGTi Tracker.
99 x 60 Sec frames. DSS and Siril.

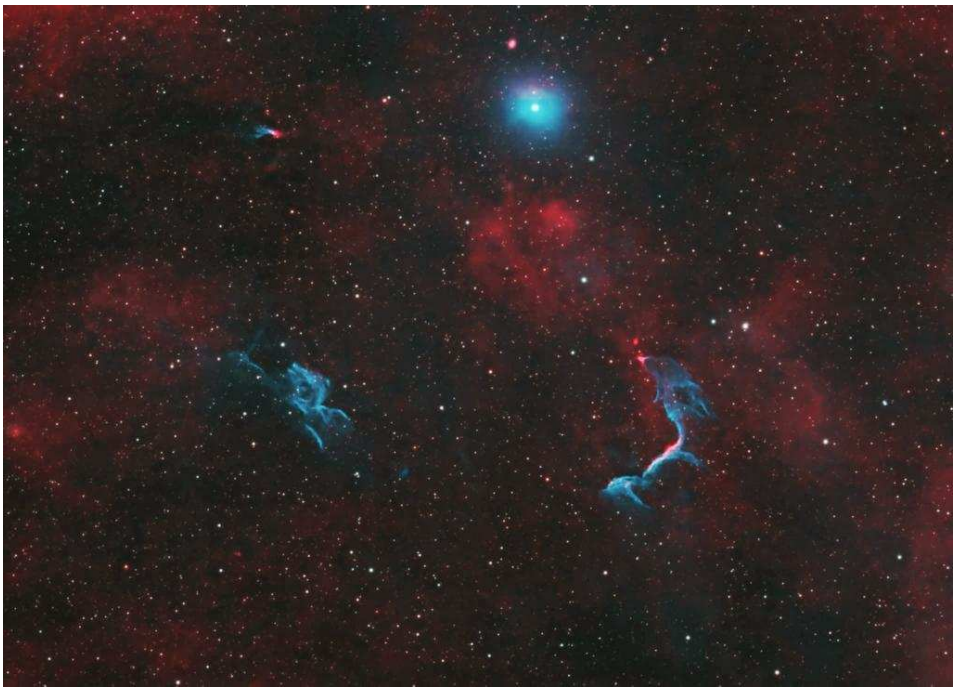
By Chris Kostokanellis



Below - Sundogs at the Gippsland star party. *By Chris Kostokanellis*



Right -



The Mermaid or Betta Fish Nebula in Centaurus, is part of Supernova Remnant SNR 296.5+10. The bright star is Rho Centaurus.

The blue colour comes from double Ionised Oxygen (OIII).

I imaged this over 2 nights at the Gippsland Star Party. This is 695 minutes of exposure (139 x 5 min).

Sharpstar CF80 refractor
Optolong L-Extreme (Ha / OIII) filter
ASI294 MC Pro camera. AZEQ6.
ASI Air for image capture and DSS and Siril for processing.

Playing around with the processing of this. I separated the Ha and OIII data, and processed it as HOO (Red = Ha, Green and Blue = OIII).

By Chris Kostokanellis

Right - Cover images - *By Nik Axaris*

OED1 - The NilAdh Bubble

This is a rarely captured object near the Pencil Nebula and only discovered in 2024 by Marcel Drechsler & Aygen Erkaslan.
This image was taken over several nights.
20.5 hours of acquisition time in total using the Askar FRA300 and the TS-Optics Photoline 130 APO, so totally different Focal lengths.
I also use 2 totally different cameras, the ZWO 585MM using Scorpio H and O filters of 3nm and the ZWO 294mc Pro using the Optolong L-Ultimate.
Mono images were 3 mins each Colour images were 600secs each. Using both rigs allowed me to double and even triple the capture time without losing days and days due to fickle Melbourne weather.
I then processed each batches separately in Astropixel processor, even extracting the H and O channel from the Colour version. Then recombined the master images back into astropixel Processor to do a total combination of all the mono channels. For the final result this was processed in pixinsight and Photoshop.

Right -

M83 - NGC5236 - Southern pinwheel

Face on spiral galaxy

Distance - 15 million light years

Imaging with the short tube 100mm refractor in the small dome. Uses the newly acquired field flattener with my 15 year old Canon 60D DSLR.

By Greg Walton

MO PHO CHALLENGE

Chris Kostokanellis

This month's Photo Challenge, the first for 2026, is imaging the Moon.

Astro Mo Pho is Back for 2026! The first challenge ran during the Intra Members Meeting period over February and March 2026. Members were tasked with imaging the moon, and the Lunar Eclipse which occurred on the 3rd March.
Members who completed this challenge were:
Barry Thompson, Chris Kostokanellis, David Rolfe, Domenic Lucarelli, Greg Walton, Guido Tack, Jamie Pole, Kelly Clitheroe, Leigh Hornsby, Liam Laube, Nik Axaris, Pam Kammerhoffer, Peter Wylie, and Sylvie Grandit.

We captured images of the moon starting off with a 3 day old Waxing Crescent captured by Liam Laube with his iPhone at St Kilda Beach on the 20th February, and finished off with a waning Gibbous moon by Leigh Hornsby on the 9th March, using his 150mm Newtonian and an ASI585 camera.

This year, there will be a clear winner for the Mo Pho challenge of the year. The winner will be by popular vote, and the winning image will be the cover shot for the 2027 MPAS Calendar.
Obviously there will be a cut off around September, as we need to get the calendar designed and printed.

More details on this will follow. *Clear skies. Chris Kostokanellis.*

Right -

Astro Mo pho
daylight Moon
Seestar S50

By Sylvie Grandit

Far Right -

Astro Mo pho
video stacking
Seestar S50

By Sylvie Grandit

Right -

Astro Mo Pho. Moon. This was captured last Thursday 26th February, after the students from St Mary's College went back to the camp, I put my camera on the MPAS 14" Meade to try capture some Lunar shots. Conditions were terrible for this, with a fair bit of wind moving the scope, even in the shelter of the Observatory, not to mention the poor seeing it produced.

Regardless I persevered, and this is one of the captures.

Of some 3000 frames, I stacked the best 15% (approx 450 frames) to end up with this image.

I used PiPP and Autostakert to align, analyse and stack the frames, and Siril to process and sharpen.

By Chris Kostokanellis

Right -

Spamming another shot of the moon.

Again from 26th Feb, and from the 14” Meade.

This one is centred on the Montes Apenninus mountain range. The large crater in the upper left is Copernicus Crater, which is around 93 km wide.

PiPP, AutoStakkert and Siril for processing.

By Chris Kostokanellis

Right -

My last processed moon pick from the 26th Feb, imaged through the 14” Meade at MPAS.

This one covers the heavily cratered region of the moon that is near the moon’s south pole.

By Chris Kostokanellis

Right -

Luna Eclipse! – Taken with a 135mm lens and Canon 60D. Clouded out from moonrise until 10pm, then the clouds parted right on time! I look at the 480mm photos I also took later.

It was a great night!

By Dominic Lucarelli

Below right -

Blood Moon Eclipse 10.45pm toward the later part of the eclipse so it showing brightening on one side, which highlights my favourite crater, Tycho! Taken with a cooled camera and a “small” 480mm focal length telescope, a basic stack of 5 photos sharpened with PS.

By Dominic Lucarelli

Below -

Blood Moon and partail eclipse .. taken on my Dwawf 3 scope. I love the Moon.

By Pamela Kammerhofer

Right -

I took this with a Samsung phone attached to my telescope in Chelsea Heights last night. We had quite a good show.

By Barry Thompson

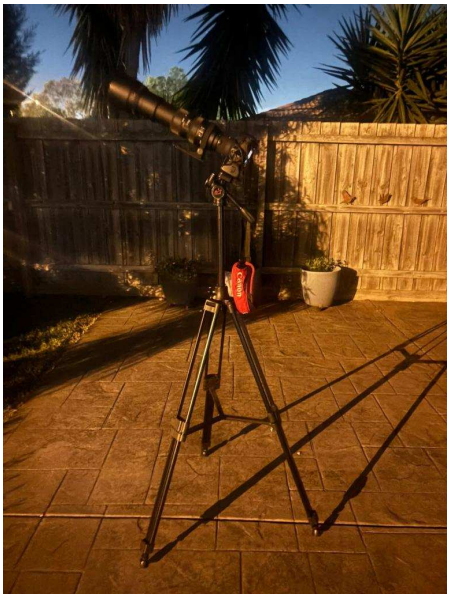
Nice catch Barry, you even captured a star next to the Moon.
Regards Greg Walton

Right -

Blood Moon!

Taken from Aspendale Gardens last night with a 1000mm effective lens (150-500mm Sigma with a 2x extender, and a canon 6D)

By Jamie pole



Below -
Selection of Lunar eclipse images.

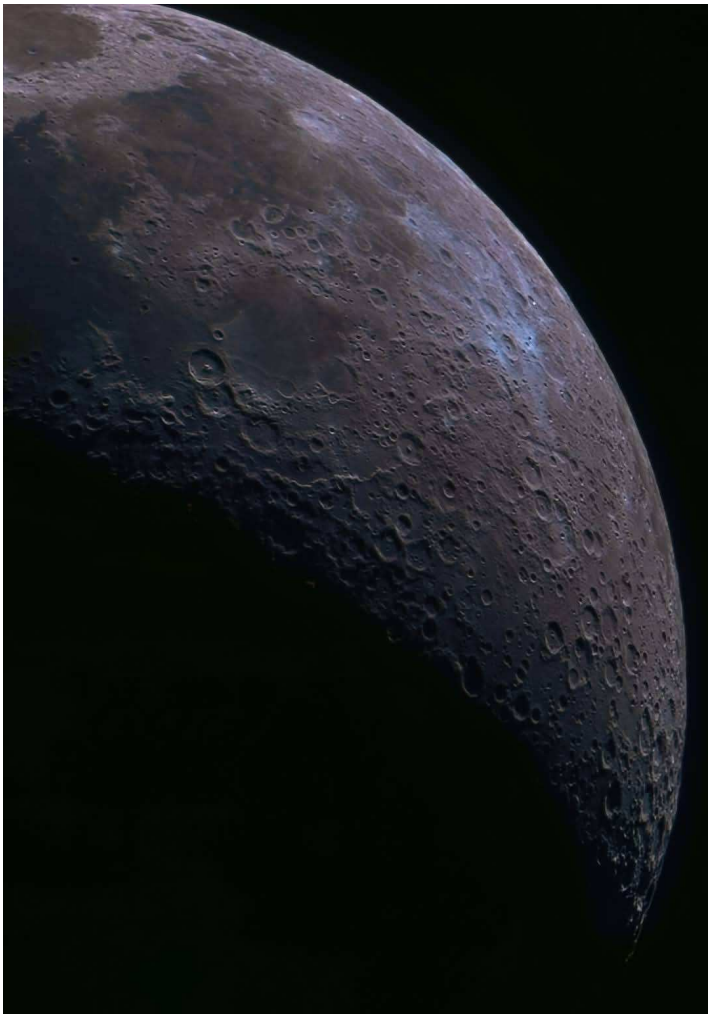
By Greg Walton

Below - Compare the pair.. taken from Celestron nexstar6 with a cheap Celestron 32mm eyepiece in Bonbeach. First two images from iPhone 16 non pro, the second two from a pixel 9 pro. No AI used but approx 6 second exposure. I can't tell you what a pain it is to align phones to eyepieces.... Apple wins hands down. *By Peter Wylie*

Right and Below -

Astro Mo Pho - 3 images of the Moon.
Mineral Moon, saturate the moon's colours carefully and it reveals the Moon's minerality.
The blue hues suggest a high titanium content and the orange/brown is iron.

By Nik Azaris



Right -

Astro Mo pho. Mare Imbrium, Mare Serenitatis and Mare Vaporum. Also partially visible is Mare Tranqillitatis(Sea of Tranquility). I believe that in this image are 4 of the 6 Apollo landing sites(11, 15, 16 and 17).

This image is from a 60 sec video, imaged with my 2 150mm reflector and ASI585 MCAIR. Processed in PiPP and Autostakert only.

By Leigh Hornsby

Right -

Mo Pho Moon challenge

I dragged my 10” Dob out on Wednesday night and took a photo of the Moon with my phone camera.

By Kelly Clitheroe

Below 2 images -

Mo Pho Moon challenge

Remote image from Starview farm

By Dave Rolfe

Right -

Astro Mo pho

The Moon
From St Kilda beach
20th Feb 2026

iPhone SE

By Liam Laube

MO PHO CHALLENGE

Chris Kostokanellis

The second Photo Challenge, is imaging Open Star clusters.

Open Clusters are collections of 10's to a few 1000 stars, formed from the same molecular cloud at roughly the same time. More than 1,100 have been discovered in the Milky Way, but there are certainly more that we can't see. The stars are loosely bound by mutual gravitation, but because of their open nature, they are prone to be disrupted by interactions with other clusters, or even interactions between member stars. They slowly loose members in this way and the stars get dispersed through the Milky Way. Our sun and solar system was likely a member of an open star cluster when it was first formed. Members who completed the Open Clusters challenge were: Mark Stephens, Sylvie Grandit, Nik Axaris, Michael Barrow, Dennis Cooke, Chris Kostokanellis, David Rolfe, Michelle Sykes, Greg Walton.

Summary of the images submitted for the last Astro Mo Pho Challenge. https://drive.google.com/.../1PDIBOAoEEvXLqITbH20.../view...

Well done to all the members who managed to get a shot for this challenge. Clear skies. *Chris Kostokanellis*

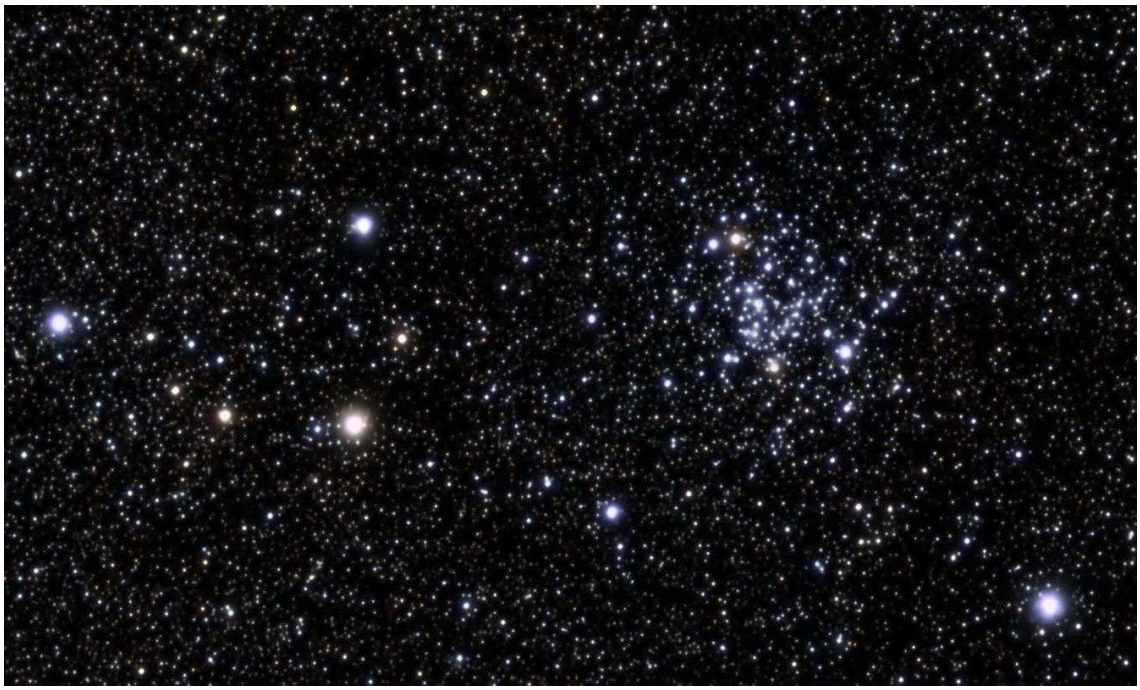
Right -

For this month's Mo Pho challenge I went looking for something south due to the moon making a mess of the rest of the compass.

I found C 97 or NGC 3766. I love the fact that the different colours are so visible.

Only got 67 x 30 sec shots with the S50. Processed in Siril. I will try for a couple more if the clouds break tomorrow night.

By Michael Barrow



Right -

Astro MO PHO NGC3766 near the Running chicken Nebula.

TS-Optics 130 APO optolong L-Pro ZWO asi294mc Pro

By Nik Axaris

Right -

ASTRO MO PHO
Gem Cluster - NCG 3293 in the Carina constellation consist of 100 or so stars 8,969 light years away from earth also there is the Gabriela Mistral Nebula.

88 minutes (the moon was not my friend) equipment use 115 SKYROVER triplet with flattener / reducer and Optolong L-pro filter and ASI 2600 MC PRO – only used IPad to enhance.

By Sylvie Grandit

Right -

ASTRO MO PHO
The Jewel Box NCG 4755 open cluster in the Crux Constellation 6,419 light yrs away from earth.

Equipment REDCAT51 20 x 3mins

By Sylvie Grandit

Right -

Astro - Mo pho - XMAS TREE NCG2264 open star cluster.

SEESTAR S50 182 x 20 sec taken at Gippsland Star Party

By Sylvie Grandit

Top 2 images -

Astro Mo Pho.
Here are 2 more from me.

First is M41, The Little Beehive Cluster in Canis Major.

Around 100 Stars, 2,360 LY away.
48 min exposure (24 x 2 min).

Second is M46 (NGC 2437) in Puppis.
500 stars, 5,000 LY away.

The planetary Nebula in the photo is NGC 2438, and is not related to the cluster. It is in the foreground and only 1,370 LY away.
60 min exposure (30 x 2 min).

Both images:
200mm Newtonian.
ASI294 MC Pro.
Antila Triband filter.
AZEQ6 and ASI Air.
DSS and Siril to process.

By Chris Kostokanellis

Bottom Right -

Astro Mo Pho.

NGC 4609 – The Coal Sack Cluster. Crux.

NGC 4609 is around 4,300 LY away, placing it behind the cold dust and gas of the Coal Sack nebula (~586 LY).

It contains around 33 stars, so not a very large cluster, but still bright enough to shine through the Coal Sack.

The Bright star in the middle is BZ Crucis, and at the 7-8 o'clock position from it, there's another small open cluster, Hogg 15, around 10,000 LY away.

This was a stack of 15x5 min frames, taken last night (4/4/2026)

200mm Newtonian.

Antila Triband filter helped to tame the bright moon.

ASI294MC Pro and ASI Air.

AZEQ6.

DSS and Siril to process.

By Chris Kostokanellis

Right -

NGC2516 Southern Beehive (or Diamond star cluster) in the Carina.

Taken from my Starview Remote Telescope with VC200L, ZWO2600 Camera using RGB & L filters.
2 Hours with each filter
(1 night imaging).

By David Rolfe

Right -

Table of the Scorpion NGC6231 imaged with the 100mm refractor in the small dome on the Briars.

By Greg Walton

Right -

Mo pho submission of NGC 2244 Satellite cluster in the Rosette nebula.

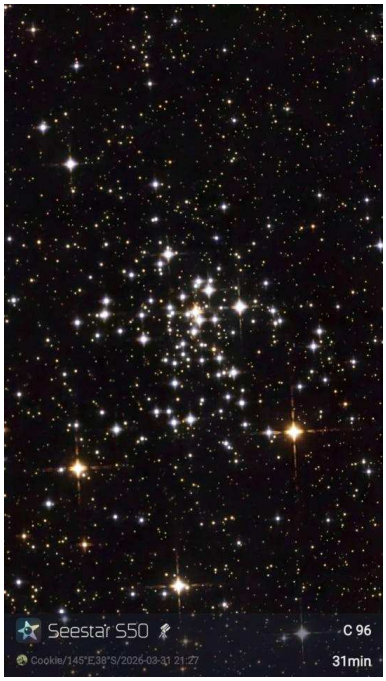
By Mark Stephens

Right –

Astro Mo Pho
Wishing Well cluster NGC 3532
Date - April 4th 2026

360 x 10sec
Seestar s50

By Michelle Sykes



Above -

Open clusters - C94, NGC1966, C96 & C91
I thought I'd go cluster chasing last night from my yard in Patterson Lakes for the Mo Pho challenge, even though the moon was full and bright I think these turned out ok.

By Dennis Cooke

Right -

Open clusters - C85 & SH2-273
On the 4th April 2026 it was a nice clear night last night for clusters and other shots until the moon was high enough to flood the sky with light. I also had the Celestron out but couldn't locate the Astronauts heading for the Moon.

By Dennis Cooke

The current Astro Mo Pho Challenge is imaging the Milky Way.
This is a wide field challenge, aiming to capture larger sections of the Milky Way.

Currently, a large section of the Milky Way is visible after 11pm, from Sagittarius in the East, spanning through Scorpius, Crux, Carina, Canis Major and even Monoceros in the West early in the evening.

This is a No Telescope challenge, but feel free to use whatever other equipment you have, be it a Smart phone, All Sky camera, Hub cap camera to capture the whole sky, or a longer focal length lens to capture a smaller section of the Milky Way using a tracking mount. Mosaics and stitch ups are a good way to capture the milky way too.

Clear skies, Chris Kostokanellis

Below - Milky Way, from Horizon to Horizon, 2 panel stitch up using a Canon 700D and Sigma 14-20mm lens by me.

SOCIETY INFORMATION


Peter Skilton


Chris Kostokanellis


Nerida Langcake

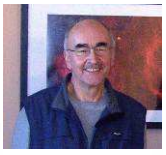

Jamie Pole


Trevor Hand


Guido Tack


Simon Hamm


Phil Peters


Manfred Berger


Greg Walton

OFFICE BEARERS OF THE MORNINGTON PENINSULA ASTRONOMICAL SOCIETY

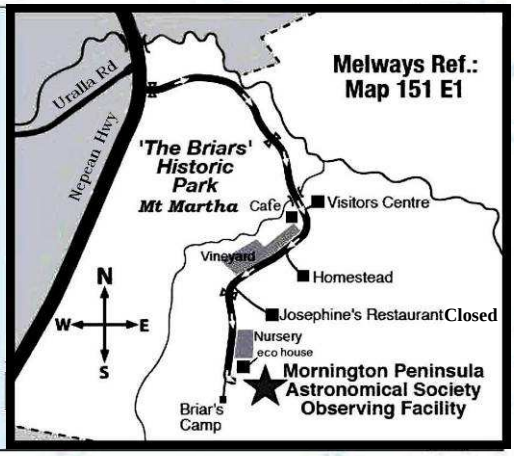
President: Peter Skilton
Vice President: Chris Kostokanellis
Committee: Trevor Hand, Guido Tack, Simon Hamm, Phil Peters and Manfred Berger
Secretary: Nerida Langcake
Treasurer: Jamie Pole
Web master: Guido Tack
Scorpius editor: Greg Walton
Site manager: Phil Peters

SOCIETY MEETINGS

Meeting Venue: MPAS Astronomy Centre
The Briars, 450 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: Mornington Peninsula Astronomical Society
450 Nepean Hwy, Mount Martha, Victoria, 3934



LIBRARY


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 - Librarian

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.

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

VIEWING NIGHTS - MEMBERS ONLY

Members only Viewing Nights - any night at The Briars, 450 Nepean Hwy, Mt Martha. 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: Mornington Peninsula Astronomical Society
450 Nepean Hwy, Mount Martha, Victoria, 3934

Members please write a story about your astronomy experiences and add some pictures.
Send them to the editor: Greg Walton gwmpas@gmail.com
MPAS newsletters online - https://drive.google.com/folderview?id=0ByvkxzZGI9g_SUNmZVhkZTFGWTA

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