

Cover image – Aurora with star trails! All images taken and stacking done with my phone. Just ignore the dumb plane on the left that didn't seem to know where it was going. Somewhere near Tooradin 24/04/23. Taken with my Samsung Note20 Ultra smartphone, 263 x 20 sec images @ ISO1600. By Nerida Langcake



# SCORPIUS

THE JOURNAL OF THE  
MORNINGTON PENINSULA ASTRONOMICAL SOCIETY INC.

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

Vol. XXVIII, No. 3 (May / June) 2023

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



**Public viewing Night March 3rd** - we had 52 members of the public in attendance. After a cloudy day the evening turned out to be clear. We setup the telescopes early, long before the sky got dark and pointed them to the Moon and Mars. This gave the public the opportunity to see the Moon and Mars before the talk. As the sky darkened, we spotted Venus and Jupiter just above the trees in the West. We also seen the ISS past over head. The talk was presented by Trevor Hand finishing around 9pm, then the public returned to the telescopes, by then it was dark enough the see the Orion Nebula M42, Omega Centaurus NGC5139, Jewel Box NGC4755, the pin cushion NGC3532 & the double star Alpha Centauri. *Greg Walton*

**Trivia Night with Southern Peninsula Concert Band March 4th** - Starting at 6pm, We had a great turnout for our "Close Encounters of the Fourth Kind: A Musical Stargazing Trivia Soiree" last night, with 110+ in attendance, plus members of the Southern Peninsula Concert Band. We saw some creative costumes on our guests and the music was fantastic! Congratulations to the winning trivia team, the raffle winners and the door prize winner! Then we found a few gaps in the clouds, Moon, Mars, Orion Nebula M42, the double stars Alpha Centauri and A crux. Thank you to all who attended and supported our fundraiser event.



## Public Somerville Family Fun Day. Monday 13th, 9am-5pm Somerville.

MPAS attended the Somerville Family Fun Day yesterday (Monday 13/03), armed with our new marquee (well, parts of it anyway and some 'loan' bits), telescopes, meteorites, astro pictures and our brand new hand-outs. Several intrepid members arrived to bump in at 7am and set up our stall. With clear blue skies and a slight chill in the air we worked out how to operate the new marquee, which turned out to be quite easy. Once the tables were erected and items put on display, we were soon ready for the day. The one viewable object we had all day was the Sun which we targeted with the Societies Solar Telescope. Despite the sign on the scope advising people to NOT look at the Sun, we then encouraged a large number of people, to look at the Sun through the Solar scope. They were treated to numerous prominences and a single sunspot.



We also had Nerida's collapsible Dobsonian scope and Phil's refractor. We were lucky to have a daytime Moon until about 11am and despite patchy cloud both of these scopes gave visitors a terrific view of the Lunar surface. Once the Moon set, we had one trained on some pine cones about half a kilometre away and the other on the top of a large slide, watching people preparing to use it (if questioned about the choice of target by the Police who had a marquee nearby, we were prepared to throw Phil under the bus). Nevertheless, people were amazed at the detail that the scopes allowed to be seen.



Trevor manned the table with his meteorite and cube of Wolfram (Tungsten), the weight of each surprising people, who thought they were one-handed pick-up objects. Many of the visitors were also surprised that there was a thriving astronomical society so local. We have already received bookings for two school groups and based on the number of our new brochures handed out, the next couple of PVN's should be booked out.

All considered, the day was a terrific success and as with all things like this was due to the support of members. Attending and assisting on the day were, Trevor and Kathryn Hand, Chris Kostokanellis, Phil Peters, Nerida Langcake & Piper Grierson, Mark Stephens, Greg Walton, Pia Pedersen, Simon Hamm, Ben Claringbold, Fred Crump and Bonnie Cass, Mike Smith and Cathie Dethick. In addition, there were many members attending on the day who stopped by and said hello.

*Mark Stephens VP*



**Society meeting March 15th** - 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. The meeting features Prof. Janna Levin, Astrophysicist, Columbia University, on the topic of "Black Hole Blues and Other Songs from Outer Space", being her book title about the detection of gravity waves by the LIGO facilities. This public lecture is courtesy of the Perimeter Institute for Theoretical Physics in Ontario.

Also covered is Schrodinger's cat explained, How big a magnet is needed to erase your credit card, How deadly are airlocks in space, and what happens to a gold ring dropped into lava. We close with ESA footage from the vantage point of the International Space Station of 2 complete Earth orbits, set to an 1886 tune well-known to Harry Potter aficionados, but prohibited for decades, only to be performed for the first time after the death of its composer in the 1920s.

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

**Special viewing night March 17th** - Last Friday saw a birthday party held at the Briars for an 11-year old girl and her friends and families, followed by a stargazing evening. Following the obligatory nibbles to start with, the group of 25 first were able to see Venus through the large refractor on the lower slab, before the planet slipped below the treeline in twilight.

Peter Skilton then gave the talk indoors, before everyone moved outside to see Mars and the many deep sky objects on offer. The sky was almost entirely cloud-free all evening, and it was a pleasant temperature for this time of year. There were a lot of very excited children all evening, enjoying an adventure in the dark.

Helping with running the evening were Nerida Langcake, Jamie Pole, Phil Peters and Ben Claringbold. *Regards, Peter Skilton*

### Members BBQ & Working Bee March 18th –

Calling out to any aliens looking down on us!!!  
A big thanks to Phil Peters for single handily removing the rust and painting the top of the shipping container. Looks much better now.



*Star trails at the member BBQ, taken by smartphone on a Briars fencepost.  
Image: Nerida Langcake*

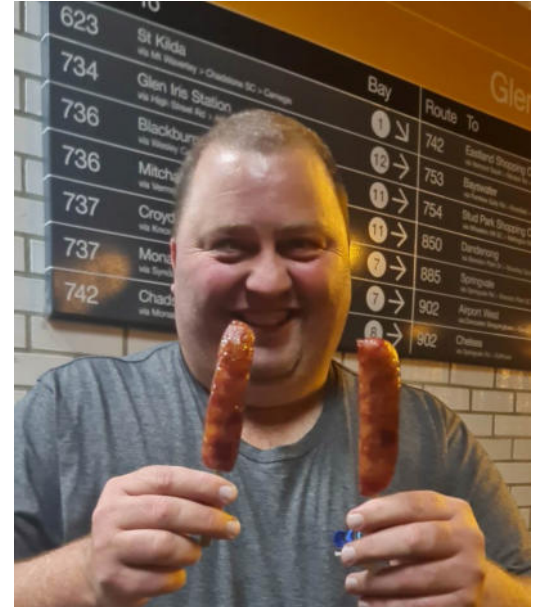
**School viewing March 22nd** - Seventy-one Year 6 pupils, plus half a dozen teachers, from Strathaird Primary School, all on day 1 of their annual camp, visited the Briars last night for a stargazing evening.

The skies were clear all evening, the temperature was pleasant and wind was absent. The evening started off by seeing a bright, gibbous Venus through the telescopes in twilight before it set too low to be seen in the West. Then everyone moved indoors to hear Katherine McCoy and Peter Skilton give the talk and bat many, many questions thrown from the audience all evening.

After the sky had darkened, the group then moved outdoors to look through the many telescopes at Mars, Orion Nebula, Wishing Well cluster and many other deep sky objects peppered around the sky. It was a Moonless evening, so the skies were dark for the occasion which, of course, adds to the adventure for the visitors. Helping with the set up and telescope operation were Jamie Pole, Nerida Langcake, Robin Broberg, Guido Tack, Chris Kostokanellis hiding in the dome, Phil Peters and Fred Crump, and also Katherine had her instrument in use. Plus, we also had Ashley and Jamie Grierson proudly in the audience as it was their school.

Given it was a very early start to the day for the classes, and day 1 on camp is always tiring, it was pretty impressive how many questions arose from the children, with at least half a dozen hands in the air at any instant throughout the entire talk! With luck, we might see this school again next year as they definitely seemed to enjoy the experience a lot. *Regards, Peter Skilton*

**Professor Brian Greene - 3rd April, Melbourne Convention Centre** – 15 members made their way via various means to the Plenary to attend the Brian Greene event “The Twilight of Time: A Cosmic Journey to Eternity”. Dave and I decided to catch public transport, which was all smooth sailing on the way in (however, going home was a 2 hour, 3 trains, 1 bus and 3 spicy sausages adventure). We arrived early, grabbed a Krispy Kreme donut for the walk to Crown, where we enjoyed some yummy Indian takeaway at the food court. Then we traipsed over to the Plenary and waited for the gathering of our MPAS group. Once we were all there, we made our way inside and found all our seats. The event was hosted by Adam Spencer, who was an excellent host, and cosmologist, Brian Greene, was absolutely fascinating and enlightening. Some people in the audience asked some great questions! *Regards, Nerida Langcake*



**Public viewing Night April 7th** - April's public night on Good Friday saw 62 visitors plus 19 members in attendance at the Briars. For those arriving early there were very brief glimpses of Mars and a very fuzzy Moon close to being Full and rising steadily in the East, but alas the cloud was too thick for the rest of the evening for any telescope viewing, though tours of the facilities were of course possible.

Indoors, Trevor Hand gave an updated talk on eclipses, ahead of him soon journeying to North-West Australia for an ocean-going total solar eclipse on 20th April near Exmouth. Hopefully the currently intensifying cyclone Ilsa doesn't interfere with the sea and sky conditions too much. Perhaps some weather incantations beforehand might help.

As a consolation for the clouds, those on-site were treated to two entertainment features put on by other organisations. There was a solid 5 or more minutes of fireworks due East very close to Peninsula Link and clearly visible and audible over the opened roof of the main observatory building. In all likelihood it was something put on at one of the vineyards in that direction, perhaps in celebration at an Easter party or a wedding being held that evening. But it was enjoyed by all who were outside at the time.

Second point of entertainment was an anonymous group of silent visitors at the camp, complete with everyone dressed in long gown and bonnet not too dissimilar to those depicted in the television series "The Handmaids' Tale". Two of the group's members patrolled quietly back and forth along the front verandah all evening, presumably to ward off the cult of astronomers next door from getting too curious and interrupting the deliberations. One of the public visitors who parked their car next door, said they also saw many others similarly dressed and parading silently in a large circle behind the buildings. As astronomers will tell you, under Full Moon unusual things can occur.

Cult members helping on the public night and visiting, included Jamie & Piper Grierson, Nerida Langcake, Fred Crump, Guido Tack, Peter Skilton, Chris Kostokanellis, Phil Peters, Yvonne Hsu, Sylvia Grandit, Kathy Dethick (with her new telescope), Carl O'Neill, Jenny & Brian Thomas, Anders Hamilton, Ben Claringbold, Jason Heath and Alan Predjak. *Regards, Peter Skilton*

**Society meeting April 19th** – Chris Kostokanellis ran through the Astro MoPho Challenge with the monthly target being objects within Carina, followed by a summary of the survey completed by members a few months ago. Then Mark Stephens presented Sky for the Month and showed all the various meteor showers, comets, clusters, planets, etc, to look out for in the coming month.



The monthly member meeting main talk features Dr. Sabine Hossenfelder, Theoretical Physicist and Quantum Gravity Fellow, Frankfurt Institute for Advanced Studies, on the topic of "Existential Physics: Life's Biggest Questions". This public lecture is courtesy of the Royal Institution, London.

Also covered is an engineering report into why the giant Arecibo radio telescope in Puerto Rico failed so spectacularly in December 2020. We close with the stellar lifecycle, produced by the Acapella Science channel as a fun parody of the pop song "Pumped Up Kicks".

**Members BBQ & Working Bee April 22nd** – The members night working bee and BBQ on Saturday proved popular with 23 in attendance, including several we haven't seen at the Briars for a while, though cloud cover was an issue on the night for any telescope use. As the main food course part was winding down, Eden White then gave a good overview talk for about an hour all about many aspects of Cosmology in general. This drew many questions, especially from the younger audience members. It may very well be that some more may come along to the next Cosmology group Saturday afternoon meeting at the Briars. Following that, the desserts also proved popular.

On the night, Maria Remova and two sons, David and Senya, kindly donated to MPAS one of the 2023 Ningaloo Eclipse medallion and postage stamp packs, which are limited to a numbered production run of only 2500. This can be found on display in the glass mushroom cabinet next to the auditorium screen at the Briars. Photos below courtesy of Phil Peters.



# WHAT'S ON



**The 2023 timetable of events.**

**MAY**

- \*\*Tue 2nd, 7pm Briars. Mornington Primary School. 90 Year 3&4 anticipated. Speaker TBD.
- Wed 3rd, 6:30pm. St. Augustines Primary School at Camp Manyung, Sunnyside Rd, Mt. Eliza. 75 Year 5/6. Speaker Peter Skilton.
- \*\*Thu 4th, 7pm Briars. Mornington Primary School. 64 Year 3&4 anticipated. Speaker TBD.
- Friday 5th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
- Friday 26th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 70 anticipated.

**JUNE**

- Friday 2nd, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

**JULY**

- Friday 7th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
- Friday 28th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 70 anticipated.

**AUGUST**

- Friday 4th, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
- Friday 18th, 8pm Briars. Science Week public stargazing night. Speaker TBD. 70 anticipated.

**SEPTEMBER**

- Friday 1st, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.
- Saturday 16th, 2pm Briars. Astrophotography Workshop. Public & members. Speakers Various. 70 anticipated.

**OCTOBER**

- Friday 6th, 8pm Briars. Public stargazing night. Speaker TBD. 85 anticipated.
- Saturday 21st, 4pm Briars. Telescope Learning Day. Public & members. Speakers Various. 70 anticipated.
- Thu 26th, 8pm. Mentone Primary School, Childers Rd, Mentone. 57 Year 2's on sleepover. Speaker Peter Skilton.
- Friday 27th, 8pm Briars. Scout, Cubs & Guides night. Speaker TBD. 85 anticipated.

**NOVEMBER**

- Friday 3rd, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

**DECEMBER**

- Friday 1st, 8pm Briars. Public stargazing night. Speaker TBD. 70 anticipated.

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

## ★ New Members Welcome ★

Geoff & Belinda Scott  
 Brian & Henry Finocchiaro  
 Stirling Denyer  
 Meha Rajoo & Anand Subramanian  
 Rebecca Marsden  
 Diana & Chris Roberts

Jenny Gosch  
 Peter Lavelle  
 Jerry & Kirrily Boyd  
 Paton family  
 Alan Craig  
 Rachelle & Daniel Knoche

### MPAS SUBSCRIPTIONS 2023

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 2023 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 2023 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.

### SOCIETY FEES

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



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 / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
	1	2	3	4	5 <b>Public night 8pm</b>	6 Lunar Eclipse <b>Full Moon</b>	
7 <b>Mothers Day</b>	8	9	10	11 Moon at 369,343km	12 <b>Last Quarter</b>	13	
14 Saturn left of Moon dawn	15	16	17 <b>Society Meeting 8pm</b>	18 <b>SPSP</b> Jupiter above a thin crescent Moon dawn Mercury right of Moon dawn	19 <b>SPSP</b>	20 <b>SPSP</b> Working bee 4pm BBQ 6pm <b>New Moon</b>	
21 <b>SPSP</b>	22	23 Venus above a thin crescent Moon	24 Mars above a thin crescent Moon	25 Mars left of Moon	26 Moon at 404,509km	27	
28 <b>First Quarter</b>	29	30	31				

**Monthly Events**

**Public night** - 8pm to 10pm on the 5th @ The Briars MPAS

**Society Meeting** - 8pm to 10pm on the 17th @ The Briars

**Working Bee - 4pm - Members night & BBQ** - 6pm on the 20th @ The Briars

**SPSP - South Pacific Star Party** - 18th to 20th May @ Ilford NSW

CALENDAR		June / 2023					Red Days indicate School Holidays
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	
				1	2 <b>Public night 8pm</b>	3	
4 <b>Full Moon</b>	5	6	7 Moon at 364,861km	8	9	10 Saturn below the Moon dawn	
11 <b>Last Quarter</b>	12	13 King's Birthday	14 Jupiter below the Moon dawn	15 Jupiter above the Moon dawn	16 Pleiades below thin crescent Moon dawn	17 Mercury above thin crescent Moon dawn	
18 <b>New Moon</b>	19	20	21 <b>Solstice</b> <b>Society Meeting 8pm</b>	22 Mars & Venus left thin crescent Moon	23 Moon at 405,385km	24 <b>Solstice</b> Working Bee 4pm BBQ 6pm	
25	26 <b>First Quarter</b> Scorpius Deadline	27	28	29	30		

**Monthly Events**

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

**Public night** - 8pm to 10pm on the 2nd @ The Briars MPAS

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

**Working Bee & Solstice** - 4pm - **Members night & BBQ** - 6pm on the 24th @ The Briars

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



## Lift-off! The JUICE mission is on its way to Jupiter

After a one-day delay due to lightning at its spaceport in French Guiana, the European Space Agency (ESA) launched its JUICE mission on April 14, 2023. The spacecraft lifted off successfully into cloudy skies. It now begins a multi-year mission as it heads to Jupiter and its icy moons. Starting in 2031, it'll perform 35 flybys of the Galilean moons Ganymede, Callisto and Europa, before going into orbit around the largest moon, Ganymede.

Below is Juice's journey to Jupiter. It will become a reality (fingers crossed) in July 2031, when JUICE is scheduled to arrive at Jupiter. It's impressive, especially considering the spacecraft will still be soaring around Earth in 2029! Only when it has completed its 2nd flyby of our home planet will JUICE make a quick 2-year hop to Jupiter. There, it'll complete 35 flybys of the giant planet's 3 largest moons: Ganymede, Callisto, and Europa (pictured 1st, 5th, and 4th from the left, respectively). Image via ESA.

JUICE stands for JUpiter ICy moons Explorer.

ESA said its goals for JUICE are to make detailed observations of the giant gas planet and its three large ocean-bearing moons – Ganymede, Callisto and Europa – with a suite of remote sensing, geophysical and in situ instruments. And, ESA said, the mission will characterize these moons as both planetary objects and possible habitats. ESA hopes that a wider study of the Jupiter system can be used as an archetype for gas giant planets and their moons, across our Milky Way galaxy.

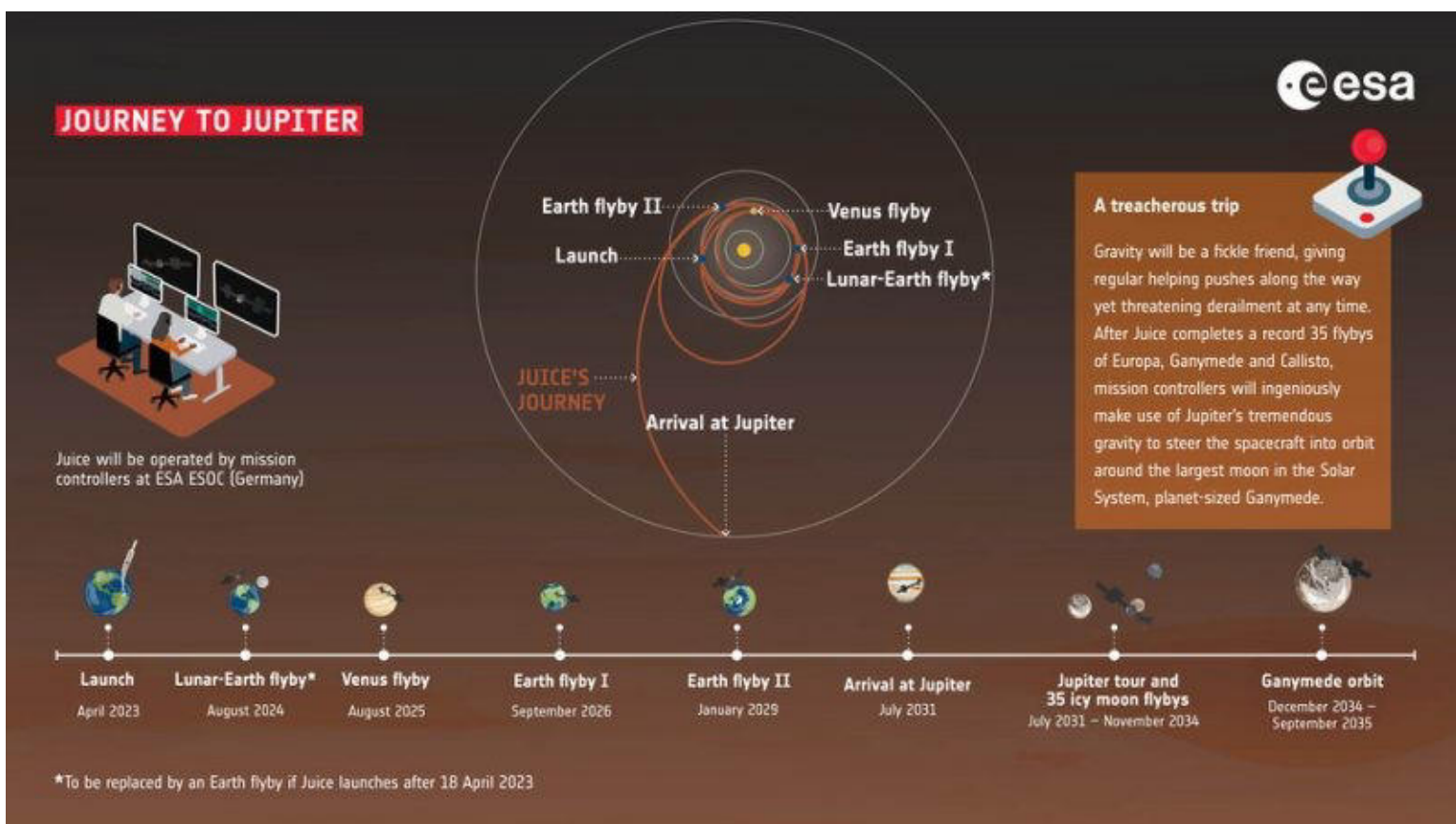
### Why JUICE will study Europa

JUICE will arrive at Jupiter in 2031. One of the moons it will observe is perhaps the most fascinating of the Jovian moons to Earthly scientists: Europa. This moon is thought to have an ocean of liquid water under its ice crust (also made of water ice). And JUICE is designed to look for the sort of chemistry on Europa that is essential to life on Earth. For example, organic molecules, or molecules containing carbon that are key to life on Earth. JUICE also aims to understand the formation of Europa's surface features and the composition of any non-water-ice material.

### Why JUICE will study Ganymede

After a series of flybys of Jupiter and three of its large, icy moons, JUICE will eventually settle into an orbit around the largest moon, Ganymede. JUICE will orbit Ganymede down to 200 km for about three years. It'll end its mission with an impact on the moon's surface. While at Ganymede, JUICE has many science objectives. They include:

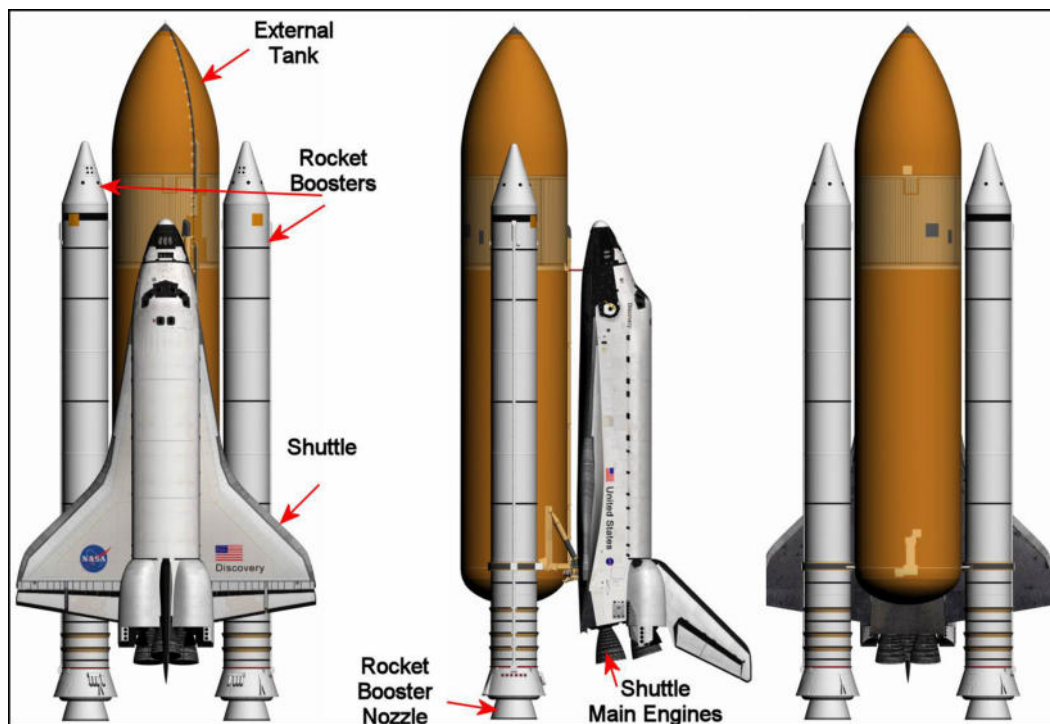
- Characterization of the ocean layers and detection of possible subsurface water reservoirs.
- Topographical, geological and compositional mapping of the surface.
- Study of the physical properties of the icy crusts.
- Characterization of the internal mass distribution, dynamics and evolution of the interiors.
- Investigation of the exosphere.
- Study of Ganymede's intrinsic magnetic field and its interactions with the Jovian magnetosphere.
- Having a better understanding of this wet, cold world will also help us understand possible distant worlds around other suns, scientists say.



# YOUR ASTRO QUESTIONS



Hello all, My space loving 11yo (the reason we joined MPAS ) has asked me what the difference is between a rocket, space shuttle and space ship? I hope the brains trust here can help with this! *Warm regards, Alison*



Hi Alison,

A rocket is a relatively streamlined cylinder filled with a couple of chemicals which, when combined, burn with immense force which is directed through a nozzle at one end, forcing the rocket body to move rapidly in the opposite direction, steered by fins to keep it on the desired path. The fuel is consumed relatively fast - in seconds or minutes, during that time the body of the rocket accelerates. Once the fuel is burnt, the rocket is slowed by air friction and pulled earthward by gravity. Developed as a weapon in World War Two and still in use in weapons today.

Following the War it was realised that a sufficiently powerful rocket could be fired beyond the Earth's atmosphere and thus would not be slowed by air friction. And if fast enough, it would be pulled towards the Earth on a path that became a constant height above the Earth's curved surface. It could thus be made to circle the Earth in the almost perfect vacuum of space beyond Earth's atmosphere, which becomes virtually nil around 200 kilometres. Maybe such a body could be used to house scientists, instruments and become a research laboratory in space - a "space station".

Since the rocket itself is only a chemical motor, it had to be used, maybe several rockets fastened together or firing in a sequence, to launch a specially built space station with living quarters and laboratories. After reaching the desired path in space the empty chemical rocket was detached, to fall back to Earth, if possible into an ocean. This was wasteful, costly and dangerous until a re-usable launch rocket was developed that either had a final return stage with wings to fly back to a suitable landing ground or could (this is recent) return vertically firing reverse rockets to slow it to landing speed. This type of vehicle is called the space shuttle because it can be used many times to shuttle between Earth and space station, to carry fresh crew, new instruments, spare parts and food for long duration flights.

A space ship is a vehicle designed mainly to spend some time in space, particularly on a voyage to another body in the solar system. Initially to the Moon, first with instruments and then with humans. Originally we imagined it would be possible to send humans on many different voyages but it has become apparent that it is very expensive, and may be dangerous, to send humans with enough food and water on long voyages. Therefore increasingly our space "ships" carry robotic explorers sending back information to Earth. Since it was once calculated that it cost about \$10,000 to send one kilogram of anything into Earth Orbit, and much more to another planet, small, light robots are a much more efficient way to explore the Universe (and carry telescopes) at this stage in human exploration.

*George Elliston*

Hi Alison,

The Shuttle is another way to travel short distances, e.g. to the Moon, however it still needs to be attached to rocket fuel boosters to escape Earth's atmosphere. It can take large payloads too. Alternatively, a rocket ship is built for larger space distances and small loads. They both are similar in their purpose but can do different tasks. The Shuttle ended its usefulness because of a huge loss of life and out of control costs.

*Kind regards, Eden White*

My understanding is that the original "Space Shuttle" (which was winged for a flown landing to an aerodrome for re-use) never had the power to reach the Moon, which was why, after the Saturn rocket (used to place Apollo astronauts on the Moon) was no longer in production, we had to wait for a much more powerful rocket to be designed for manned Moon-and-return trips. Such a rocket now exists and has made one, uncrewed, trip to prove its feasibility. Perhaps we should call this the "Moon Shuttle". It will enable us to build and resupply a base on the Moon from which even larger space ships can be constructed and launched from the Moon to the outer Solar System. This is possible because of the Moon being without an atmosphere and much less massive than the Earth, requiring much less energy to launch from. However, that may not be for a few decades. As Eden writes, even a new powerful rocket still needs to be given additional rocket power to launch from Earth in the first place, by attaching several use-and-discard "booster" rockets to get it above our lower, dense atmosphere or alternatively mounting it atop of a detachable "first stage" to do the same job.

*George Elliston*

Hello Alison

Your son has asked a good question and the answers from George and Eden have given you some great information.

I would add a couple of things.

Firstly, I would say that if we define a rocket as an object that is propelled by a rocket engine, then the space shuttle and most 'space ships' we have sent up from earth are, and will be for the foreseeable future, 'rockets' in that they were/are propelled by rocket engines. There are other possible forms of propulsion for 'space ships', that will certainly be used in the future, but the vast majority of objects that we launch into orbit and beyond use rocket engines.

Also, although that was not what it was designed for, the space shuttle could probably have flown to the Moon and back as it was designed for mission durations of more than two weeks, which would have been sufficient for that, except for one thing, and that is it didn't have capacity to carry any significant amount of fuel on board that would be needed to escape from Earth orbit. It was equipped with quite powerful engines to reach orbit, indeed the same ones being used now in the new Space Launch System (SLS) rocket that will be used to send astronauts to the Moon that George has described. However, those engines were supplied from an external fuel tank that was jettisoned when all its fuel had been used to bring the shuttle up to orbit. It may have been possible to carry more fuel inside the shuttle if they had used space in the cargo bay for a tank, but I don't know if it would have been enough to escape from Earth orbit, and then the shuttle would not have been able to carry any cargo in that space.

Actually the word shuttle comes from a device or vehicle that is used to move things back and forward and we use it today for that. The Melbourne airport bus shuttle carries passengers between the airport and various locations. There are other shuttle services around the world. Ferries are a good example of shuttles as they carry people and vehicles back and forward between two points. The space shuttle's main purpose was to carry people and cargo to and from low Earth orbit in a way that did not use disposable rocket vehicles and, therefore, would reduce costs. Unfortunately, as Eden has pointed out, the cost savings didn't eventuate.

If all goes well it looks like we may be on the verge of a new era in space travel with the development of a fully reusable rocket powered vehicle called Starship developed by Elon Musk's SpaceX. It is designed to be launched from Earth and return again. The booster used to launch it into orbit will land back in a controlled manner and be able to be reused. The Starship will also glide back to a landing site, and be reused as was intended with the original space shuttle. However, in the case of Starship, it is planned to be able to leave Earth's orbit and travel to the Moon or Mars, although that will require it to be refuelled once it reaches orbit. And in the case of Mars, it will need to refuel after it lands using fuel manufactured on the surface. It is currently planned for a version of the Starship to be sent to the Moon in the next few years to be used there to land the first astronauts on the moon in 50 years. I use the word planned because Starship has not yet been successfully launched into orbit. It has had some unmanned test flights to prove it's ability to land again but these flights have not been to very high altitudes and there have been considerable problems during its development. Hopefully it will succeed.

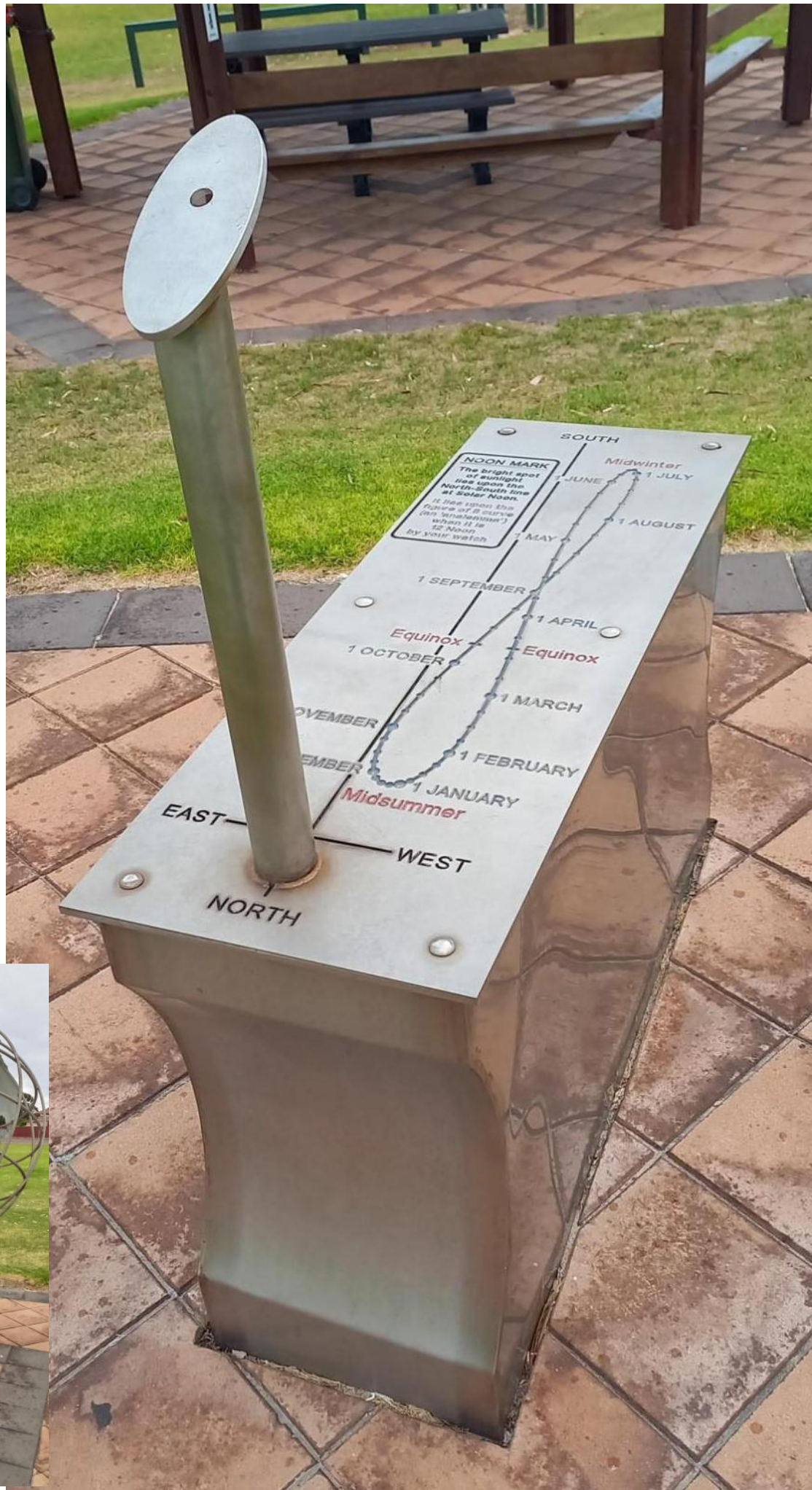
*Regards Manfred*

### Whyalla Analemma

While staying in Whyalla South Australia, we walked to the botanical gardens and found a sundial, world globe and an Analemma, all made from stainless steel as its near the sea.

How the Analemma works is light shines through the hole on the stork and at noon the point of light will land somewhere along the line, on which will tell you what day and month it is. This Analemma also has the Equinox marked on it.

Greg Walton





## Giant Sundial at Geraldton

While staying at Geraldton Western Australia we came across a giant sundial with an Analemma at its centre, in front of the Queens Park Theatre. It's interesting having the clock faces (above) punched into a large ring, where the sunlight shines through a clock face that projects the correct time onto the centre of the Analemma. The clocks showed half hour intervals. Unfortunately the sun was hiding behind a tree when we were there. Maybe I should ask the council if they want me to cut it down. I can see a lot of thought and money had gone into the Sundial. The instruction below looked complicated; I don't think many visitors have the time to figure it all out.


Greg Walton



### The Iris Sundial

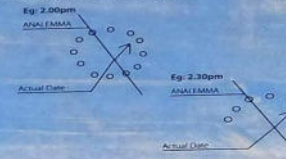
This unique sundial sculpture was constructed in 2004. Creator, W.T. (Bill) Newbold, dedicated it to his wife Iris. The children playing in the sun are their grandchildren, Darcy and Sophie Clarke. The two parts of the sundial construction are called the GNOMON and the HOUR PLATE. The overhead Gnomon is tilted at 61.2 degrees north - the complementary angle of local latitude. Into the Gnomon are cut the HOUR and HALF HOUR clock faces for each thirty minutes of sunlight. The concave HOUR PLATE receives the moving shadows of

**READING THE TIME**  
Firstly locate TODAY'S DATE on the Figure of Eight ANALEMMA on the HOUR PLATE.  
Eg. For the 7th March (Interpolate between marked dates)

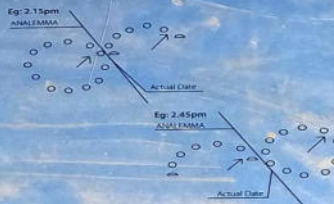


these clock faces. Engraved on the hour plate is the Figure of Eight ANALEMMA graduated in four day intervals for the whole year. The time can be read from the CENTREPOINT of the clock face shadows cast by the overhead Gnomon onto the hour plate. The passage of the hours can be observed on the black granite base of this unique sculpture. INDICATED TIME is Western Standard Time and no further adjustments are necessary. The error is less than one minute for most of the day.

Secondly determine which shadow from the GNOMON is intersecting the ANALEMMA date point on the HOUR PLATE. The HOURS and HALF HOURS are indicated when the PIVOT POINT of the hour hand coincides with TODAY'S DATE on the ANALEMMA (noting that the shadow moves from right to left across the hour plate).



Between the clock faces the QUARTER HOURS are indicated when the cut out triangles intersect today's date on the ANALEMMA - the observer can estimate the minutes within the quarter hour intervals.



Sundial information courtesy GfL - Local History Collection, G 2135A.

## Exmouth WA solar eclipse 20th April 2023. *By Greg Walton*

So far everything had gone to plan, including the weather with clear blue sky. Just driving to Exmouth was a marathon. But now we are here and waiting.

Photographing the Eclipse was my second priority, the first was just being there to watch and feel the overall atmosphere of a solar eclipse.

This solar eclipse only had a totally of 60 seconds. So there was no time for adjusting camera settings, everything had to be set to run and then just hope for the best. I would use exactly the same equipment as I did during the Cairns solar eclipse 10 years prior. My trusty ED80 refractor with a glass solar filter, a field flattener, 2 times converter which gave me a focal length for 1400 mm and my 11 year old Pentax K30. I looked at the images I took at the Cairns solar eclipse and found 100 ISO at 1/30th of a second looked good and I would set my camera to that. I also had my very old manual 300mm lens with an even older Pentax K-x, piggy backed on the ED80, this lens would have no filter and would be used to image totality. Again I looked back through the 300mm images I took in Cairns and found 100 ISO at 1/2 a second looked the best, the lens I set to F8. During totality I would take the cover off the lens and manually press the shutter release button 10 times while watching the Eclipse and then put the cover back on the lens.

All this was mounted on my HEQ5 GoTo mount which I powered with a car battery, as there was talk of some trouble with the town's power supply being overloaded. I adjusted the angle of the polar axis to 20.9 degrees and set the RA & Dec on the hand controller. I would also need to set the tracking to solar rate. On the evening before the Eclipse, I found a spot on our campsite where I could see Octans and did the best polar alignment I could. And then with a piece of rope, I tied the mount down to the car battery, just as an extra precaution against it moving. Then I placed a cover over the mount and went to sleep.

On the morning of the Eclipse we stood, waiting in anticipation. What will we see? What will we feel? What will we hear? And will my camera gear work?

It was an early morning start on the day of the Eclipse. I placed the telescope back on the mount and double checked all the settings on the mount and cameras, and if there was enough room on the memory cards for the number of images being captured. I had decided to set the interval timer to 20 seconds and shot count to 900, which would give 5 hours run time, more than enough for the whole Eclipse. Then I started the mount and pointed the telescope to the Sun and checked the tracking and camera focus and took a few test shots. Once I was happy I started the interval timer. Then it was fingers crossed.

Next I set up another Pentax K30 camera with a 20mm lens on a tripod. I set the camera to auto mode and the interval timer to 30 seconds and shot counter to 900. I placed the sun on the right hand side of the image, knowing the sun would cross to the left. Then I started the camera.

Next I set up my 40mm P.S.T. solar telescope, so I could view the solar eclipse, as the other telescope was just for imaging. I also had my binoculars on hand with solar filters attached.

At **10:05am** WA time the Moon bit a small chunk out of the sun. Yes it's happening. Totality was a little more than an hour away. I checked both cameras constantly, are they running and is the tracking holding the sun in the centre of the image? Then I looked at the Sun with my binoculars and 2 sunspots near the centre could be easily seen.

Then I looked through the P.S.T. and saw some prominence on the edge. I grabbed my mobile phone and tried to get an image, but it was not so easy. Slowly I figured out how to align the camera lens with the eyepiece and hold it steady and press the shot button. As time went on the images were getting better and are a good record of the Eclipse.

Surprisingly no one at the caravan park came to bother me during the Eclipse. Nearly everyone had come to Exmouth for the school holidays and to swim on the Ningaloo reef, even at the time of the Eclipse most had gone to the beach.



**11:15am** - 15 minutes before totality the temperature started to drop and the ground took on an eerie sunset orange. Yes it's all happening. I quickly checked the cameras one more time and another look through the binoculars and P.S.T. and a few more shots with the mobile phone. From now on time seemed to speed up. What was left of the sun was disappearing very fast. I thought, where should I be? What should I be doing? Yes it's happening and then the sun was gone. I heard a cheer from people around the camp and birds flew round in circles calling out something has gone wrong.

**11:29am** - I quickly remembered to remove the lens cap from my 300mm lens and press the shot button 10 times. While I looked up at the Moon trying to hide the Sun. But the Moon was too far from the Earth and sunlight was somehow sneaking past. This Eclipse looked nothing like the Cairns solar Eclipse which totally block all light from the sun, leaving the solar wind easily seen radiating away in all directions.

This Eclipse had a very bright ring around the Moon with ruby red flashing lights in it. The ring was almost too bright to watch. Pia looked up at the Eclipse and said, there is a black dot on the Sun, while she also filmed the scene around the camp with her mobile phone and gave running commentary. How dark and cool it had become, and that the birds were not happy.

And then the Sun reappeared, it's all over, I heard people cheering in the distance. I thought, Wow, what a rush! I asked Pia, what did you think of that? Knowing it was Pia's first solar Eclipse. Pia thought, it was all incredible. I can see why so many people get excited about this.

I could hear my cameras still clicking away. I sat down in the shade for a moment to rest my legs. Quickly things started to return to normal and the eerie orange disappeared. We brought along a bottle of champagne, but forgot to open it. Maybe we can keep it for the Sydney solar eclipse in 2028.

**1:00pm** - It was not long before the Moon left the sun in peace, and then it was time to pack away the cameras and telescopes. I didn't dare look at the images till the following day. It was more important to find a cold beer.

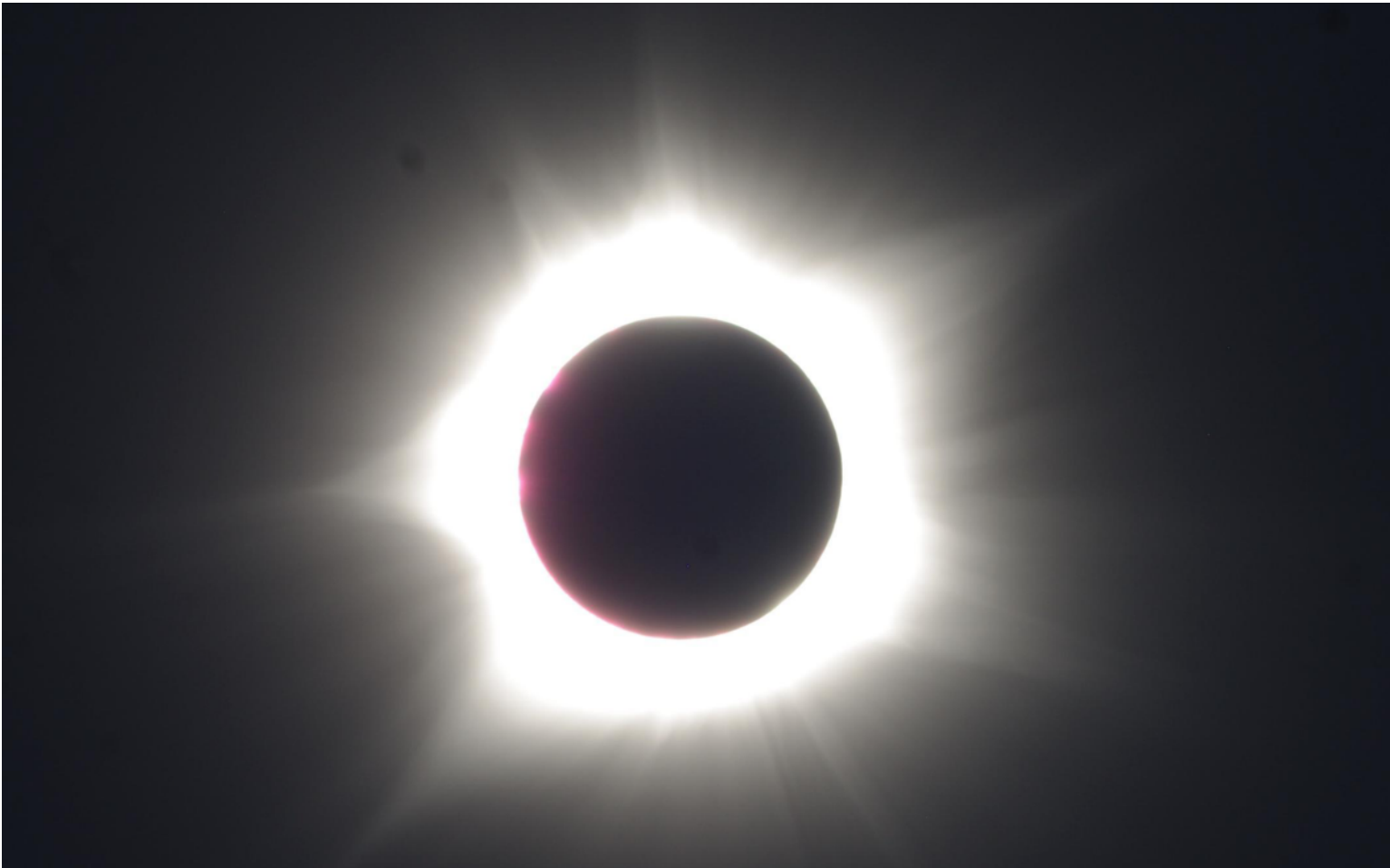


We met up with MPAS members Dominic and Judy. We took the bus to the town beach to celebrate the solar Eclipse with a drone light show. This depicted the Aboriginal stories of the solar eclipse and animals of Ningaloo. Afterwards buses would take the 10,000 people to a concert with food vans at the showground. We enjoyed the drone light show and then decided to walk the 1.6 km back into town and we almost beat the first bus there, as the buses couldn't move because they were surrounded by the sea of people.

The concert had music from the 1950s to 2023 remixed by Hot Dub time machine with DJ Tom Louder. It was very loud with 3 large screens and 10 searchlights crossing the sky. I think everyone was there, as the music could be heard all over town, so you would not be getting any sleep anyway till it finished up around midnight.

The next day I checked my images and put a time lapse of the solar eclipse together and uploaded it to YouTube. See link below

Exmouth WA solar eclipse 20th April 2023 [https://youtu.be/JhVyo\\_\\_8I08](https://youtu.be/JhVyo__8I08)



Exmouth solar eclipse 20th April 2023 by Greg Walton

Above - taken with 300mm lens on Pentax K-x camera, settings are 1/2 sec at 100 ISO, image cropped 50%

Right - 10 minute light show with 160 drones over the town beach

Below - The after party at the Exmouth Showground. I don't think Exmouth has ever seen anything like this before, with 23 police cars and 5 ambulances on standby sent up from Perth. Exmouth, you put on one hell of a show!!!





**DESTINATION GIPPLAND – WITH MPAS, ASV & LVAS**

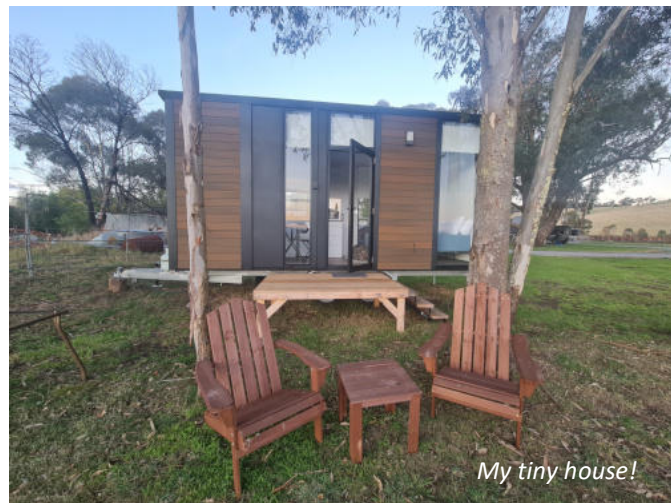
On Friday 21st and Saturday April 22nd, 2023, Destination Gippsland (DG) in partnership with the Mornington Peninsula Astronomical Society (MPAS), the Astronomical Society of Victoria (ASV) & the Latrobe Valley Astronomical Society (LVAS) collaborated at The Stockmans Camp in Buchan South for an unforgettable astronomical experience. This event was the first of many to promote tourism to the Gippsland area and focussing on their stunning dark skies as a drawcard.

Representing MPAS, Guido and I were joined at Buchan by Chris and Frank from LVAS, and Andrew and Michael from ASV. While we hadn't met each other before, having a common interest made us old mates in no time and there were definitely no awkward silences! We booked a table for dinner at the local hotel on the first evening there and were sharing photos from our phones in no time.

After our dinner we met back at the Stockmans Camp with the organiser of the event from DG, Janine, and owners from various local businesses who have a strong interest to utilise astronomy to drive tourism business to the area. We went through the basics for them to understand how outreach events work,

safety, equipment, planning, etc.

DG provided us with accommodation at the Stockmans Camp, and I was lucky enough to have my very own tiny house for the weekend. Apart from a terrifyingly monstrous huntsman in my house on the first night, where I had to bolt in the dark over to my new neighbours cabin and request urgent assistance from them in removing it, my view was amazing! I was woken early in the morning by a chorus of kookaburras, ducks, cows, roosters and pigs – the country is noisier than my suburb!



*My tiny house!*



*The view from my bed*



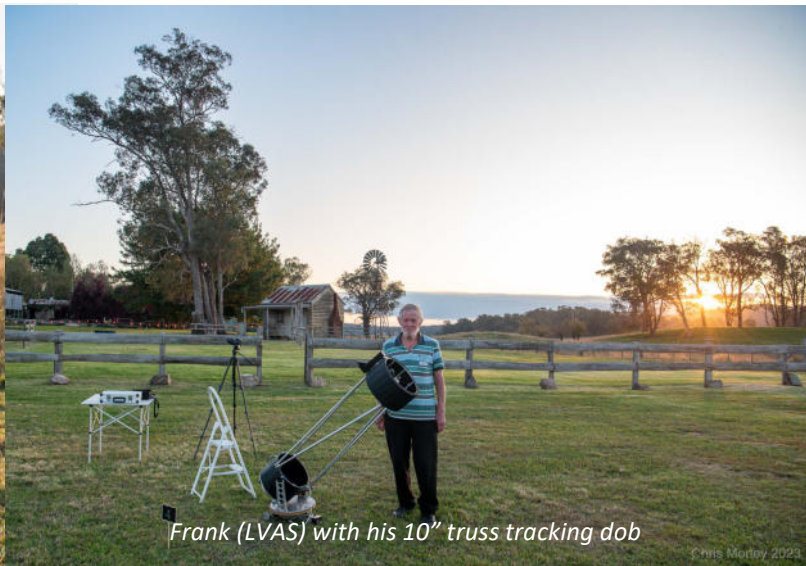
*Guido & I setting up scopes – Image by Chris Morley (LVAS)*



*Enjoying our 2-course meal in rustic surrounds*



*The view from the stage – Image by Michael (ASV)*



Michael (ASV) with his 12" collapsible dob & Frank (LVAS)

Frank (LVAS) with his 10" truss tracking dob

Chris Morley 2023

On Saturday the weather was spectacular, but thanks to cloudfreenight.com we had a good idea of what was coming – and it wasn't promising... The ticketholders began rolling in during the afternoon, and there was a great turnout at the venue (The Stockman's Camp) with around 70 people attending for a combination of a two-course dinner, live music and astronomy, and with about 30 camping overnight.

We had just finished our first course of roast dinner when we decided to go straight to the telescopes before we were clouded over, as we could see them getting closer. Chris (LVAS) gave a quick sky tour and safety talk to the visitors, then they roamed amongst the 6 telescopes that were setup on different objects, including Omega Centauri, Jewel Box Cluster, Orion Nebula, Alpha Centauri, etc. Everybody got to see at least something before we were completely clouded out, so it was obviously time for dessert!

After our apple crumble and ice-cream LVAS President, Chris, gave a great interactive presentation including props and lots of questions from the audience.

The feedback received from the guests was excellent, so hopefully the next one will have clear skies to raise the bar that bit higher!

Janine from Destination Gippsland was a fantastic organiser of the whole event, and special thanks also to ASV Vice President David Rolfe for including MPAS and LVAS in this collaborative event with the ASV.

By Nerida Langcake



Andrew (ASV) setting up his 5" SCT

Chris Morley 2023



Drone view of the Stockmans Camp – All images on this page by Chris Morley (LVAS)

Chris Morley 2023

# MPAS Members Survey Results

By Chris Kostokanellis

Late last year we ran a member’s survey to get an idea of what our members think of MPAS and to get some suggestions from members of new things we can do, and old things we may do better.

We all enjoy our society in our own way. Some choose to be more involved, some less so for varying reasons. There’s no requirement to attend events or engage with the club to be a member. The only requirement for membership is your membership fee. The rest is up to you.

A big thank you to everybody who provided feed back on the recent members survey. In total, 30 responses were received. Some interesting and insightful feedback was provided, and we learned a bit about the make up of our membership group. Below is a summary of the results and responses from the survey, which ran from November 2022 to March 2023.

## Reasons for Joining MPAS

As expected, most respondents joined MPAS due to an interest in Astronomy. Interest in general science and knowledge sharing were also popular reasons.

### Why did you join MPAS?

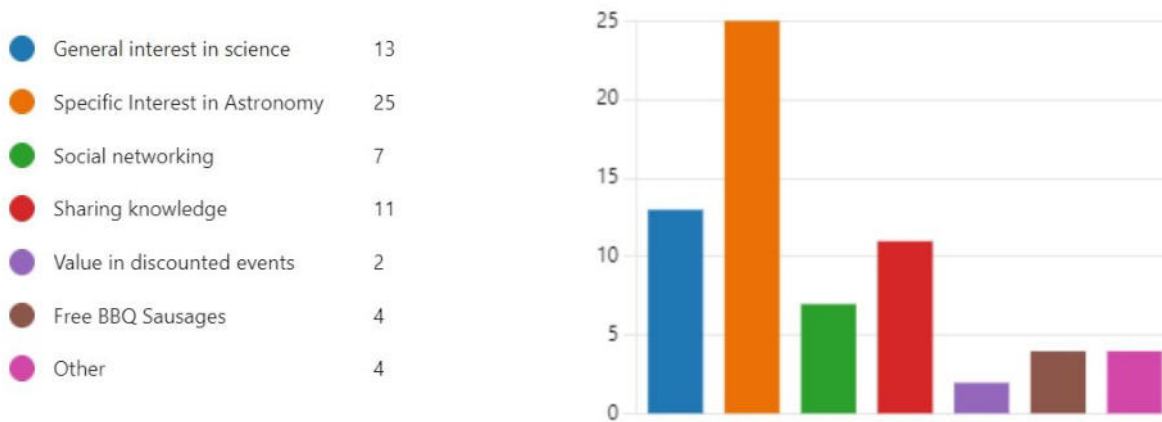


Figure 1. Reasons for joining MPAS

Our members have a wide range of interests in Astronomy, with the planets and our Solar system, Nebulae and Galaxies being the most common topics of interest, and alien life, exoplanets and space based technology and space exploration featuring less popularly.

However, with the number of exoplanets being discovered increasing all the time, including those in the habitable zone of their stars, we may see interest in these areas increasing in years to come.

### Specific Astronomical areas of interest.

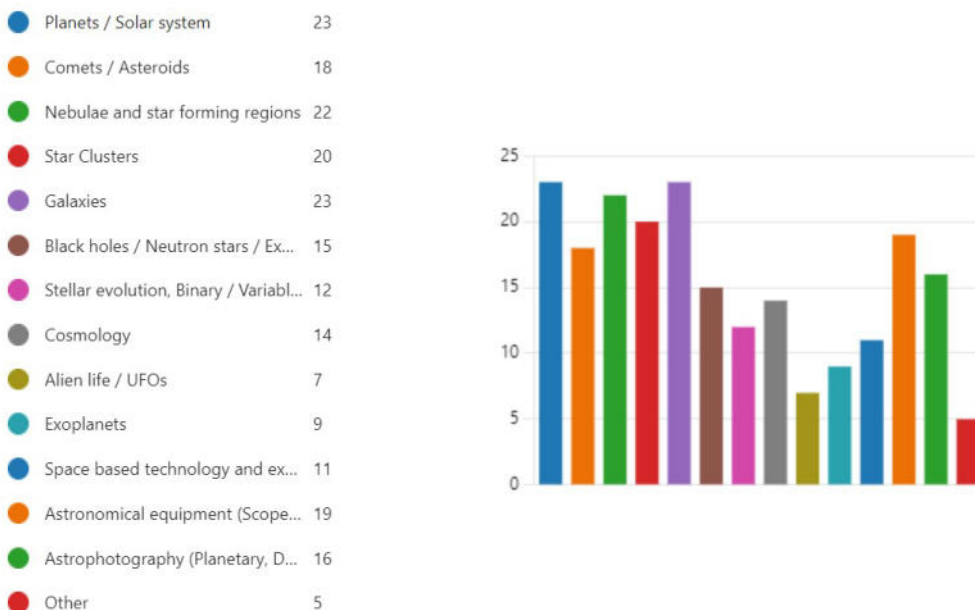


Figure 2. Topics of interest

Meeting and BBQ attendance.

We found that 35% and 32% of respondents attended the members meetings and BBQs respectively, either frequently or occasionally, with the rest attending rarely or not at all.

The most common reason was inconvenience, be it time, place, availability of transport or other commitments. However, we do have a significant number of members who view the meeting recordings on You Tube. Unfortunately, You Tube doesn't work too well with BBQ sausages.

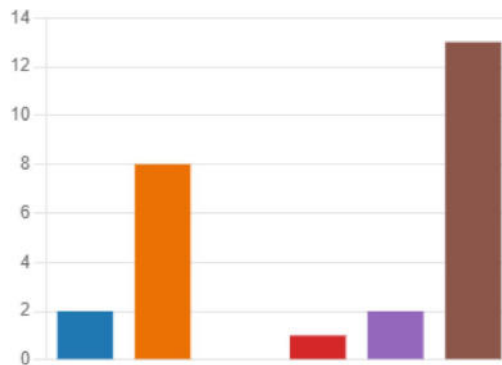
**Member Meeting Attendance.**

● Frequently (8-12 per year)	3
● Occasionally (4-7 per year)	8
● Rarely (1-3 per year)	13
● Never	7



**Reason for non-attendance at Members meeting.**

● Inconvenient location	2
● Inconvenient day and time	8
● Didn't know about them	0
● Not interested	1
● Prefer to watch on line	2
● Other	13



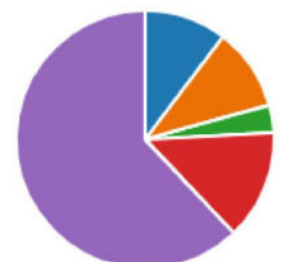
**Member BBQ Attendance.**

● Frequently (8-12 per year)	6
● Occasionally (4-7 per year)	4
● Rarely (1-3 per year)	12
● Never	9



**Reason for not attending Members BBQ.**

● Inconvenient location	3
● Inconvenient day and time	3
● Didn't know about them	1
● Not interested	4
● Other	18



A significant number of respondents (25 of 30!) expressed interest in attending events outside of the regular meetings and BBQs, such as field trips and star parties.

Recent events that MPAS members have been given access to include presentations by Brian Cox, Brian Greene, and Neil deGrasse Tyson. Access to the Snake Valley, and the upcoming South Pacific Star Party has also been promoted to members. Keep an eye out for more events.

### Outreach.

It's good to see a significant number (66%) also interested in attending and assisting at outreach events.

Any member can come along to the PVNs, and all assistance with showing the public objects through our scopes is welcome. It's a great opportunity to get familiar with the equipment at MPAS and have a look through the scopes yourself. If, you're not confident, come along and accompany an experienced member on the telescopes to get a feel for it and build your confidence.

Attendance at school outreach events requires members to bring along their own equipment to operate for the kids to look through. This does require a Working with Children check. It's a free online process for volunteers. Your application can be made online at: <https://www.workingwithchildren.vic.gov.au/>

### Notable Feedback.

- "Not sure about privacy but maybe get an idea of what equipment members have and what they are willing to share?"  
MPAS has a couple of telescopes available to loan to members. If you are interested contact Simon Hamm to enquire.
- "Training on the equipment at the Briars. Image processing tutorials."
- "Maybe having a telescope learning day twice a year also a talk on the technology needed relating to "Astro photography "" for telescopes - as I'm researching I'm finding it a bit overwhelming maybe an article in the MPAS newsletter on a " telescope Astro starter kit for telescopes " to get you going as these technologies are and can be expensive but that said there are a lot of very very approachable members at the club I just hope they don't get tired of me asking questions"  
Observatory training is offered a few times a year for members. If you are interested in learning how to use the telescopes at MPAS or if you have a telescope that you would like some help with, bring it along to a member BBQ and someone will probably be able to give you some assistance. It's best to make an enquiry prior through the member communication channels to make sure there will be someone who can help on the day as some BBQs are not as well attended than others, but BBQ day is THE day to bring your scope along to do some astronomy after the BBQ. The MPAS Facebook page and E-Scorpius Group chat is a great place to post questions about equipment, photography techniques, and all things Astronomy.
- "Update the society building and create a more modern interior. Get better furnishings and make the building a nicer place to be in general. At the moment it looks very amateur, cluttered and distasteful."  
MPAS is a volunteer run Astronomical Society. The committee is charged with making decisions regarding the expenditure of club funds, and how these funds can be best used to benefit the members and further our goal of fostering the study of all aspects of Astronomy, Space and general Science. Our facilities are maintained by our volunteer members who help to keep the place clean and orderly, and set up for upcoming events. A big thanks to all members who assist with the maintenance of our site, and if you have a particular skill or expertise you would like to offer to improve our facilities, please let us know.
- "Perhaps we can emphasise to new members and visitors that they are welcome to approach anyone in a blue vest or other MPAS apparel to ask questions. I did feel a little lost when I started attending PVNs but I kept coming and now feel like part of the MPAS community."  
This is a great point. PVNs can be busy nights, often attracting over 70 attendees from the public alone. If you are a new member attending a PVN, make yourself known and introduce yourself to the other members.  
Members BBQs and meetings are the best way to meet other MPAS members as they aren't as busy or crowded as the PVNs.

Once again, thanks to all members who took the time to complete the survey and provide all the great feedback.

Clear skies!

Chris Kostokanellis, MPAS Committee member

# MEMBERS GALLERY



Here is NGC 3576, the Statue of Liberty nebula, situated at the Crux end of Carina.

I captured this last Friday night. This was 12 x 600 sec exposures, interrupted half way through by some passing clouds.

Equipment was my Sharpstar CF80 refractor, 0.8 reducer, Optolong L-Extreme dual band filter, and ASI294MC Pro camera, and of course using PHD guiding.

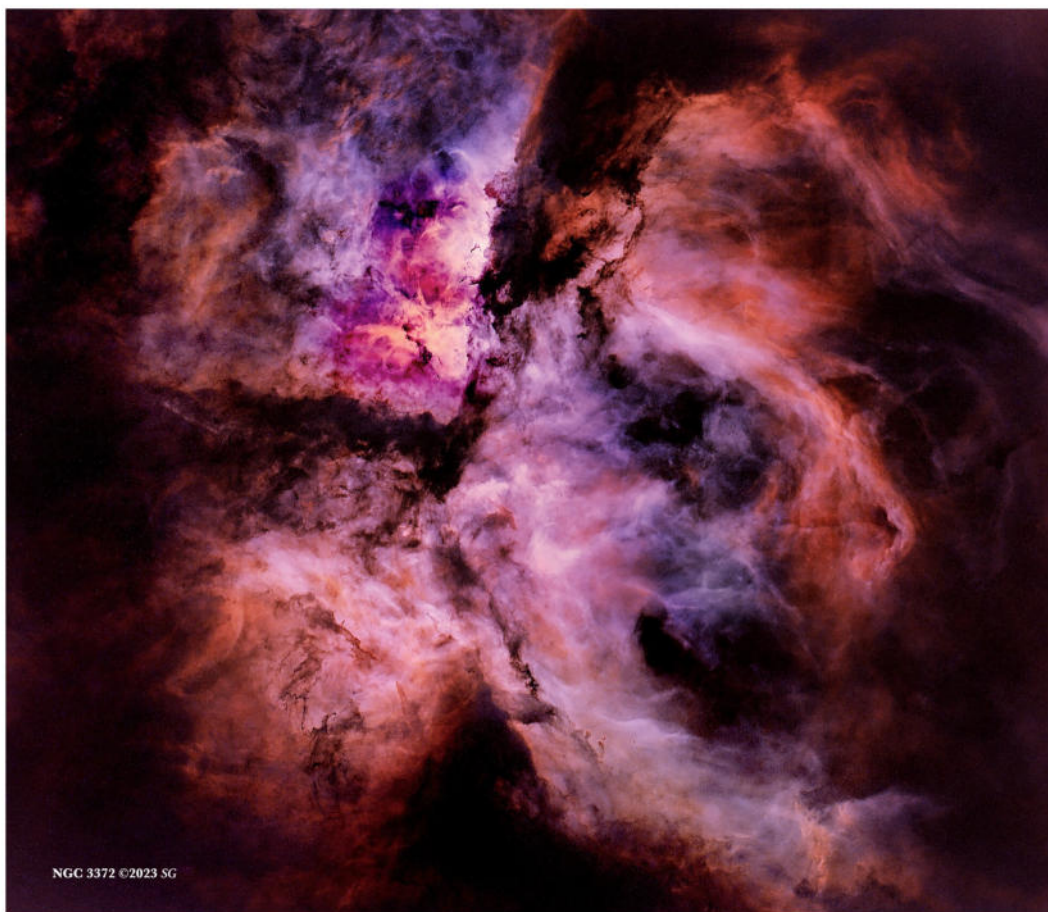
I processed this in Siril with Darks, Flats and Dark Flats.

My initial processing was very red, so I tried something different in Siril. That was to separate the Ha and OIII in the stacking and recombine them in the processing. Ha to red, OIII to Green and Blue. So this is a type of HOO image. This was surprisingly easy, as there are scripts available in Siril for separating the 2 bands (Ha and OIII).

Still much to learn.



Regards Chris Kostokanellis



NGC 3372 ©2023 SG

Here is my version of the Eta Carina nebula.

We have recently moved from Mt Eliza to the city; this image was taken from our South Melbourne apartment balcony in January this year and shows that you can acquire decent images - with appropriate filters - in severely light polluted skies.

If anyone would like to reproduce the image, please let me know (I have the uncompressed 45MB TIFF).

Telescope: Officina Stellare RH-200, 600mm FL, F3

Guidescope: Takahashi 8x50 Finder Mount: Rainbow Astro RST-135

Camera: ZWO ASI-071 MC Pro Filter: Antlia ALP-T Dual-Band 5nm Highspeed

Guide camera: ZWO ASI-120MM Mini

Control: ZWO ASIAIR

Processing: 10 x 10 minute lights, no flats or darks, PixInsight and Photoshop Elements

Kind regards Stephen Gilmore

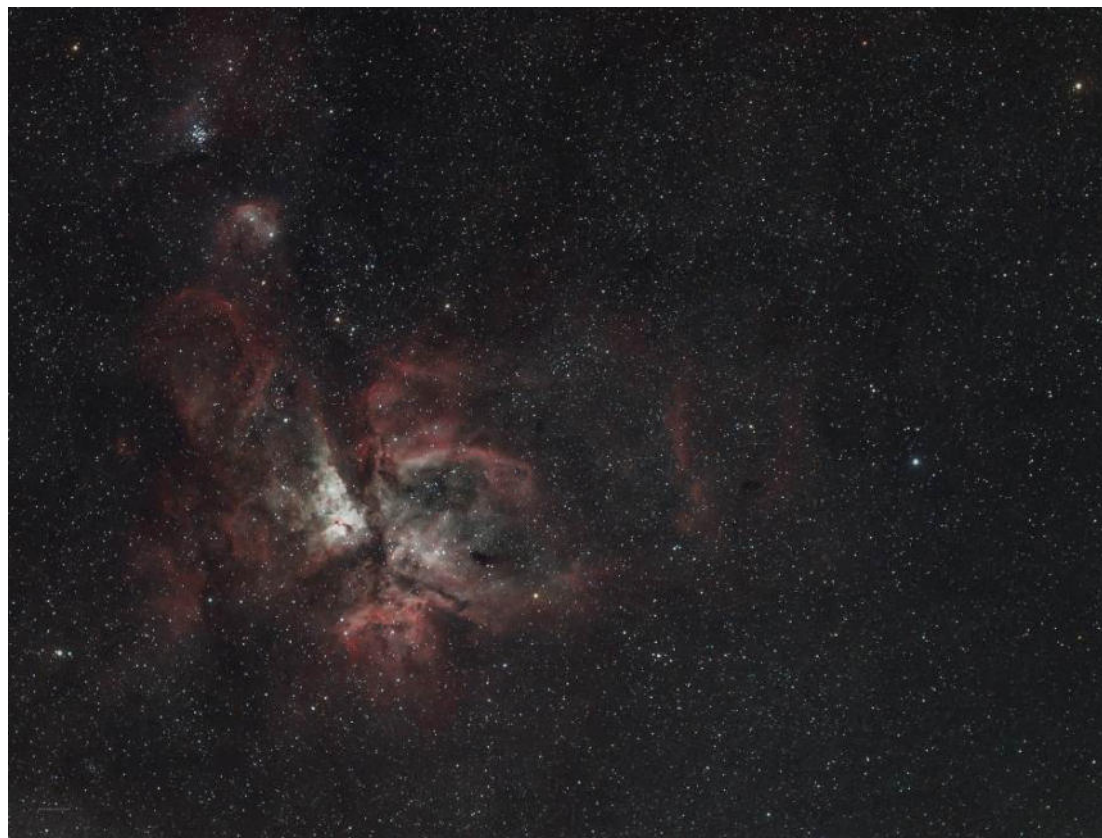
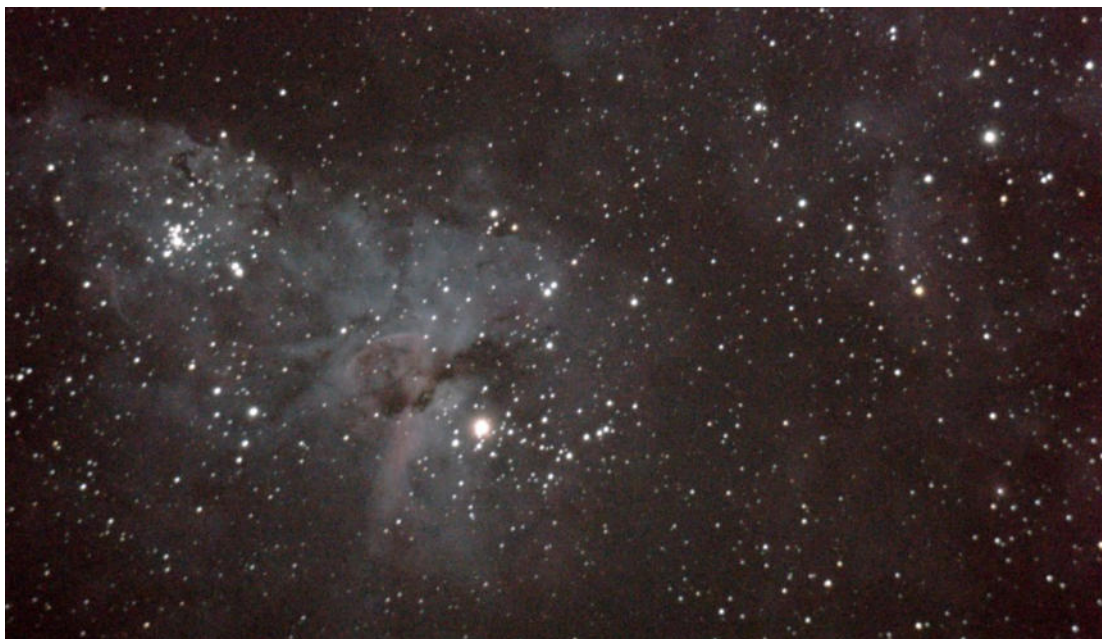
## Astro Mo Pho Challenge #4. Carina.



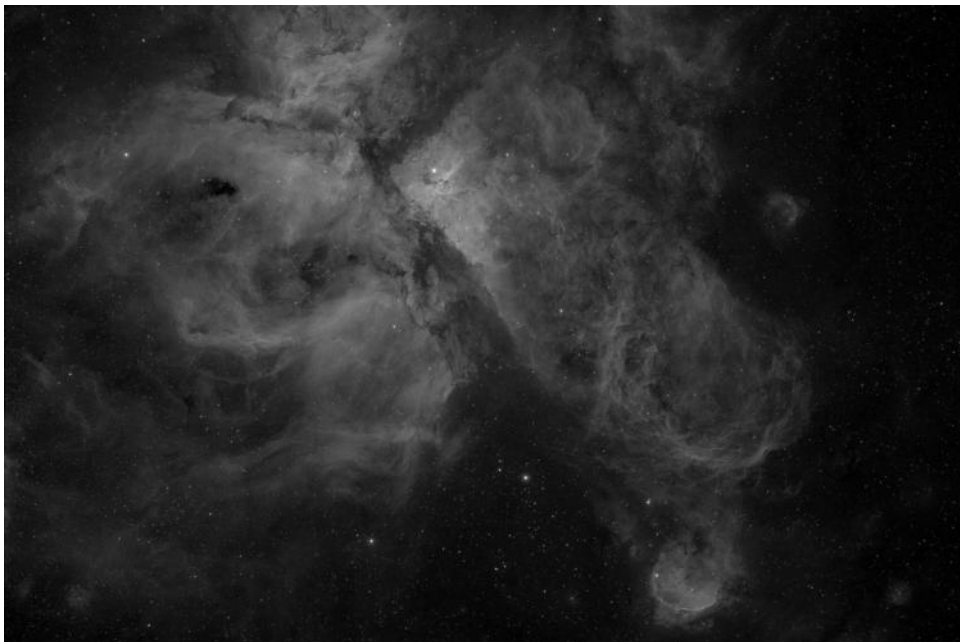
Below are the images submitted by MPAS members for the 4<sup>th</sup> Astro Mo Pho Challenge, the Carina Constellation. Also submitted for this challenge were the NGC3576 Statue of Liberty Nebula by Chris Kostokanellis, and Eta Carina Nebula by Stephen Gilmore shown above.

Well done to Nikhil Joshi, Dave Rolf, Stephen Gilmore, Guido Tack, Chris Black, Chris Kostokanellis, Russell Smith, and Nik Axaris for completing this challenge.

Nikhil Joshi.  
 DSLR and Celestron C8 on  
 a Skywatcher HEQ5 pro  
 mount  
 ISO 800, 40 x 10 Sec  
 exposures.  
 Deep Sky Stacker and  
 GIMP for processing

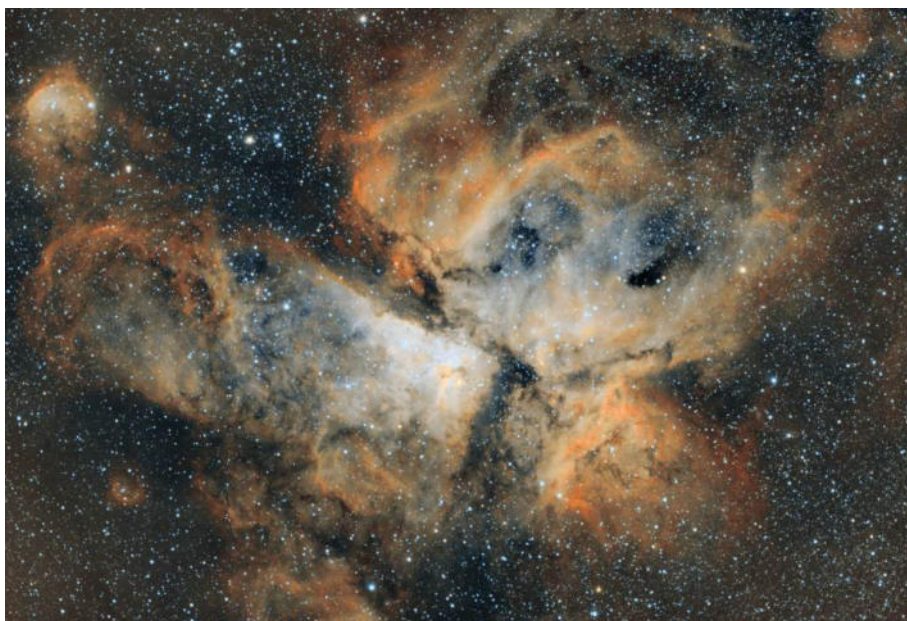


Chris Black  
 Eta Carina Nebula.  
 Redcat 51, Canon 6D.  
 ISO 1600.60 x 90sec subs.



Russell Smith.  
Eta Carina Nebula.  
Carina is Ha.  
130mm refractor.  
ZWO6200mm

Nik Axaris  
Eta Carina Nebula.  
Carina using the ED72 and .85 reducer  
before I sold the scope.  
Optolong L-extreme and ZWO 294mc pro  
Stacked and channel separated in Astropixel  
Processor  
I processed this in PixInsight using the  
Forax Then HSO script and added an HA  
luminance layer in Photoshop.  
ZWO Asiair for guidance and acquisition.



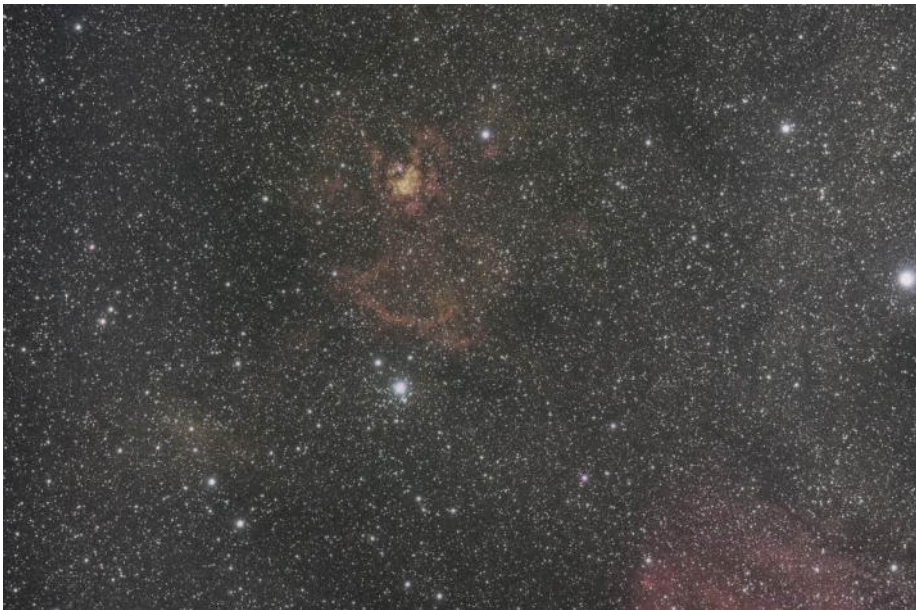
Chris Kostokanellis  
Eta Carina Nebula  
Saxon AZ-EQ6.  
Sharpstar CF80, 0.8 Reducer, Optolong L-  
Extreme Dual Band filter, ZWO ASI294MC Pro.  
60x120 Sec Exposures.  
Stacked and Processed in Siril





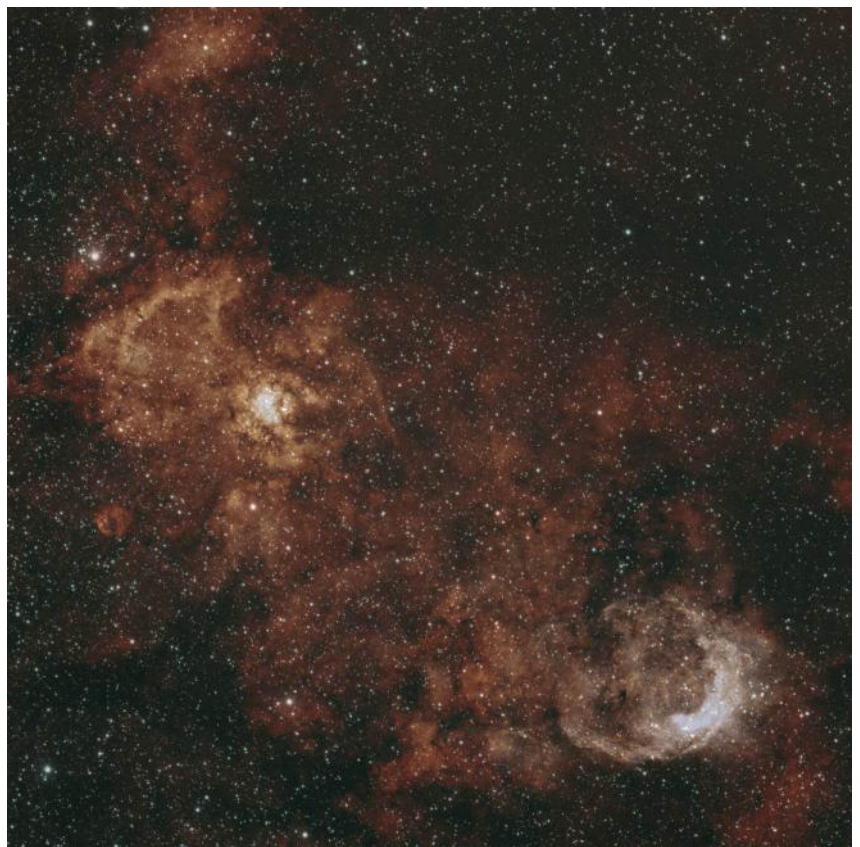
David Rolf  
Open cluster NGC2516 (Top) and NGC3247 - Whirling Dervish Nebula (Bottom) in the constellation Carina.

NGC2516, 6 x 5min luminance frames combined.



NGC 3247, 2.5 hours of exposure time using Ha, OIII & SII Narrow band filters.  
Equipment : William Optics FLT132 / SBIG STL11k Camera / AP1100 Mount.

Guido Tack.  
NGC3199 (aka the Banana nebula, bottom right) and NGC3247 (centre left), and an open cluster, IC2581 (top left).  
90 x 300 sec images from Friday night, William Optics ZenithStar 73, ASI294MC, L-extreme dual narrowband filter. Processed in PixInsight.  
I decided to try out "dynamic narrowband combinations" to get a different colour palette

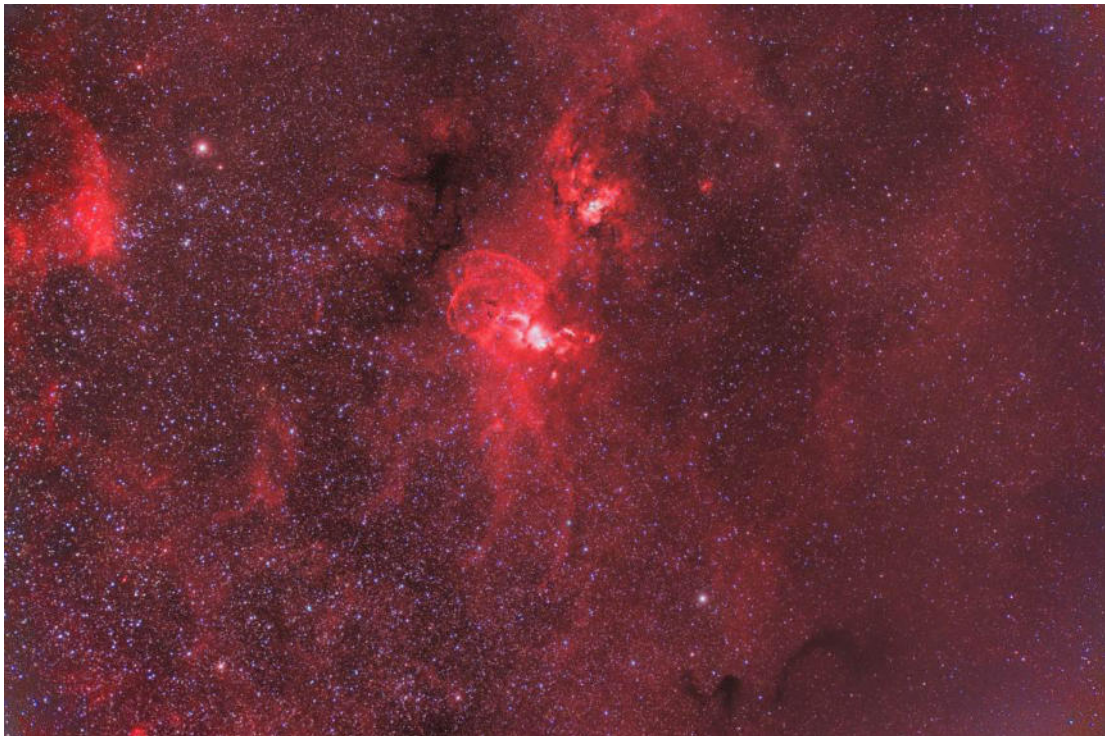




Nik Axaris

NGC 3576 Reprocess

Two lots of data one with a full field at 910 mm focal length, the other with the Riccardi 0.75 reducer so 683mm focal length with the TS-Optics 130 APO L-extreme and stacked and combined in Astropixel processor, Then PixInsight where I used Luomaticos HOO pixelmath workflow and all the Xterminators and finally into photoshop 5 hours data of 300 and 600 minutes Optolong L-Extreme ZWO asiair ZWO 294mc pro



Russell Smith.

Statue of Liberty

HaLRGB, 130mm refractor. ZWO6200mm

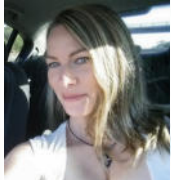
SOCIETY INFORMATION



Peter Skilton



Mark Stephens



Nerida Langcake



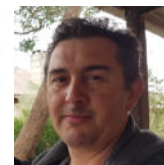
Jamie Pole



Anders Hamilton



Trevor Hand



Chris Kostokanellis



Guido Tack



Simon Hamm



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 and Chris Kostokanellis

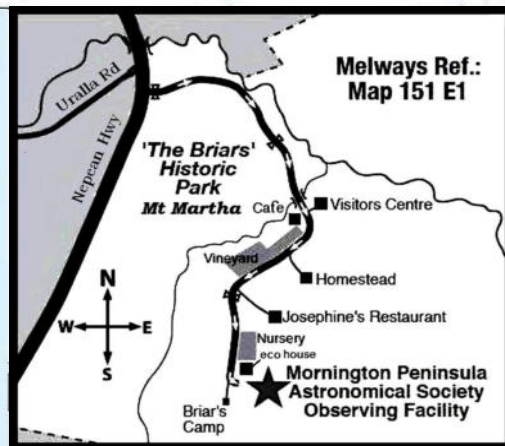
**Secretary:** Nerida Langcake  
**Treasurer:** Jamie Pole  
**Web master:** Guido Tack  
**Scorpius editor:** Greg Walton  
**Librarian:** Fred Crump

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](http://www.mpas.asn.au)  
**email:** [welcome@mpas.asn.au](mailto:welcome@mpas.asn.au)  
**Phone:** 0419 253 252  
**Mail:** PO Box 596, Frankston 3199, Victoria, Australia



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](mailto: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](http://www.mpas.asn.au)  
**email:** [welcome@mpas.asn.au](mailto: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 [gwmpas@gmail.com](mailto:gwmpas@gmail.com)  
**MPAS newsletters online** - [https://drive.google.com/folderview?id=0ByvkkxzZG19g\\_SUNmZVhkZTFGWTA](https://drive.google.com/folderview?id=0ByvkkxzZG19g_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 © 2023, Mornington Peninsula Astronomical Society