



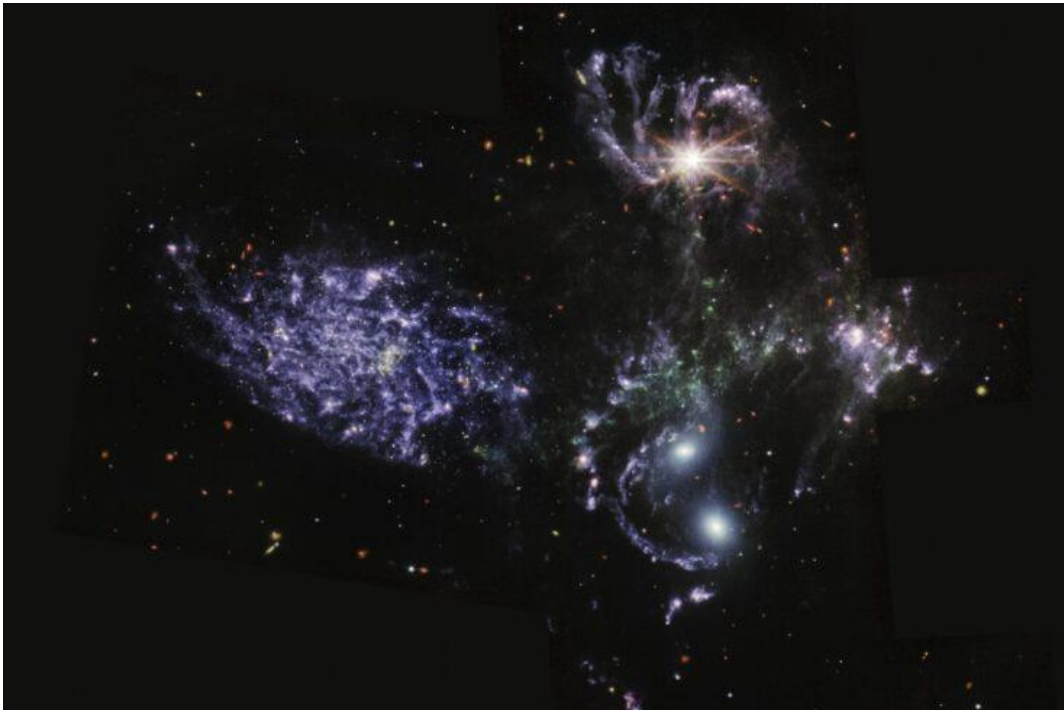
ASTRONOMICAL SOCIETY OF SOUTHERN AFRICA

# Durban 'nDaba

Monthly Newsletter of the Durban Centre - March 2023

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# Chairman's Chatter

Greetings ASSA Durban members

And now we are in month 3. Time flies when you are having fun – well, I guess it flies anyway.

The end of February public viewing Friday saw the first perfect viewing weather in a very long time; sadly, Alan was working to restore critical electricity supply and was unable to host the event. We are desperately needing volunteers to help out, pretty please, particularly as we expect the weather to start clearing as we move into autumn. This is bigger than a one-man job and it needs a team of volunteers to take turns and ease the load. If you would like to learn how to use the big scope in the observatory and assist with the monthly public viewings, please contact Alan on [alan@astronomydurban.co.za](mailto:alan@astronomydurban.co.za) or any other committee member (addresses on website). The more people we can get onto the team, the less often you will be asked to help out – so bring a friend (or two or three) too.

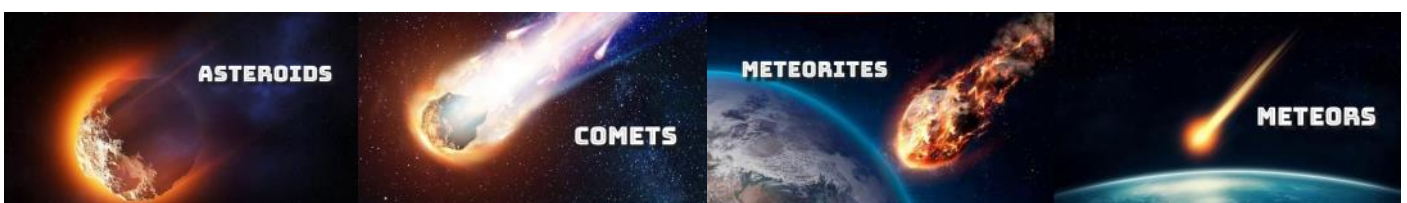


We are back into stage 4 to 6 load shedding and stage 8 is staring down the barrel at us. Durbanites will get the shock of their lives when we are put back onto the national schedule – we are still on load-shedding-lite; 'normal' would mean 9-11 hours a day off at stage 6. There is even talk of an extended schedule to stage 16, and some smart Alec was talking about stage 22. Our meeting venue stands in an area that goes dark on a Wednesday at 8pm – in the middle of our meeting. Our last committee meeting was plunged into darkness during a cracker storm and, believe me, it is dark in there with a two flights of stairs to negotiate. The society cannot afford the regular use of the school generator and the committee has been throwing various options about, trying to find a solution that will satisfy most members (we can never make them all happy) without breaking the bank. We have unfortunately had to make the decision to keep things digital for the foreseeable future; Gerald has kindly agreed to continue hosting us on his Zoom.

The other thing to note is that we will log on at **7 pm (NOT 7:30 pm)** to have the 'business' section done and dusted before Johannesburg joins us for the speaker at 7:30 pm. We found that members were not following us to the 'home' section of the meeting after leaving the Jhb speaker; perhaps they didn't see the two links on the notice, or it just been a loooong day by then and they were tired. So, we'll start a bit earlier (consider that your 'travel time' to the venue if we were meeting in person). If anyone has an alternative idea for a (free) venue that does not load shed on a Wednesday evening, or an alternative format, please let the committee know.

Wednesday, 8<sup>th</sup> March, we will be enlightened and entertained by one of our own, Yesen Govender, telling us about NASA's Artemis mission back to the Moon – something possibly a tad more achievable than another planet some people would like to visit. So, see y'all online at 7 pm.

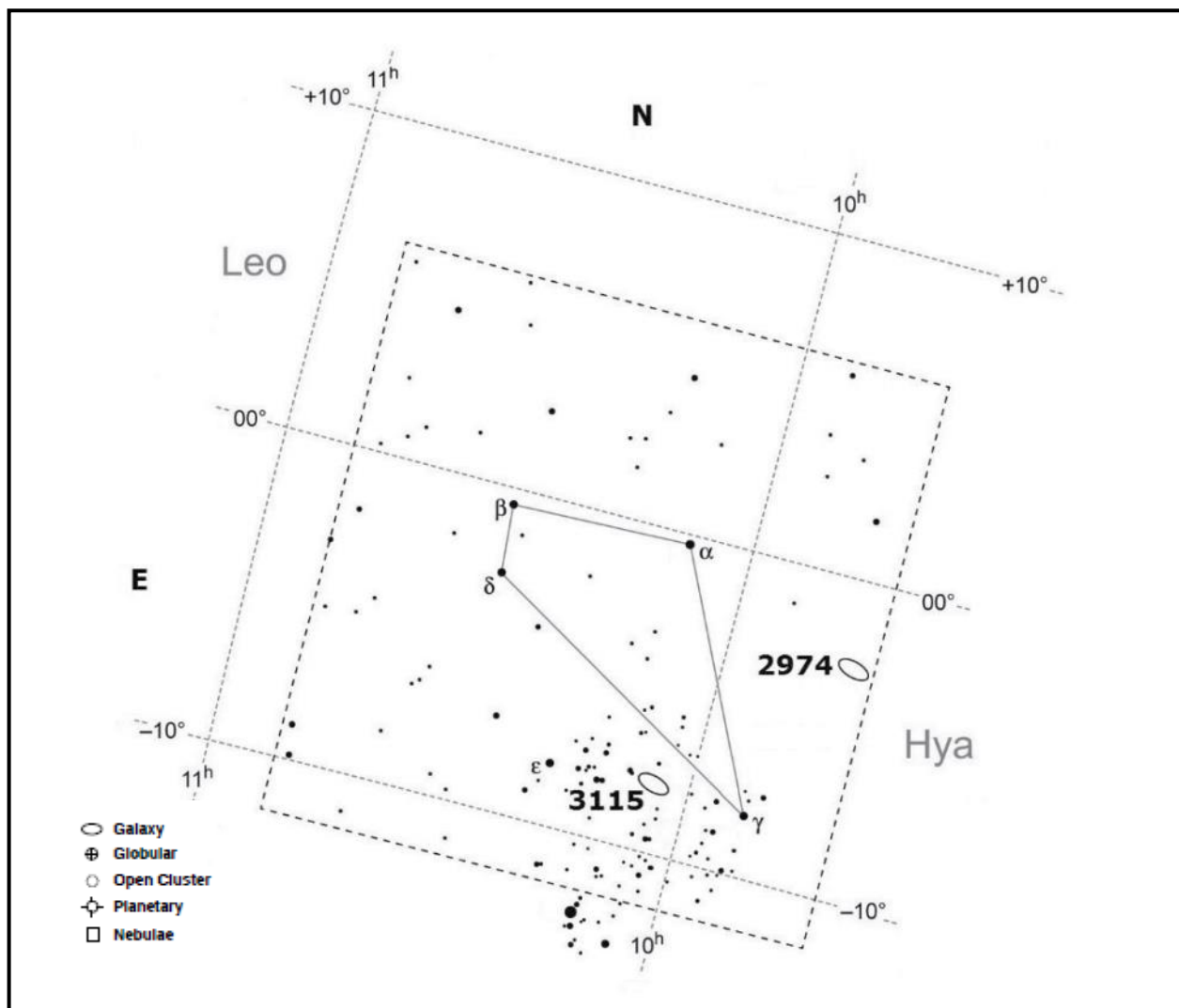
Debbie Able



# Astronomy Delights - Sextans

## A Stellar Instrument

By Magda Streicher



ABOVE: The Constellation of Sextans

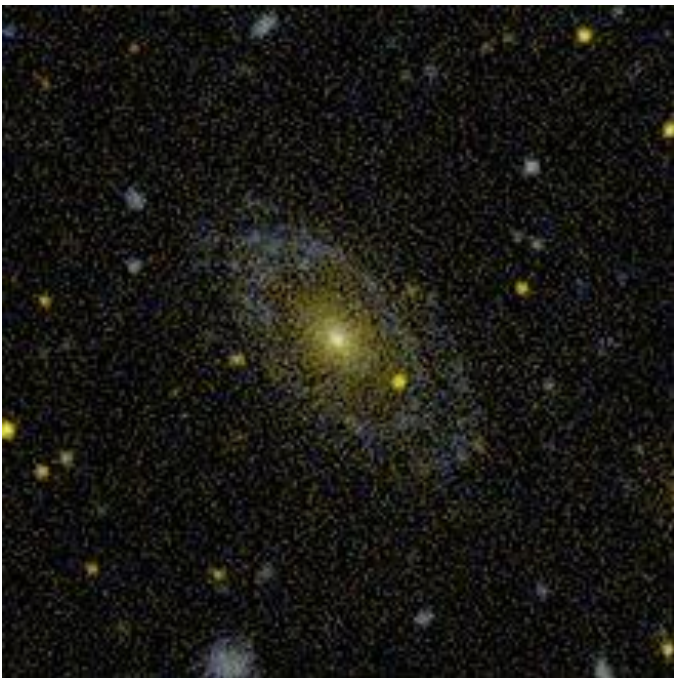
LEFT: The Sextans of 1673, on display on the roof of the old observatory in Beijing

OBJECT	TYPE	RA	DEC	MAG	SIZE
NGC 2974	Galaxy	09h42m.6	-03°41'.9	10.9	3'×1.7'
NGC 3115	Galaxy	10h05m.2	-07°43'.0	8.9	8'×2.8'

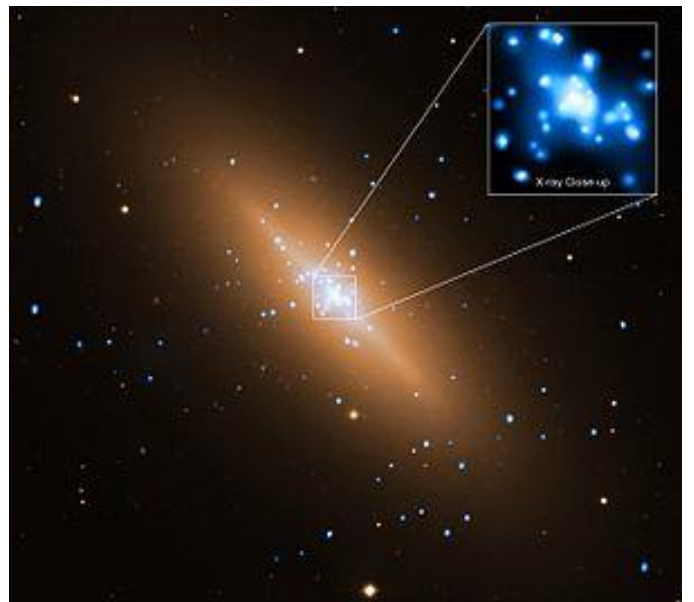
## ...Sextans

*Sextans Uraniae* was formed by Hevelius to commemorate the Sextant, so successfully used by him in stellar measurements during the 1600s. The original shape of the constellation comprised the twelve unclaimed stars between the constellations Leo and Hydra.

The galaxy **NGC 2974** is situated virtually on the western border with Hydra. The stars in the field play an important role when complementing this relatively bright oval shaped galaxy. It is difficult to detect the faint nucleus, but a slight brightening towards the center is suspected.



ABOVE: NGC 2974 - Credit Galex Wikipedia



ABOVE: NGC 3115 - Credit Wikipedia

In the southern part of the constellation the galaxy **NGC 3115** is to be found, also called the Spindle Galaxy. Known as a lenticular S0-type galaxy it nestles in a lovely star rich field of view. The very much extended oval stretches in a north-east to south-west direction, with the galaxy's tips running out thinly and fading away into the field of view. The bright nucleus, slightly tilted resembles a flattened lens in a way. The object was discovered by William Herschel in 1787. At about 32 million light-years away from earth, it is several times bigger than the Milky Way.

Mike Read wrote a short summary of the observatory in ancient Beijing: "The observatory was founded in 1442, and operated continuously until 1929 for almost 500 years. The Dutchman Johann Adam Schall von Bell advised the Chinese to adopt the Western standard numbering and measuring systems. In 1673, the Chinese Emperor invited Ferdinand Verbiest to build a new set of instruments and these are now preserved on the roof top of the building. The Azimuth Theodolite was built by Kilian Stumpf in 1715 and a new Armilla in 1744.

## ...Sextans

In 1900, during the Boxer Rebellion, the German and French Invaders stole the instruments for their museum, but they were returned to China at the end of the 1914-1918 war.”

A group of ASSA members visited the country of China for the July 2009 solar eclipse. It was one of the longest in duration which totality was due last nearly seven minutes. Rain dominated eclipse day unabatedly, as the bus laboriously made its way southwards, where we hoped to find better conditions, but sadly in vain.

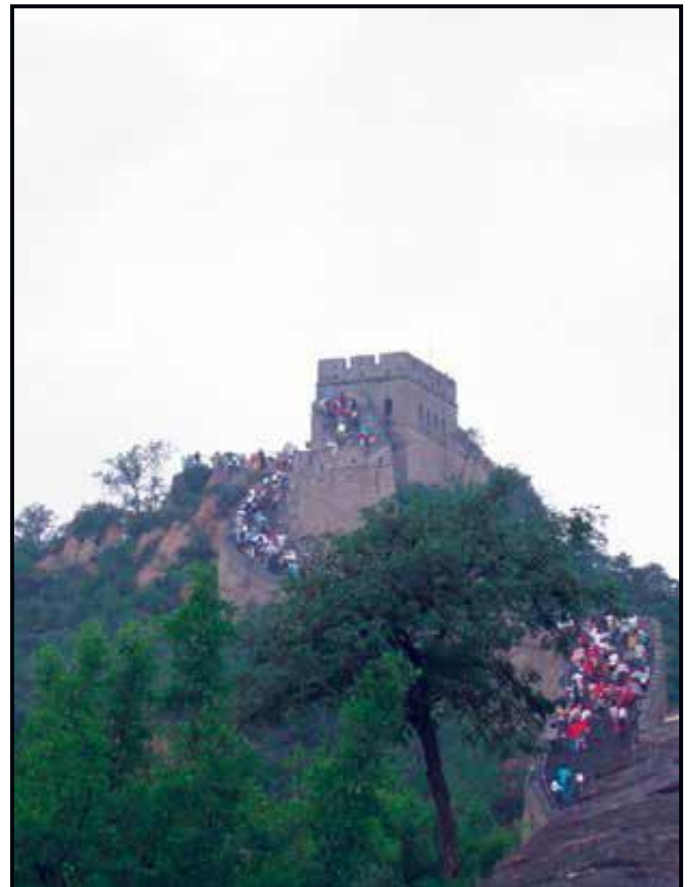


With the time for the eclipse approaching and just minutes to go, before total darkness set in, the dark grey clouds wrecked our last hopes of seeing anything of the sun, totality completely blocked out for us somewhat strange sun seekers.



## ...Sextans

China is a country of contrasts and many facets. The welcome was insightful, and there were cars, bicycles and masses of people everywhere, surprisingly orderly, with a history stretching a long way back. The Great Wall astounds, and takes one's breath away; and then there are the ruler clay soldiers, the eighth wonder of the world according to a rather cute Chinese tour-guide girl.



The well-known Terra-cotta warriors were found in the Shaanxi province at the original mausoleum of QinShihuang, the first emperor in Chinese history. These amazing pottery statues, bronze chariots and horses will linger in my mind forever.

RIGHT: Myself, Margie, Pat and Johan



# At the Eyepiece

March 2023 by Ray Field

The Sun reaches the March Equinox on the 20<sup>th</sup>.

The Moon is Full on the 7<sup>th</sup>, Last quarter on the 15<sup>th</sup>, New on the 21<sup>st</sup> and First quarter on the 29<sup>th</sup>. The Moon occults Venus at noon on the 24<sup>th</sup>. (See page 16 of the ASSA Sky Guide). The Moon is near and occults eta Geminorum on the 2<sup>nd</sup>, is near Pollux on the 3<sup>rd</sup>, near Regulus and occults eta Leonis on the 6<sup>th</sup>, near Spica on the 10<sup>th</sup>, near Antares on the 14<sup>th</sup>, near Saturn on the 19<sup>th</sup>, near the Pleiades on the 26<sup>th</sup>, near Mars on the 28<sup>th</sup> and near Pollux again on the 30<sup>th</sup>.

Mercury is not suitable for observation this month.

Venus is visible in the sky at dusk, low over the West, for a short while after sunset.

Mars is highest in the sky at midnight at the start of the month. It sets about an hour earlier by the end of the month. It is a fairly bright object at a magnitude or +1.

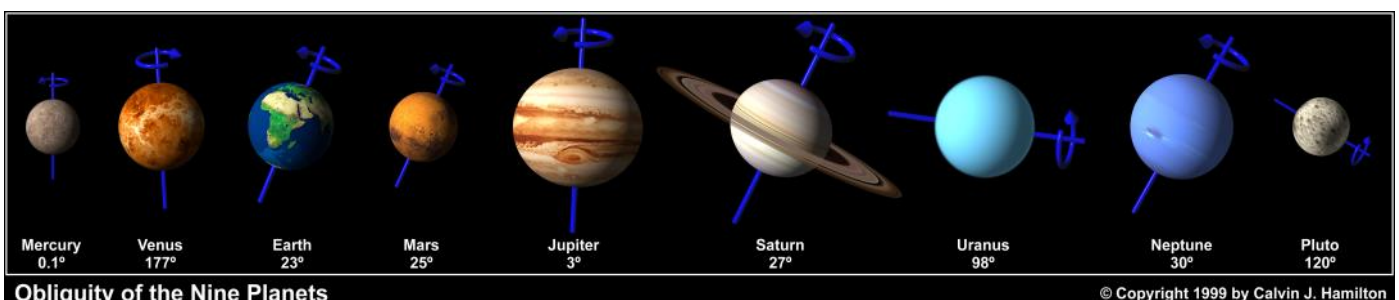
Jupiter, the largest planet, is not suitable for observation as it is too close to the Sun this month in the evening sky after sunset.

Saturn is not suitable for observation this month as it is too close to the Sun and lost in the solar glare in the early morning sky.

Comets: There are no bright comets predicted for March although new comets may unexpectedly appear at anytime. Refer to page 89 of the ASSA Sky Guide.

Meteor Showers: The gamma Normids will reach a maximum on 14<sup>th</sup> March at a predicted ZHR of 5 per hour. They are active from 25<sup>th</sup> February to 28<sup>th</sup> March and are a far South shower with a radiant at  $-51^\circ$ . The observing prospect is poor. Refer to page 86 of the ASSA Sky Guide.

The Starry Sky: The Southern Cross, preceded by the "Diamond" and the False Cross are rising over the South East. It is a star rich area of the sky. The bright star Canopus is at its highest over the South and Achernar is setting in the South West. Orion is fairly high up over the North West as is Sirius, the brightest star in the whole sky. The Twins, Gemini, are low over the North, with Procyon between them and Sirius. Leo, the lion, is rising over the North East and Taurus is setting over the North West.





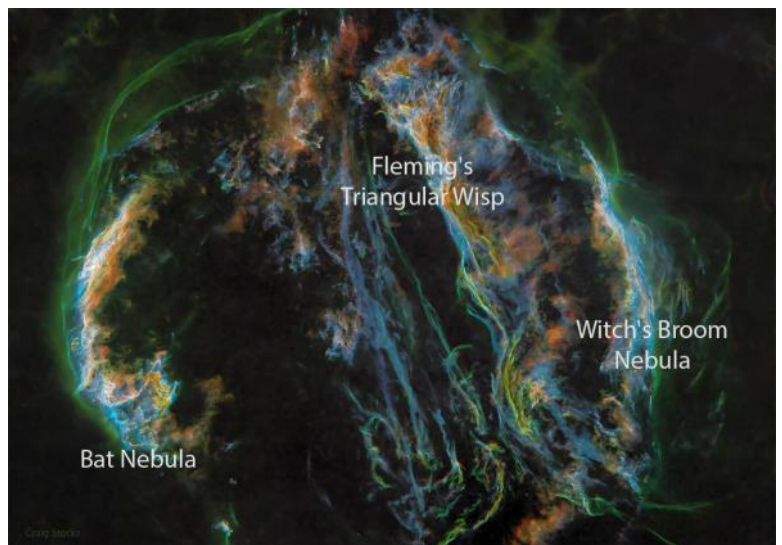
# The Veil Nebula

By Brian Ventrudo



ABOVE: The Veil Nebula in the constellation Cygnus. The upper section (NGC 6960) overlaps with the star 52 Cygni. The brighter lower arc is NGC 6992. In between lies Pickering's Triangle. Image credit: Brian Ventrudo/Cosmic Pursuits.

"It's better to burn out than to fade away", as Neil Young once said, and when it comes to burning out nothing beats a big star that blows up as a supernova. These catastrophic events occur as big stars run out of fuel in their core and become unable to hold themselves up against the relentless pull of their own gravity. Their outer layers collapse, crush the star's dense core into a neutron star or black hole, then snap back in a violent explosion that ejects as much energy in a few minutes as our sun does in its entire lifetime.



ABOVE: The Veil Nebula -Credit : Craig Stocks

Since only the largest stars expire like this, and since the explosion itself plays out quickly over a few days or weeks, a supernova is a relatively rare event: the last known supernova in the Milky Way happened more than 400 years ago.

## ...The Veil Nebula

But such explosions often leave a long-lasting imprint in the form of a visible nebula caused by the rapidly expanding shock wave of the exploding star colliding with and setting aglow the rarefied gas of the interstellar medium. Dozens of these so-called supernova remnants fleck the night sky. Most require a big telescope and sensitive camera to detect, but one of the brightest and easiest to see lies off the eastern 'wing' of the constellation Cygnus, the Swan.

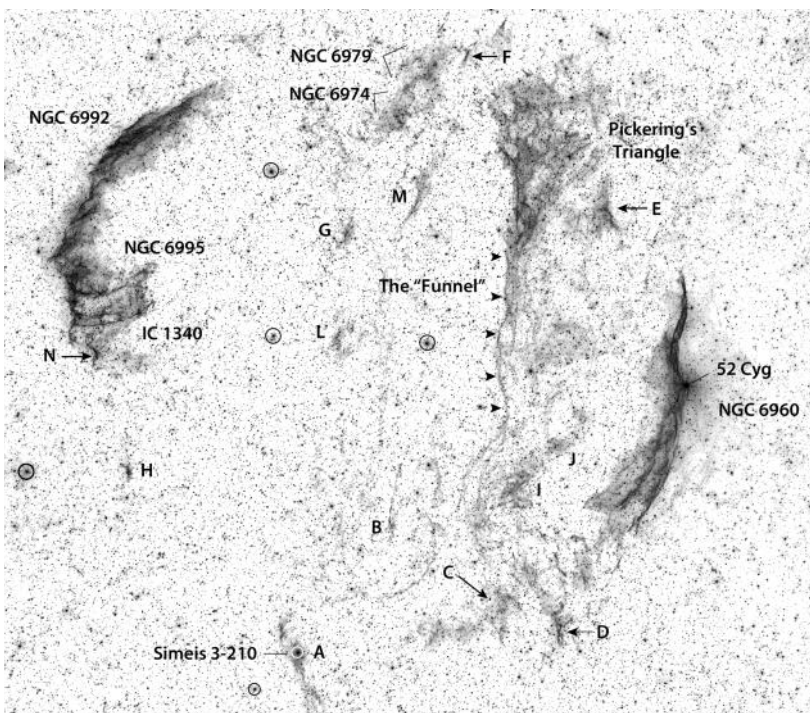


ABOVE: Swan Nebula Credit: John Gill

This is the famous Veil Nebula, a sprawling complex of glowing gas and one of the most intricate and intrinsically beautiful objects in our galaxy.

Once thought to be caused by two separate stellar detonations, the Veil was likely produced by a single star of about twenty solar masses that blew up about 8,000 years ago. At a distance of just 2,100 light years, the event must have been spectacularly bright for weeks to pre-historic stargazers and likely incited much untutored speculation about the nature of the night sky. Since then, the shock wave from the supernova has already expanded such that we see nebulosity spread over about 3.5 degrees of sky, about seven times the diameter of the full moon. In real terms, that corresponds to more than 110 light years, and the nebula continues to expand rapidly.

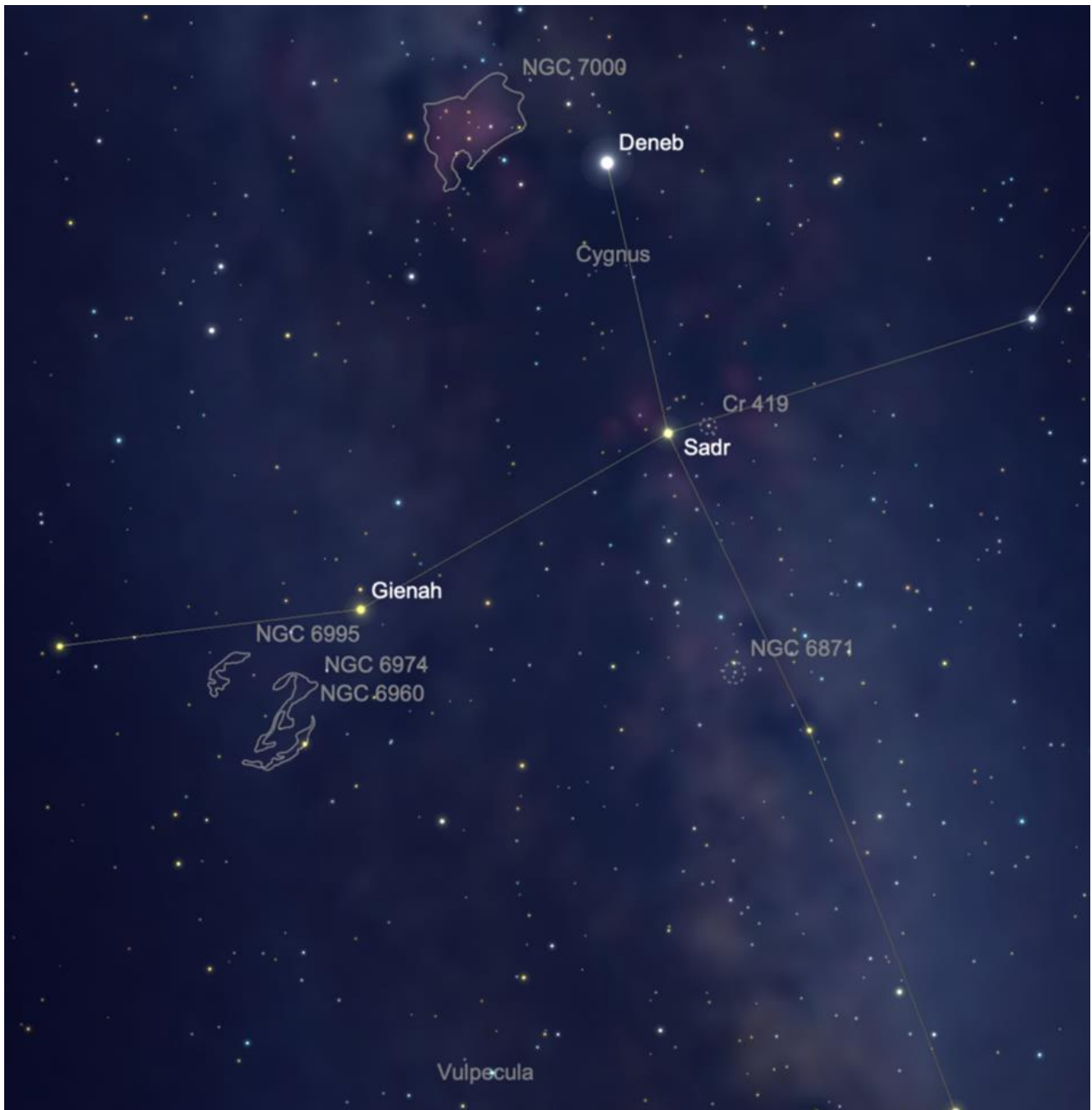
[This video gives you a close-up look at the Veil Nebula](#) with images from the Hubble Space Telescope



While it's lovely to behold the Veil Nebula in photos as a form of abstract sculpture on a galactic scale, it's also an object you can see for yourself. The complex lies a few degrees off the star epsilon ( $\epsilon$ ) Cygni (Gienah) at the tip of the eastern wing of Cygnus. It's easily within reach of a small telescope in dark sky. Like many sights in the deep sky, the Veil was first glimpsed by William Herschel in 1784. He noticed the western end of the nebula, now cataloged as NGC 6960, which runs through the 4<sup>th</sup>-magnitude star 52 Cygni. The eastern arc of the Veil complex (NGC 6992 and NGC 6995) is easier to see in a

telescope and arguably more intricate and appealing. Between the two elongated sections lies the more tenuous section called Pickering's triangle named after Harvard astronomer Edward Charles Pickering, although it was actually discovered by his redoubtable assistant, Williamina Fleming.

## ...The Veil Nebula



The location of the Veil Nebula near the star Gienah (Epsilon Cygni) off the eastern 'wing' of Cygnus, the Swan.

To see the Veil through a telescope, a light-pollution filter is a huge help. Unless you have a field of view of  $3.5^\circ$  or more (a large field for a telescope), you'll only see one section at a time. Even the brightest part of the Veil, NGC 6992, is roughly 1 full degree across. The delicate lacework becomes visible in 4" or larger telescopes with a UHC or OIII filter. Use higher magnification (and more aperture if possible) to see the finer structure. Experienced observers in ideal sky can spot the entire Veil Complex with a pair of 10×50 binoculars.

You can spend all night examining this immense complex; it's one of my favorite celestial sights. Without question, my best view of the Veil, or at least one small and intricately knotted section of the eastern Veil (NGC 6992), came on a clear July night in 2011 in the Adirondacks. The biggest scope at the observing site was a 25"

## ...The Veil Nebula

Dobsonian with a stepladder leading up to the eyepiece, aimed at the Veil Nebula. There was no lineup to look through the scope, just one young woman descending the ladder after seeing the nebula and wondering what all the fuss is about. She was clearly a beginner and didn't have much to compare it to. The owner of the telescope explained patiently that it was indeed an impressive sight and that a more experienced observer would find it so. I asked the owner if I could head up to take a look. As he continued his explanation to the young woman, I looked through the eyepiece. "Oh my GOD", I said.



# The Biggest Space Missions in 2023

While humans won't be heading back to the Moon until 2025, there's plenty to get excited about this year.



ABOVE: Image Courtesy of Dima Zel/Shutterstock

With just how exciting 2022 was when it came to space news — from the reveal of the first images taken by the James Webb Space Telescope to NASA crashing the DART spacecraft into an asteroid — it may seem like 2023 will be quiet in comparison.

However, that's not the case. From expeditions throughout the solar system to new breakthroughs in commercial space travel, here are the biggest space missions to keep an eye on throughout 2023.

## 1. Asteroid Bennu samples return to Earth

Way back in 2016, NASA launched its OSIRIS-REx mission. The craft arrived at the asteroid Bennu in October 2020 to collect rock samples. OSIRIS-REx is estimated to return to Earth with the samples on Sept. 24, 2023, though that date could change as the year progresses.

Bennu is a small asteroid compared to others in the solar system, as it is about as wide as the Empire State Building is tall (around 1,450 feet [500 meters]). Of note, it has a 1-in-1,750 chance of hitting Earth on one of its close approaches to Earth in the late 22nd century, according to NASA.

## ...Space Missions 2023



LEFT: OSIRIS-REx's touch-and-go sample collection attempt on asteroid Bennu is seen in this image. Credit - NASA/Goddard/University of Arizona

However, those aren't the reasons that scientists are studying Bennu. Rather, Bennu was selected because of its age. The asteroid has been around for more than 4.5 billion years, and its present-day composition was likely established within 10 million years of our solar system's formation. This makes it a great candidate for studying what the early solar system might have been like.

### 2. SpaceX and Boeing to send humans to space

As 2023 rolls around, Boeing and SpaceX will continue to compete to launch humans into Space as a part of NASA's Commercial Crew Program (CCP).

On 2<sup>nd</sup> March 2023, SpaceX launched four astronauts to the International Space Station from Florida. The crew is made of two Americans, one Russian and one Emirati: NASA astronauts Warren Hoburg and Bowen, Roscosmos cosmonaut Andrey Fedyaev and United Arab Emirates astronaut Sultan Alneyadi.

RIGHT: Image Credit: CC0 Public Domain



LEFT: SpaceX's Crew Dragon capsule, seen here, has already proven its worth. Credit: SpaceX

Boeing, meanwhile, has lagged behind SpaceX a bit in terms of launches, but will be attempting the first crewed launch of its Starliner craft, including two NASA astronauts as a part of NASA's CCP in April. This launch will mark the final test that Boeing needs to pass before it can use the Starliner to regularly send astronauts to the ISS; making up for lost ground this year.

## ...Space Missions 2023

### 3. Multiple countries shoot for the Moon

Russia hasn't sent a probe to the surface of the Moon since Luna 24 in 1976, but that isn't stopping it from going back. Russia's Luna-25 mission was postponed from last September 2022; and now Russia is planning on launching their Luna25 -Lander on 13 July 2023. The launch will be on a Soyuz-2 Fregat into Earth orbit. It will fire the Fregat again to go into a lunar transfer orbit and from lunar orbit it will drop down to the surface.

The craft will attempt to land north of the Boguslawsky crater, southwest of the Manzini crater on the Moon's south polar region. There are two primary scientific objectives of the mission. Luna25-Lander is to study composition of the polar regolith, and to study the plasma and dust components of the lunar polar exosphere.



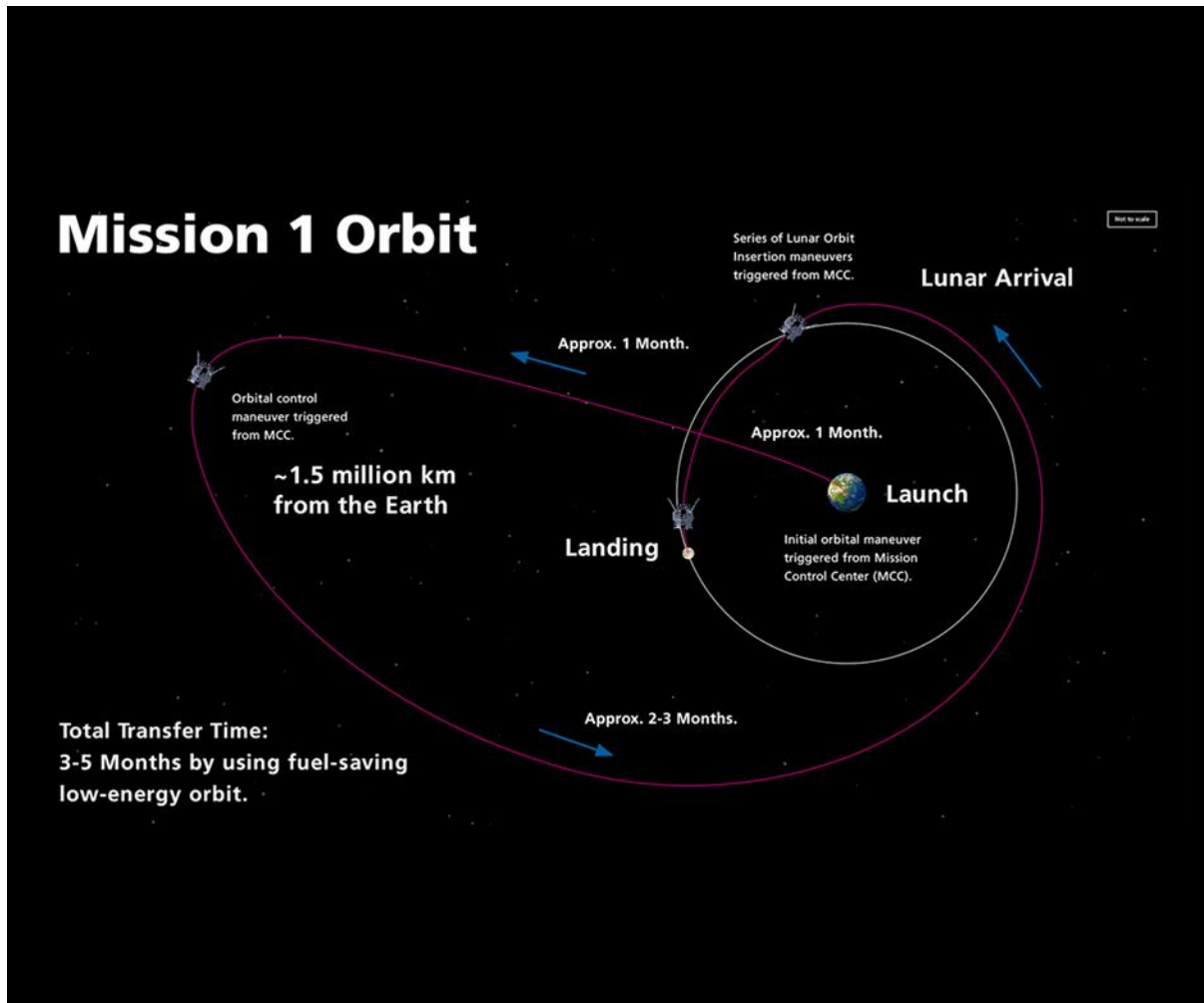
LEFT: Image source: Indian Space Research Organisation

Closer to the Equator, the Indian Space Research Organisation (ISRO) plans to launch its third lunar mission in mid-2023 from Satish Dhawan Space Centre (SDSC) in Andhra Pradesh, India.

The Chandrayaan 3 launch was originally slated for August 2022, but was pushed back to complete more vital tests. If successful, Chandrayaan 3 will land on the Aitken basin near the south pole of the Moon. It consists of Lander and Rover configuration. They are similar to the Vikram rover on Chandrayaan 2, with some improvements to ensure a safe landing. It will also carry a communications relay satellite. The rover will carry a seismometer, heat flow experiment, and spectrometers.



## ...Space Missions 2023



ABOVE: The Hakuto-R Mission1 lunar lander Image - Credit: ispace

A Japanese company, ispace, launched its privately built Hakuto-R Mission 1 lunar lander from Florida, on a SpaceX Falcon 9 rocket on 12 December 2022. It's taking a slow, fuel-efficient route to the moon and is set to arrive in April, when it will try to deploy a rover built by the United Arab Emirates, a robot built by Japan's space agency, JAXA, as well as other payloads. The craft's anticipated landing in late April.

In Japan, the Japanese H3 rocket lifted off from Tanegashima Space Center in Kagoshima, southern Japan on Tuesday 7 March, unfortunately the country's space authorities were forced to activate its flight termination system 14mins into the flight after one of its 2<sup>nd</sup> stage engine ignitions failed to operate properly. The destruct command was transmitted to H3 because there was no possibility of achieving the mission. The vehicle had plummeted safely into the deep sea off the Philippines coast.

The H3 was carrying an Advanced Land Observation Satellite, known as the ALOS-3 system, JAXA said. This would have allowed it to engage in observation, mapping, data collection for disaster response and monitor nearby military activity, including North Korean missile launches. (Tanegashima Space Center/AP)

Powered by a new simpler, lower-cost engine that includes 3D-printed parts, the H3 is designed to lift government and commercial satellites into orbit. It is also meant to ferry supplies to the International Space Station.



## ...Space Missions 2023



As part of Japan's deepening cooperation with the US in space, it is intended to eventually carry cargo to the Gateway lunar space station that Nasa plans to build as part of its program to return people to the moon, including Japanese astronauts.

ABOVE: JAXA's new H3 rocket launching on March 6.- Image credit: AXA via YouTube)

It is the second H3 failure for Japan's space agency, Jaxa, after the rocket failed to leave the launchpad in a previous attempt in February.

Finally, two lunar landers will launch from the U.S. in 2023. Houston-based company Intuitive Machines' Nova-C craft will take off in March 2023. If successful, it will become the first U.S. spacecraft to land on the Moon since Apollo 17 in 1972.

Vulcan Centaur is a next-generation heavy-lift launch vehicle being developed by United Launch Alliance (ULA).

United Launch Alliance (ULA) has a target date for its Vulcan Centaur rocket's inaugural flight: May 4th, 2023. Company chief Tory Bruno has [announced](#) the four-day launch window starting on May 4th in a call with reporters, where he explained the factors that prompted the company to come up with the schedule.

Vulcan Centaur was supposed to have its maiden flight in 2022, but Astrobotic asked ULA to delay its launch to give it more time to finish the NASA-funded lunar lander.

Bruno said Astrobotic has just finished testing the Peregrine and will soon be making final preparations before shipping it to the rocket's launch location at the Cape Canaveral Space Force Station in Florida.

In addition to the lunar lander, the rocket will also carry two prototype satellites for Amazon's Project Kuiper constellation to space. The demo satellites' deployment will give Amazon the opportunity gather real-world data to be able to finalize the design and operation plans for its broadband satellite system.

If Vulcan Centaur successfully flies for the first time on May 4th, it will mark the beginning of a new era for ULA. It plans to eventually replace the Delta IV Heavy and Atlas rockets with the Vulcan Centaur once it's done with its remaining launch obligations.



ABOVE: Vulcan Centaur heavy launch vehicle is being developed by ULA - Credit : ULA

# ...Space Missions 2023

## 4. Europe's JUICE Mission to Europa

JUICE - JUpiter ICy moons Explorer - is the first large-class mission in ESA's Cosmic Vision 2015-2025 programme. Planned for launch in 2023, it will spend at least three years making detailed observations of the giant gaseous planet Jupiter and three of its largest moons, Ganymede, Callisto and Europa.

In April 2023, the European Space Agency will send their JUICE orbiter, off to Jupiter. Upon entering orbit around Jupiter in 2030, JUICE will make detailed observations of the gas giant's three large ocean-bearing moons: Ganymede, Europa and Callisto.

RIGHT: The European Space Agency's Jupiter Icy Moons Explorer (JUICE) will study Jupiter and its icy moons - Image credit: ESA



These observations will allow astronomers to study the three moons, as well as Jupiter's environment, in unprecedented detail.

JUICE will fly by Ganymede and Callisto at least 12 times each, and Europa at least twice.

In the final phase of its projected three and a half year mission, JUICE will orbit around Ganymede for about nine months (of the icy moons), studying the moon even more closely. This will mark the first time a spacecraft has orbited around another moon in the solar system other than our own Moon.

## 5. SpaceX sends it's Starship spacecraft into Orbit



ABOVE: Image Credit: SpaceX

Over the past few years, SpaceX has made a name for itself in the aerospace industry. Now, the company is going to try and make even more history.

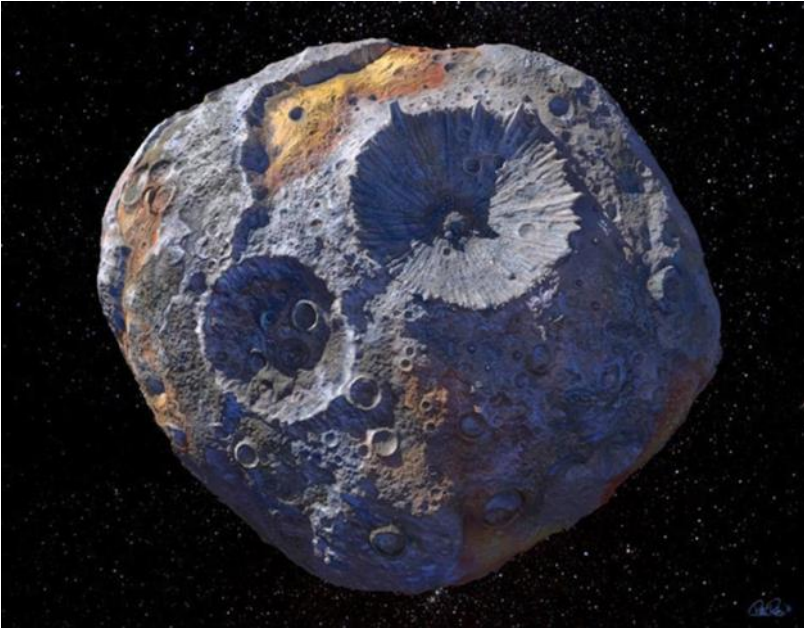
The much-anticipated maiden orbital flight of Starship - slightly taller than the Saturn V rocket used by NASA for its Apollo Moon landings in the 1960s and 1970s, will happen in the first quarter of 2023. SpaceX will attempt to use its Super Heavy first-stage rocket booster to launch its second-stage spacecraft, Starship, into orbit. The two are collectively referred to as "Starship," and the company plans to use them in the future as a fully reusable transportation system for both cargo and humans, according to SpaceX.

## ...Space Missions 2023

The company has planned several uses for Starship, including delivering satellites into Earth's orbit and landing cargo and crew on the Moon and Mars. Launching Starship into orbit around Earth is just the first test to see if it can handle those future tasks.

So, whether it's with intent or by accident, when you look up in the stars in 2023, you may be witnessing a breakthrough in space exploration.

### 6. NASA to send Heavy rocket to orbit Asteroid Psyche 16



NASA wants a close-up of one of the most intriguing and possibly one of the most valuable asteroids we know of, 16 Psyche. After software issues in 2022 delayed the mission, it is now set to go on 19<sup>th</sup> October 2023, skywards on a SpaceX Falcon Heavy rocket on a low-cost Discovery-class robotic space mission to find out if it really made of iron and nickel. The orbiter is due to arrive at Psyche in August 2029 to begin at least 21 months in orbit mapping and studying the asteroid's properties.

About 230 million miles/370 million kilometers from Earth, Psyche—as it's commonly known—is one of the most massive objects in the Solar System's main asteroid belt orbiting between Mars and Jupiter.

It's about 140 miles/226 kilometers-wide and—unlike most asteroids, which are rocky or icy—Psyche appears to be metallic.

In fact, it's so dense and metallic that Psyche is thought to be the leftover core of a planet that failed during its formation—a “protoplanet, or it was struck by an-other object in our solar system and lost its mantle and crust.”

### 7. Astrobotic's Peregrine mission to the lunar surface

Though Astrobotic's mission to the Moon will be exciting in itself. The launch of Peregrine Mission is scheduled at Cape Canaveral, Florida on a United Launch Alliance Vulcan Centaur rocket; with a touch down on the lunar surface on Sinus Viscositas after launch no earlier than May 2023. This will be closely watched by those in the space industry in the first quarter of 2023. It will be the debut spaceflight for United Launch Alliance's new Vulcan Centaur rocket, which although not quite as large as NASA's now proven Space Launch System (SLS) and SpaceX's not-yet-tested Starship, is destined to be a big player among heavy-lift rockets.

NASA's first commercial space mission to the Moon, Peregrine Mission 1 will carry scientific and other payloads to the Moon including the Iris rover, the first American and student-developed rover to land on the Moon.

## ...Space Missions 2023

The Peregrine's primary scientific objectives of the mission; are to study the lunar exosphere, thermal properties and hydrogen abundance of the lunar regolith, magnetic fields, and the radiation environment. It will also test advanced solar array.

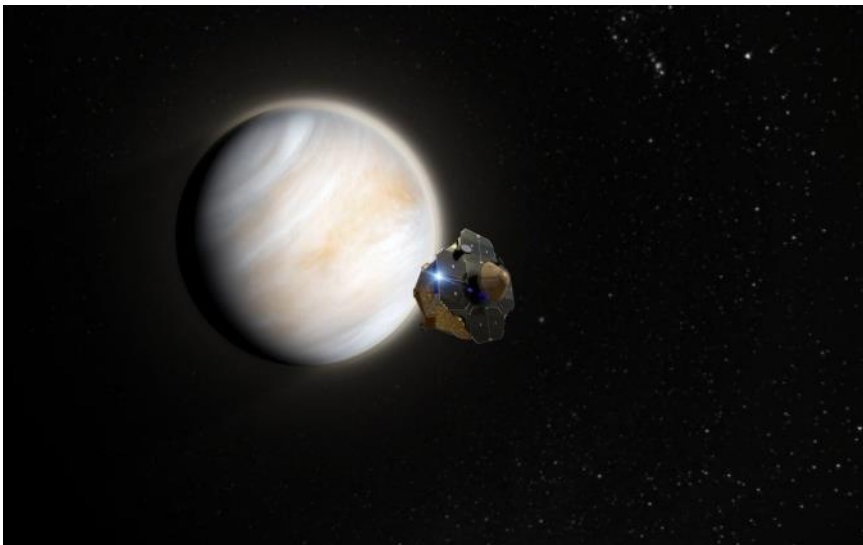
Peregrine Mission 1 was selected through NASA's Commercial Lunar Payload Services (CLPS) initiative, in which NASA contracts with a commercial partner, in this case Astrobotic, that provides the launch and lander.



ABOVE: Artist's illustration of Astrobotic's Peregrine lander on the surface of the moon. (Image credit: Astrobotic)

Peregrine is designed to deliver payloads to the surface of the moon. Its first mission is scheduled for the fourth quarter of this year, which would make it the first American spacecraft to land on the moon since the Apollo program, according to an emailed statement from Pittsburgh-based Astrobotic.

### 7. Rocket Lab's 'Venus Life Finder' probe



Research suggests Venus was once a habitable planet similar to Earth. A 2019 study from NASA's Goddard Institute for Space Studies found that Venus could have had shallow oceans on the surface for two to three billion years and this would have supported temperatures of between 68 to 122 degrees Fahrenheit. Around 700 million years ago though, a resurfacing event released carbon dioxide into

the atmosphere, turning Venus into a dangerous, inhospitable planet where atmospheric temperatures reach 1,000 degrees Fahrenheit.

Rocket Lab is sending the first private mission to Venus in search of supporting evidence of organic compounds in the cloud layer - traces of life. The goal, using an Electron launch vehicle and Photon spacecraft, is to send a probe to around 30 miles' altitude, where Venus' atmospheric conditions are closer to those found on Earth.

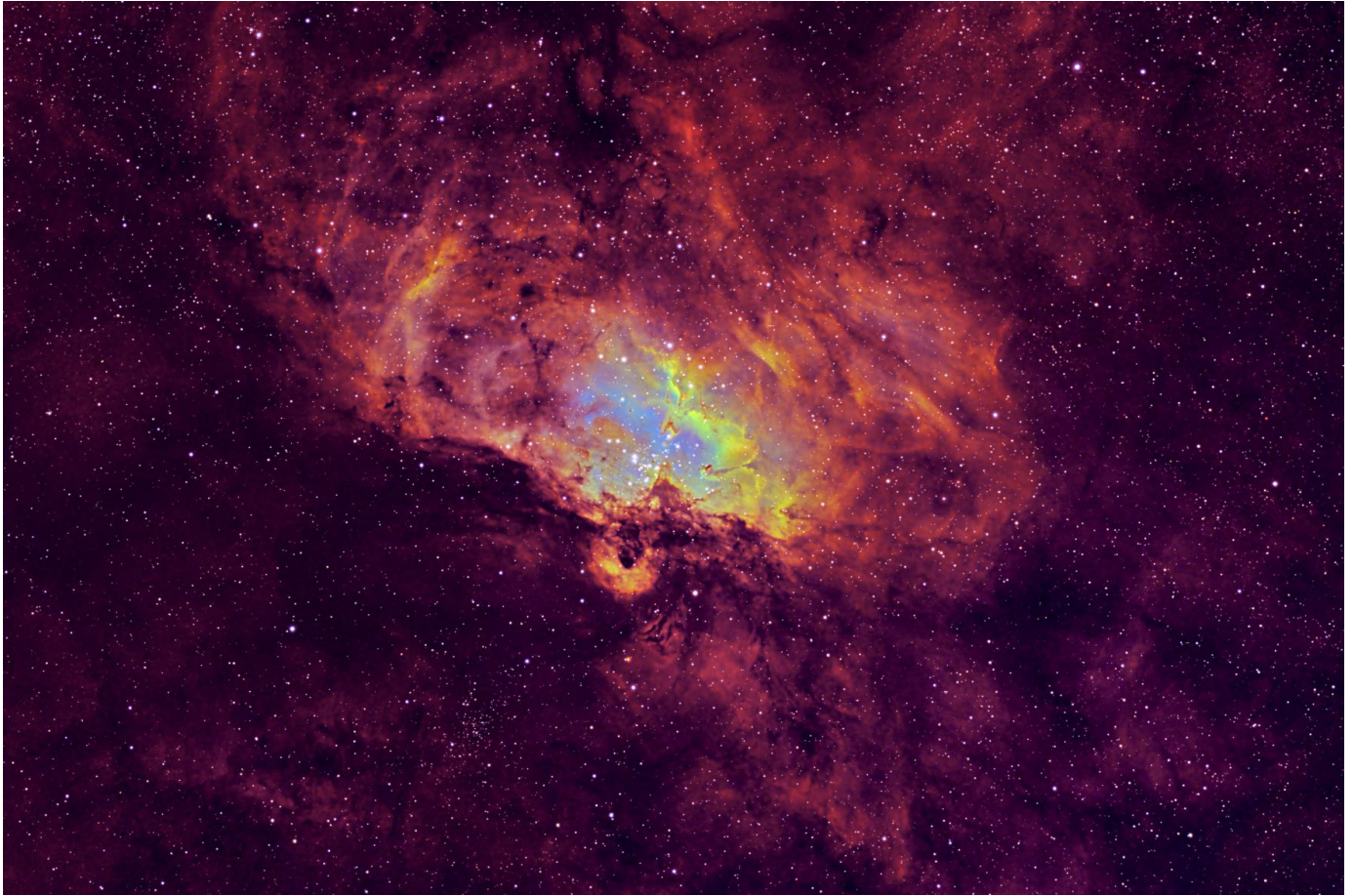
While more than 30 Venus missions have been undertaken, Rocket Lab's will be the first private exploration of the planet.

These are many more launches to take place in 2023. For updated other launch es and dates prefer to <https://www.spacelaunchschedule.com/2023-launch-schedule/page/6/>



# The Cover Image - The Eagle Nebula

by John Gill

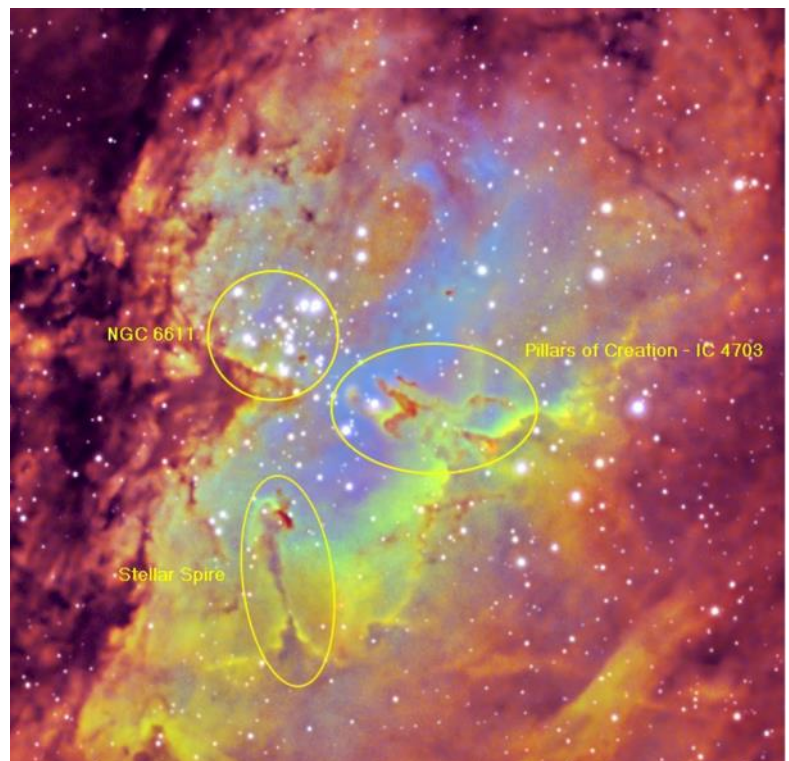


The **Eagle Nebula** (catalogued as **Messier 16** or **M16**, and as **NGC 6611**, and also known as the **Star Queen Nebula**) is a young open cluster of stars in the constellation Serpens, discovered by Jean-Philippe de Cheseaux in 1745 - 46. Both the "Eagle" and the "Star Queen" refer to visual impressions of the dark silhouette near the center of the nebula, an area made famous as the "Pillars of Creation" imaged by the Hubble Space Telescope. The nebula contains several active star-forming gas and dust regions, including the aforementioned Pillars of Creation. The Eagle Nebula lies in the Sagittarius Arm of the Milky Way .

## TECHNICAL SPECS:

Ha x 109, Oiii x 44, Sii x 69

The images are a mixture of 2, 3 and 4 minute exposures with narrow band filters. They were taken over three nights and two years. About 11 hours of integration using an APM 107/700 telescope on a CGX mount and a QHY 268m camera. Processed in PixInsight.

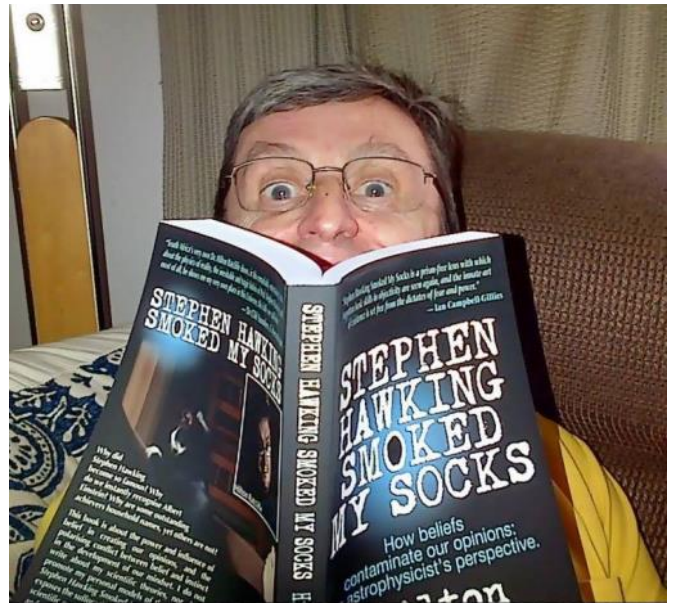


# ASSA Member Eulogy - Hilton Ratcliffe



In the prologue to "Stephen Hawking Smoked My Socks", the author Hilton Ratcliffe, a member of ASSA Durban said, *"The aim of this discourse is not to prove one of us right and the other wrong, but for us both to find an accurate and realistic way of looking at the world. I contend that everyone, without exception, is powerfully affected by personal belief, so I suppose I have at last produced a book that is relevant to 7 billion people!"*

That was our Hilton whom I am sad to report passed away on the 3<sup>rd</sup> February 2023. He was a frequent visitor to my home and we engaged in interminable debates but never once did he infer that his was the only accurate view and that all else was debatable. Hilton would be remembered as much for the many insightful talks that he gave to local members as for the often unorthodox challenges that he made internationally. He was arguably the most qualified amongst us to make such statements as a graduate astrophysicist and mathematician at prominent American universities in Missouri and Austin, Texas. He also worked at NASA as a physicist.



As the son of a farmer in Greytown in KZN midlands, he was acutely aware of the fragility of our planet and its place in the cosmos. He was an avid nature lover and wildlife photographer apart from his passion for astronomy and mathematics.

Along with undeniable notoriety, Hilton Ratcliffe has also garnered a great deal of respect amongst the global scientific community for his strictly classical approach to space science: Everything he did was based upon observation rather than esoteric theory, a complete reversal of the standard approach to cosmology.

He was prominently opposed to the stranglehold that Big Bang Theory has on astronomical research and funding, and to this end became a founding member of the Alternative Cosmology Group (an association of some 700 leading scientists from all corners of the globe), which conducted its inaugural international conference in Portugal in 2005.

## ...Eulogy - Hilton Ratcliffe

Recently, the James Webb Telescope discovered six gigantic galaxies that emerged shortly after the Big Bang, a study said, stunning scientists by forming at a speed that upends the current understanding of the early universe. *"This is an astounding discovery and unexpected. We thought that galaxies form over much longer periods of time,"* said Penn State astrophysicist and study co-author Joel Leja. *"No one expected to find these. These galaxy candidates are simply too evolved for our expectations. They seem to have evolved faster than allowed by our standard models."*



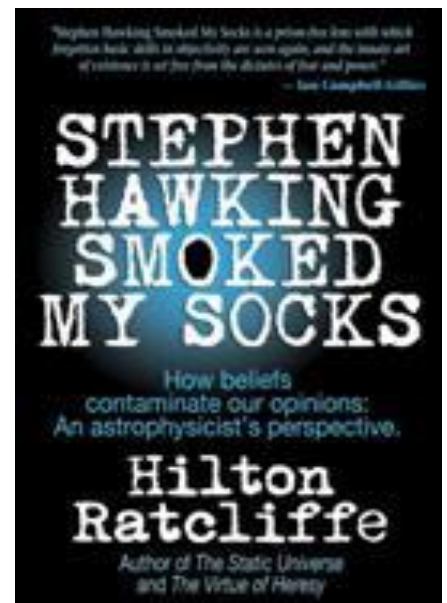
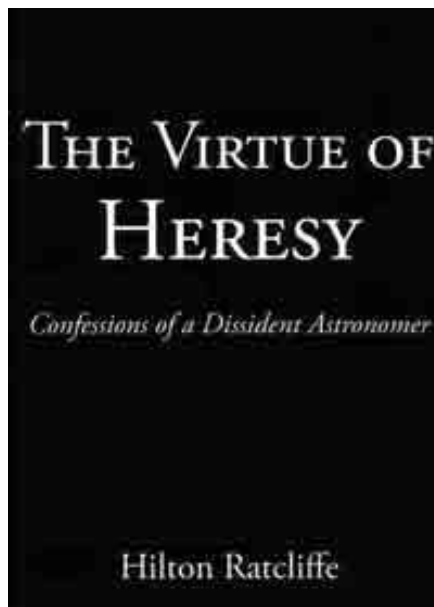
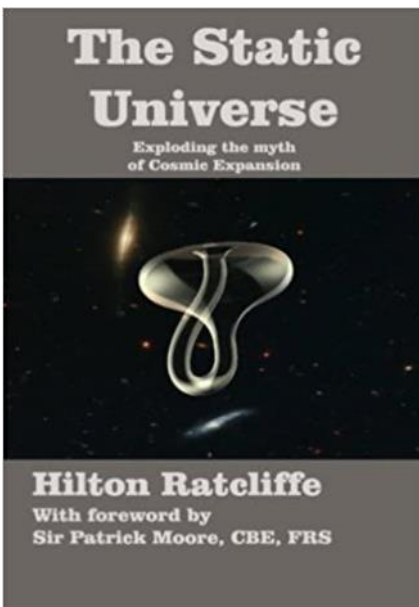
I had the immense pleasure to spend day at the home the legendary, British astronomer Sir Patrick Moore whom, when I asked for his opinion on Hilton's views said, *"They are not to be ignored."*

Who knows, Hilton might have been onto something after all!

But despite his often controversial views, he was an amazingly intelligent, kind and quiet man with an engaging smile and a razor sharp humour. It was his eloquence and abiding passion for science and astronomy that I will long remember.

Hamba Kahle Hilton

Logan Govender  
Past Chairman – ASSA Durban



# Librarian's Page

Hello Members,

We have uploaded our first small selection of books into our "virtual library"

<https://drive.google.com/drive/folders/1MCgmoKopNej2vt5txD5TDZGc8o34WitH?usp=sharing>

It's just a few for now, but there are some interesting and excellent titles in there.

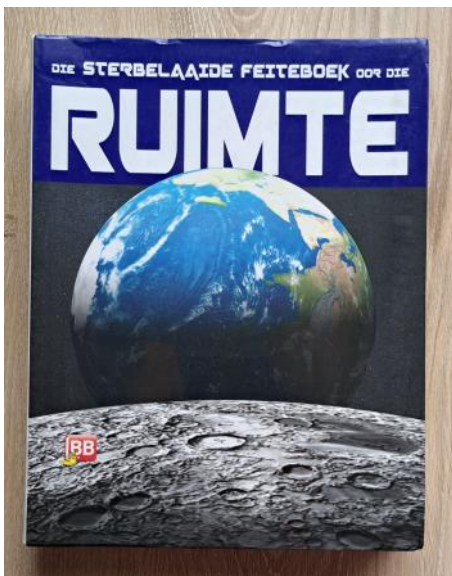
The plan is to grow this into a comprehensive multimedia resource. If anyone has any books or videos they would like to add, please PM me, or email to [Claire@astronomydurban.co.za](mailto:Claire@astronomydurban.co.za)

Please feel free to download and enjoy. They are for personal (non-commercial) use only.  
Happy Reading!

Claire

ASSA DBN Librarian

## Books For Sale

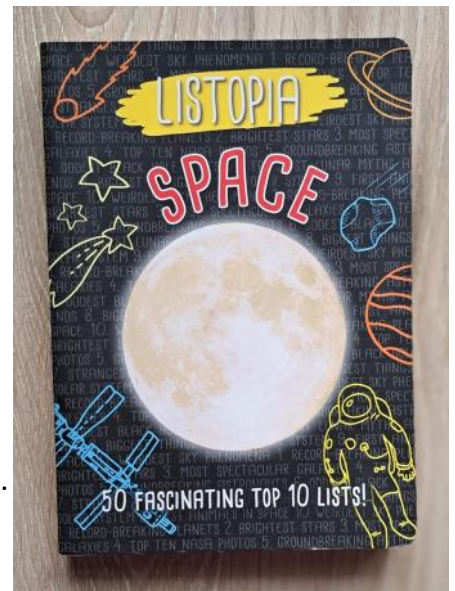


CONTACT: Claire  
[Claire@astronomydurban.co.za](mailto:Claire@astronomydurban.co.za)

WhatsApp: 083 395 5160

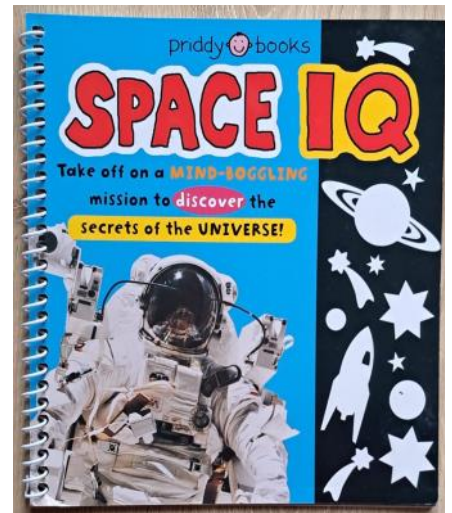
LEFT: R170- Ruimte - 384 amazing pages of information. New.

RIGHT: R125- Listopia: Space.  
Fully illustrated, beautiful book! New.



BELOW: 40- Priddy's Space IQ  
Spiral board book, ideal for younger children. (Pre-loved)

BELOW: R180 - Map of the solar system-Large wall poster, packed full of information! (5 available)





# ASSA Durban Minutes of General Meeting



8 February 2023 - 19:30 via Zoom

1. Welcome
  - Piet Strauss welcomed members in a joint Durban and Johannesburg meeting, hosted by JHB. Meeting started at 19:30.
- 1 Guest speaker - Speaker (Alison Coulter – ASSA JHB)
  - Alison gave a presentation on “How to Astronomy”.
3. Present and Apologies - Durban Hosted Meeting
  - Members of JHB and DBN attended.
  - Apologies: Several apologies were received due to loadshedding.
4. Debbie welcomed Durban members at 21:00
5. Previous meeting minutes and matters arising
  - Minutes accepted
6. Treasurers report
  - Unavailable at present. Bank access to be finalised.
7. Library
  - School cupboard to be opened at next committee meeting
8. Events
  - No Feedback
9. Ndaba
  - We are looking for a new editor urgently

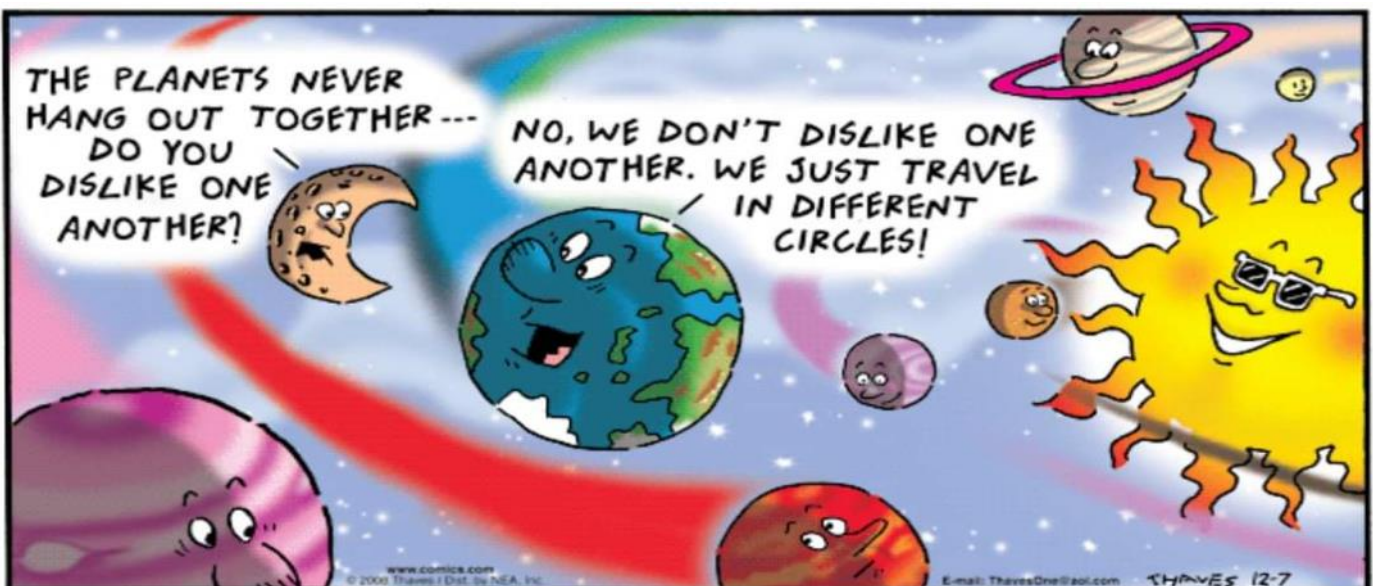
Meeting closed due to load shedding

## ASSA DURBAN ZOOM MEETING

Durban members meeting continuation details:

Meeting ID: **88037701479**

Passcode: **297674**





# Public Viewing Roster ASSA Durban



Dome Master	Email	Assistant	Telescope Volunteer	Public Viewing
Alan Marnitz	<a href="mailto:alan@astronomydurban.co.za">alan@astronomydurban.co.za</a>	TBC	TBC	24th March
Alan Marnitz	<a href="mailto:alan@astronomydurban.co.za">alan@astronomydurban.co.za</a>	TBC	TBC	21st April
Alan Marnitz	<a href="mailto:alan@astronomydurban.co.za">alan@astronomydurban.co.za</a>	TBC	TBC	19th May
Alan Marnitz	<a href="mailto:alan@astronomydurban.co.za">alan@astronomydurban.co.za</a>	TBC	TBC	

## PUBLIC VIEWING:

Public viewing is on site at the Marist Brothers St Henry's School in the dome and around the pool area; usually the first Friday evening closest to the New Moon.

Please note there is a roster with a booking system. Once the number of telescopes are confirmed, Individuals will be contacted to confirm dates and times. Please book your place!!!

## NOTIFY OBSERVATORY MANAGER:

Members interested in attending the above viewing evenings and/or becoming involved in assisting with the viewing evenings, please send your names to Alan Marnitz on cell number 082 305 9600, or via email: [alan@astronomydurban.co.za](mailto:alan@astronomydurban.co.za)

## VOLUNTEERS REQUIRED:

Volunteers to please identify which role you are willing to assist with, Dome Master, Viewing Assistant or a Telescope Volunteer. After which, attendance will be confirmed and viewing dates will be announced.

**Viewing Assistant** - Learning about the new telescope, assisting with the viewing evenings, assisting viewing members as required.

**Telescope Volunteers** - Members willing to bring their telescopes to the viewing evenings to set up around the pool for public viewing.

## VOLUNTEERS TUTORIAL:

**Mike Hadlow to organise an afternoon / evening to train volunteers as Dome Masters and the use of the large telescope. Date to be confirmed and viewing dates will be announced ASAP.**

Viewing Contact:	Phone	Email
Alan Marnitz	082 305 9600	<a href="mailto:alan@astronomydurban.co.za">alan@astronomydurban.co.za</a>

# Notice Board

## MEETINGS:

- GENERAL MEETING to be held on **8th March 2023** via Zoom <https://us02web.zoom.us/j/88037701479?pwd=UU5xMUJfbWVlVWUtd1Y1I2ZDNQdz09> @ **7:00pm or as notified.**
- PUBLIC VIEWING MEETINGS - please refer to website under the tab "Viewing and Events" for any updates with regards dates & public viewing, please click here: <https://astronomydurban.co.za/events-viewing/>

## MNASSA:

- Monthly Notes of the Astronomical Society of Southern Africa.
- Available at [www.mnassa.org.za](http://www.mnassa.org.za) to download your free monthly copy.

## NIGHTFALL:

- Fantastic astronomy magazine. Check it out.
- Available from the ASSA website [assa.sao.ac.za/about/publications/nightfall/](http://assa.sao.ac.za/about/publications/nightfall/)

## MEMBERSHIP FEES & BANKING:

- **Membership Subscriptions were due on the 2022-07-01 for the 2022-2023 financial year. PLEASE pay outstanding subscriptions fees.**
- **Please pay Subscription fees via EFT - Details below.**



Membership fees indicated below:

- Single Members: **R 190:00**
- Family Membership: **R 230:00** for family membership.
- Under 18 members: **Free to join meetings**
- Cash/Cheques: **Please note: NO cheques or cash will be accepted - Cash deposits incur bank charges**
- Account Name: **ASSA Natal Centre**
- Bank: **Nedbank**
- Account No. **1352 027 674**
- Branch: **Nedbank Durban North**
- Code: **135 226**
- Reference: **SUBS 22-23 SURNAME and FIRST NAME**
- Proof of Payment: [treasurer@astronomydurban.co.za](mailto:treasurer@astronomydurban.co.za)

## SKY GUIDE 2023 - Limited number will be available !!!

- Contact: Mike @ [Mike@astronomydurban.co.za](mailto:Mike@astronomydurban.co.za)
- Price: **R 100.00**
- Reference when paying: **SG 2023 SURNAME and FIRST NAME**



## RESIGNATIONS from ASSA:

Please send an email immediately notifying the Secretary at [secretary@astronomydurban.co.za](mailto:secretary@astronomydurban.co.za) stating your wish to resign from the society.

## COMMITTEE POSITIONS & CONTACTS:

• Chairman	Debbie Abel	Debbie@astronomydurban.co.za
• Vice Chair	TBC	
• Secretary	Francois Zinserling	Secretary@astronomydurban.co.za
• Treasurer	Francois Zinserling	Treasurer@astronomydurban.co.za
• Guest Speaker Liaison	Piet Strauss	Piet@astronomydurban.co.za
• Observatory & Equipment	Alan Marnitz	Alan@astronomydurban.co.za
• Observatory Assistant	TBC	
• Publicity & Librarian	Claire Odhav	Claire@astronomydurban.co.za
• Out-Reach - Public	Cheryl Venter	Sheryl@astronomydurban.co.za
• Out-Reach - Schools	Sihle Kunene	Sihle@astronomydurban.co.za
• St. Henry's Marist College Liaison	Moya O'Donoghue	Moya@astronomydurban.co.za
• 'nDaba Editor	John & Corinne Gill	John@astronomydurban.co.za
• Website & Facebook	John Gill	John@astronomydurban.co.za

## ELECTRONIC DETAILS:

- Website: [www.astronomydurban.co.za](http://www.astronomydurban.co.za)
- Emails : [AstronomyDurban@gmail.com](mailto:AstronomyDurban@gmail.com)
- Instagram: <https://www.instagram.com/astronomydurban/>