

SKY GUIDE

Astronomical guide for July 2025

The most up-to-date guide to planetary and lunar activity,
comet news and space wonders.

Publisher: **Bresser GmbH**
Gutenbergstr. 2 · 46414 Rhede · Germany
+49 (0) 28 72 – 80 74 – 0
info@bresser.de · www.bresser.de

Original text: Kerin Smith
© 2025 – Bresser GmbH – Group of Companies

Expand your horizon

The Solar System

The Sun

May's number of recorded Sunspots was substantially lower than predicted (79 recorded, to the predicted 137). This is possibly be a sign that solar activity - while still high - might be slowing from last Summer's significantly higher than expected Sunspot numbers. We have to look back as far as November 2022 to find a lower monthly tally, which could be a sign that the solar cycle peak has been reached. However, solar activity can rise and fall from month to month throughout the cycle, so (as mentioned in previous sky guides) it is often difficult to judge exactly when a peak has been reached. As mentioned in previous sky guides, peaks often show a "double peak", so the recent couple of months may be the dip in the middle of just such a phenomenon. Activity is still high, compared to mean averages and the past couple of months have brought us some particularly impressive-sized Sunspots, which have again triggered some lower latitude auroras - the latest of which were witnessed June 13-14th.

Websites such as www.spaceweather.com and Michel Deconinck's monthly newsletter (Aquarellia Observatory Forecasts) cover various aspects of solar observations and provide valuable insights into the current state of the Sun. Signing up for the AuroraWatch app, developed by Lancaster University in the UK, is also highly recommended for those seeking advance warnings of impending auroral events.

The Moon

We start July with the Moon on the Leo/Virgo borders - a 6 day old waxing crescent, which is found just under the "bowl" of Virgo, as it transits in the evening. The Moon will transit in the south around 6.25 (BST) on the 1st.

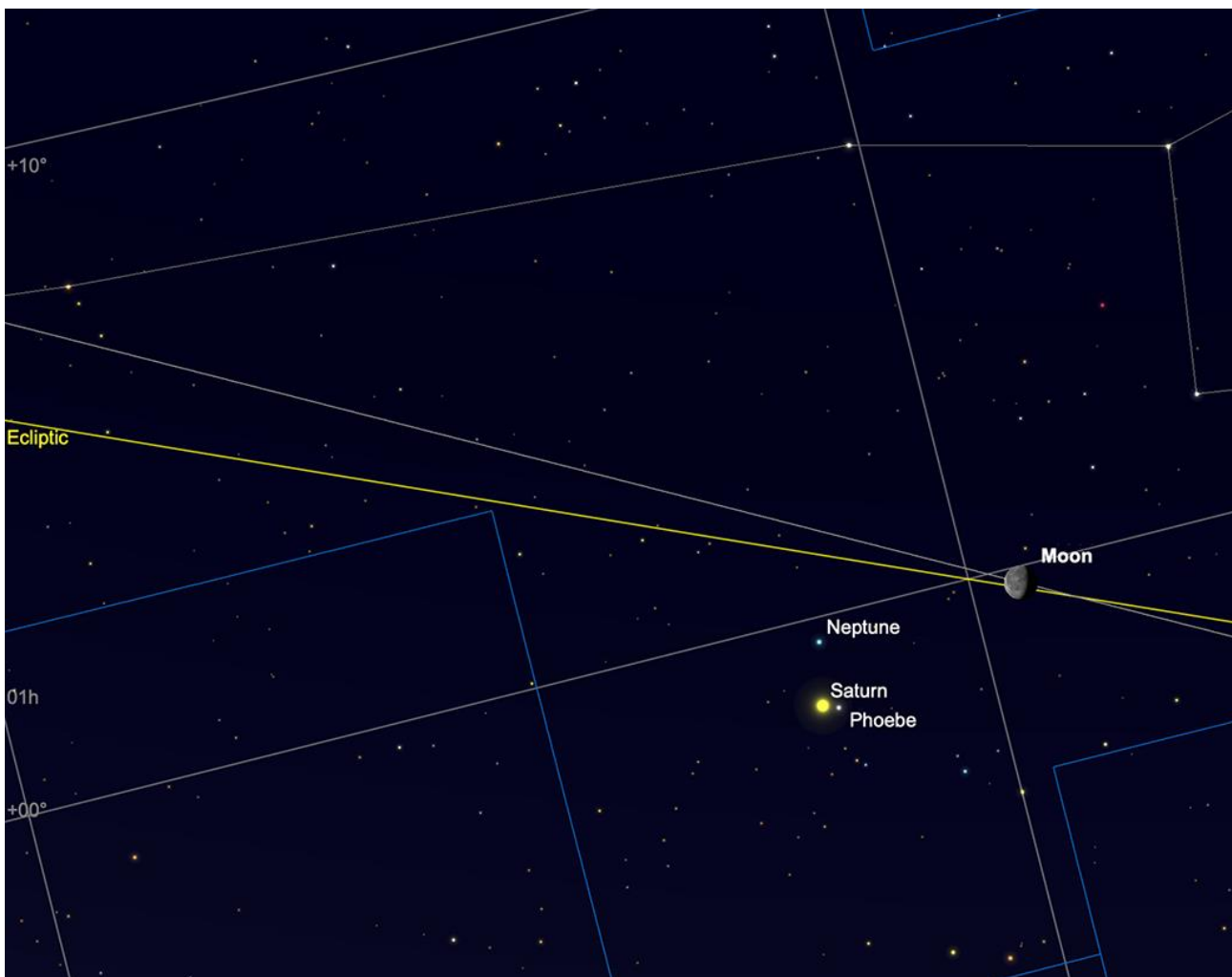
The Moon will reach first quarter phase on the 2nd, when it will be found another 12-13 degrees to the east, still in Virgo. After this it will cross the rest of the expanse of Virgo and dive down into the southerly part of the ecliptic: Libra, Scorpius and the non-zodiacal Ophiuchus and on into Sagittarius, where it will become Full on the evening of the 10th. Naturally, this part of the month, when viewed alongside the permanent astronomical twilight which many in the northern hemisphere are experiencing at this time of year, make this time particularly difficult time for deep sky observing and imaging.

Our natural satellite then continues its path through the extreme south of the ecliptic, through moving into Capricornus, Aquarius and on into Pisces, where it will pass Neptune and Saturn on the morning of the 16th and eventually reach last quarter phase on the 18th.

The Moon continues its journey sunward through Aries, and then on into Taurus, where it will form a loose morning pairing with Venus, for early risers on the morning of the 22nd. The two will be separated from each other by just over 8 degrees.

The Moon becomes new in Cancer, on the 24th July. After this point, the Moon will become an evening object again, slowly rising away from the Sun during the final days of the month. The 4 day old waxing crescent Moon acts as a signpost to the dwindling planet Mars on the evening of the 28th - the two residents of the Leo/Virgo borders separated from each other by around 2 degrees and sitting low in the west after sunset.

We end the month on the 31st, with the Moon at around 44% illuminated crescent phase in Virgo, transiting at a little after 6pm (BST) and setting at a little after 11pm.



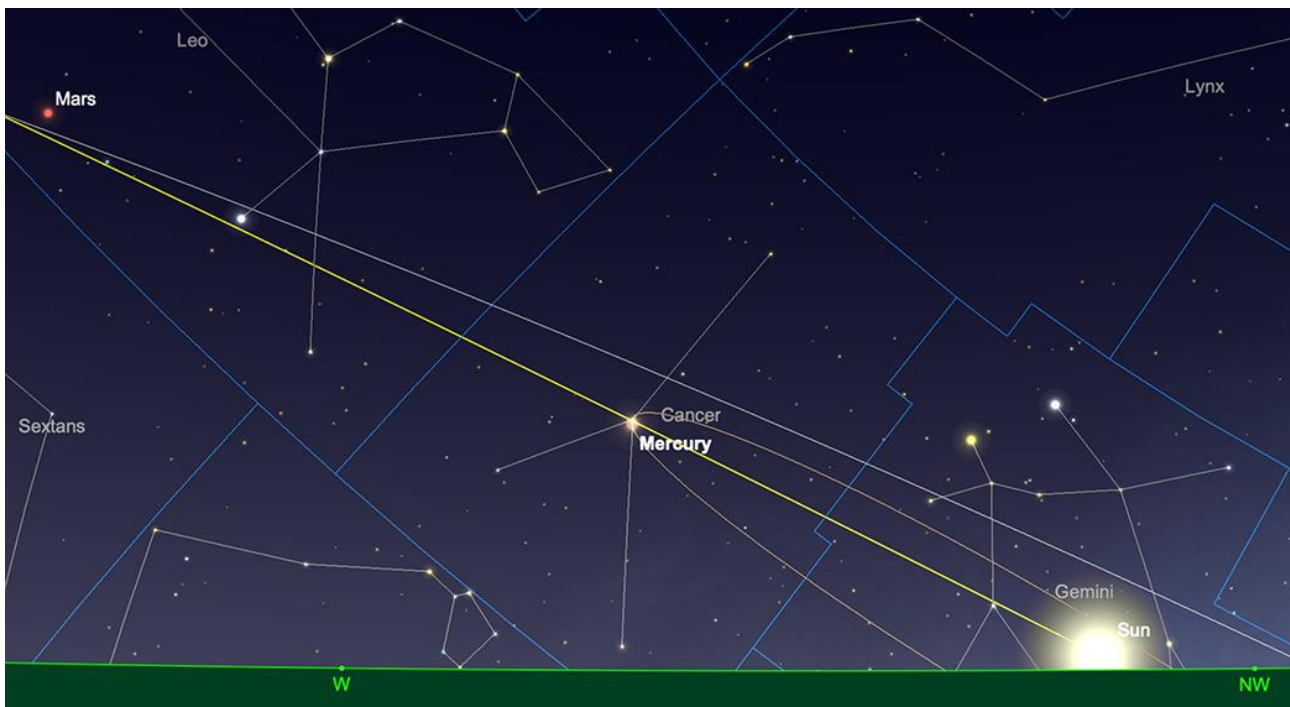
Moon, Neptune and Saturn 4.19am, 16th July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

Mercury

We begin July with Mercury approaching maximum eastern elongation and as such, very much an evening target. At +0.4 mag, the planet will show a phase of around 44% and sit a little over 11 degrees high (as viewed from 51 degrees north) at sunset. While it won't be really bright, if you have a clear western horizon, this is a very good time to find it. Though you will probably need binoculars to make Mercury out in the glare of twilight.

Mercury reaches maximum elongation from the Sun on the 4th July, after which it will start to lose altitude, as viewed from the northern hemisphere. By the 15th, it will have decreased in brightness to +1.5 magnitude, as a result of its phase shrinking to just under 29% Mercury now stands just under 5 1/2 degrees high at sunset (again, as observed from 50 degrees N).

During the latter half of the month, Mercury will dip further towards the Sun and will get lower and lower and progressively more difficult to find as time goes on. On the 31st, we find Mercury just a day away from inferior conjunction (between the Earth and the Sun), by which time it will have been unobservable for days.



Mercury, greatest eastern elongation, sunset, 4th July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

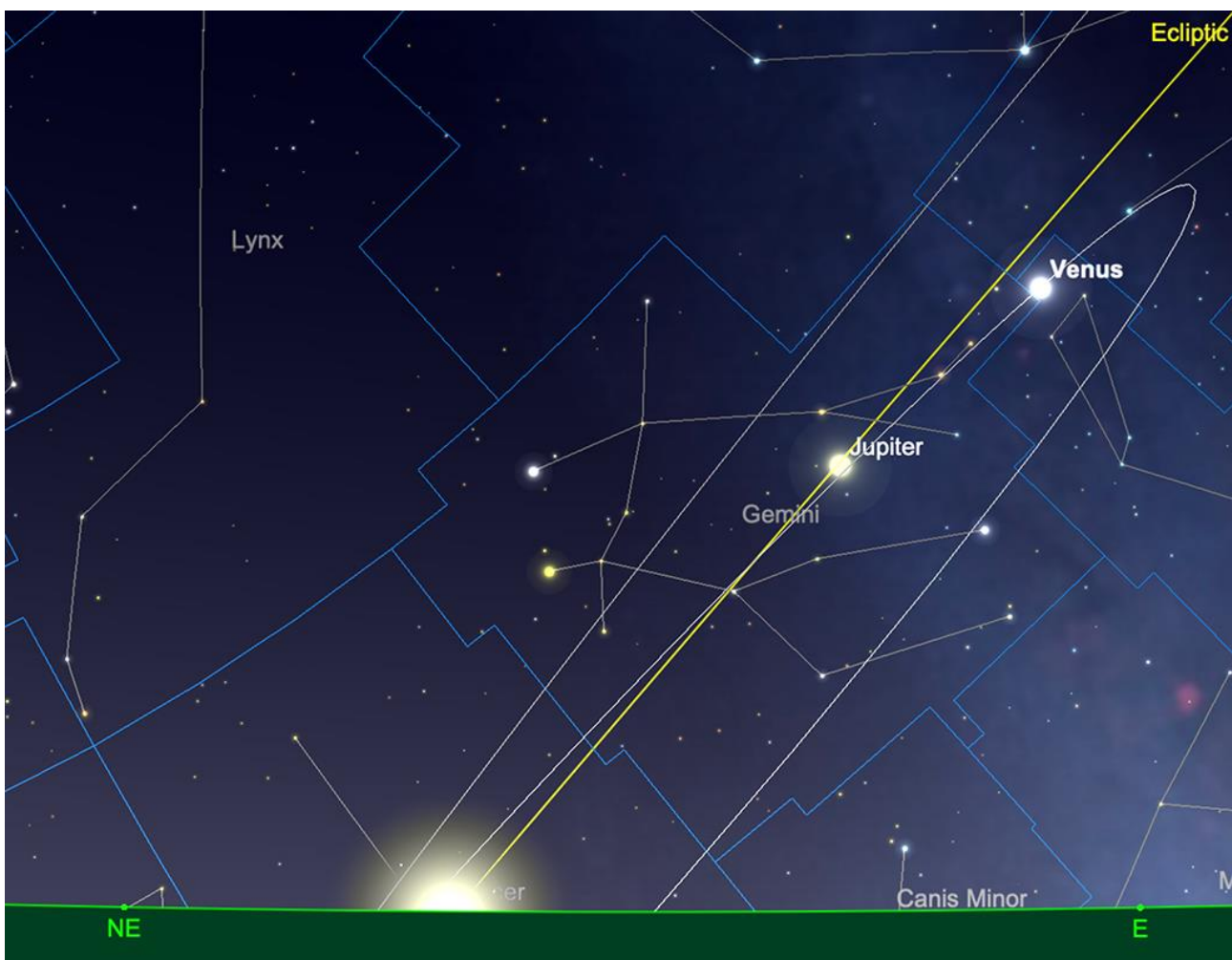
Venus

As previously mentioned, Venus is most definitely a morning object during July. It reached maximum western elongation in Pisces on the 1st June, marking its furthest separation from the Sun and as such is still very much observable, although its altitude is a little lower than

ideal for more northerly observers. Rising at a little after 2.30am (BST) in Taurus, on the morning of the 1st, the planet will be at -4.1 magnitude, displaying a disc of just under 18 arc seconds diameter, illuminated by just under 64%. Although Venus sits just under 43 1/2 degrees to the west of the Sun, it is in a rather shallow-rising region of the ecliptic plane, as seen from mid-northern latitudes, so sits a little lower than the ideal (+30 degrees) in the sky - around 21 degrees elevation, at sunrise on the 1st.

By the time we get to mid-July, Venus has decreased in brightness fractionally to -4.1, but now sits just around 24 degrees high in the east at sunrise (from 50 degrees N). The planet has increased its phase a little to just under 70%, but decreased its angular size to 16 arc seconds diameter, as it draws away and round the Sun from our perspective here on Earth.

At the end of July, Venus has again shrunk both in brightness and size, sitting at -4.0 magnitude and just over 14 seconds of arc respectively. The planet is now a brief resident of the northerly tip of the non-zodiacal Orion and stands around 206 1/2 degrees above the horizon as the Sun rises.



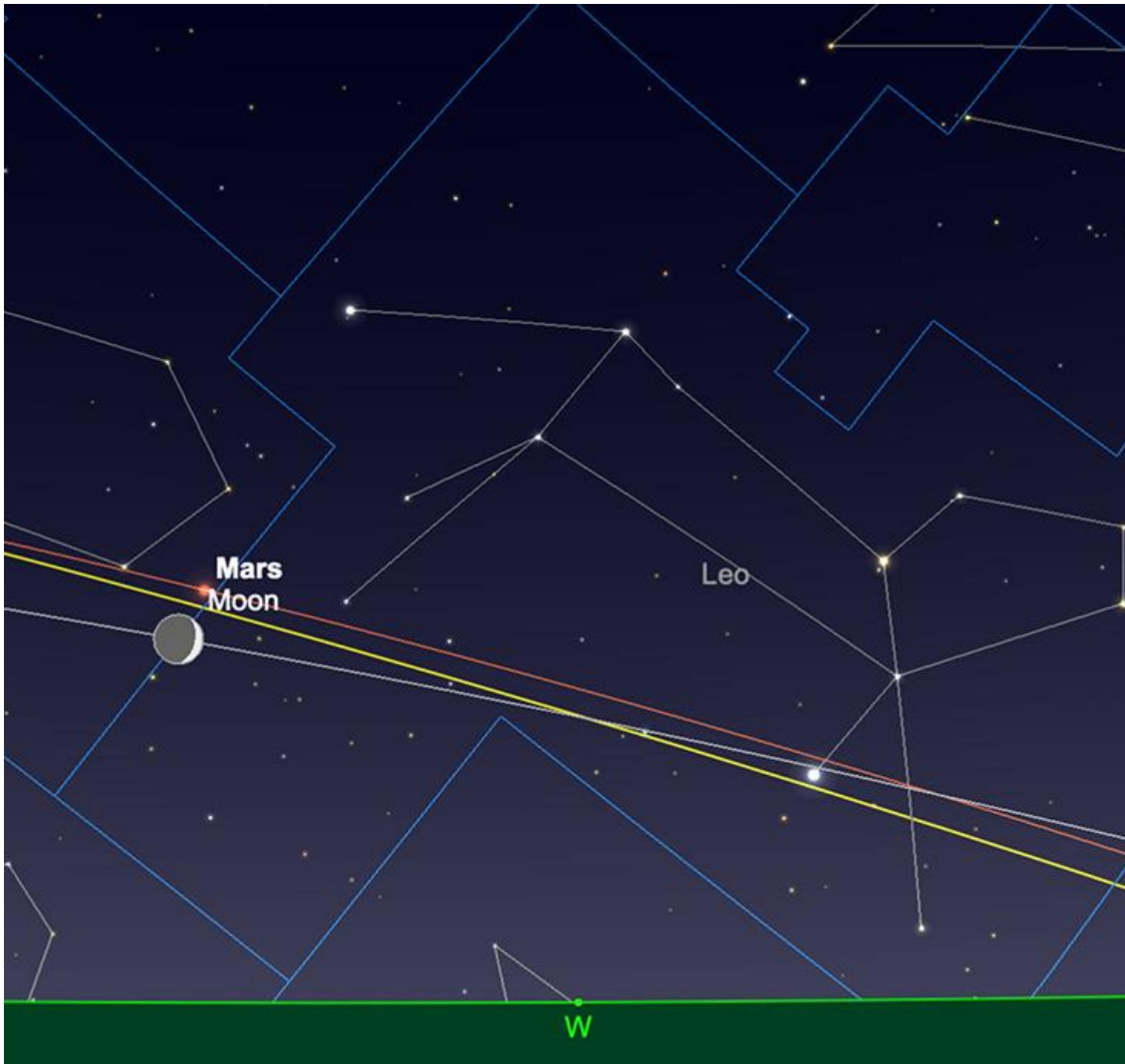
Venus, sunrise, 31st July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

Mars

Mars is a resident of Leo at the beginning of July. As mentioned in previous sky guides, Mars is now significantly diminished from the peaks that it reached in January, while at opposition and at its closest to Earth. The 1st sees Mars at +1.5 magnitude and 4.8 arc seconds diameter. While this is hardly faint and Mars is still a naked eye object, even from light polluted environments, telescopically, Mars now requires very significant amounts of magnification to show any detail on its surface at all. Smaller telescopes will struggle to detect any albedo surface features, as significantly greater light gathering power will be required to detect tonal and brightness variations in an object of this diminutive size.

By mid-month, Mars will have diminished to 4.6 arc seconds, yet still remains static in brightness at +1.5 magnitude.

By the time we reach July's end, Mars will have diminished yet further to +1.6 magnitude and 4.4 arc seconds diameter. This is basically as faint as Mars will get during its observable cycle around the sky, but it will be the latter part of the year before it begins to very slowly brighten again. While we've already mentioned that you can catch the presence Moon and Mars in reasonably close conjunction on the evening of 28th July, don't expect too much of the Red Planet at present - or for some time to come.



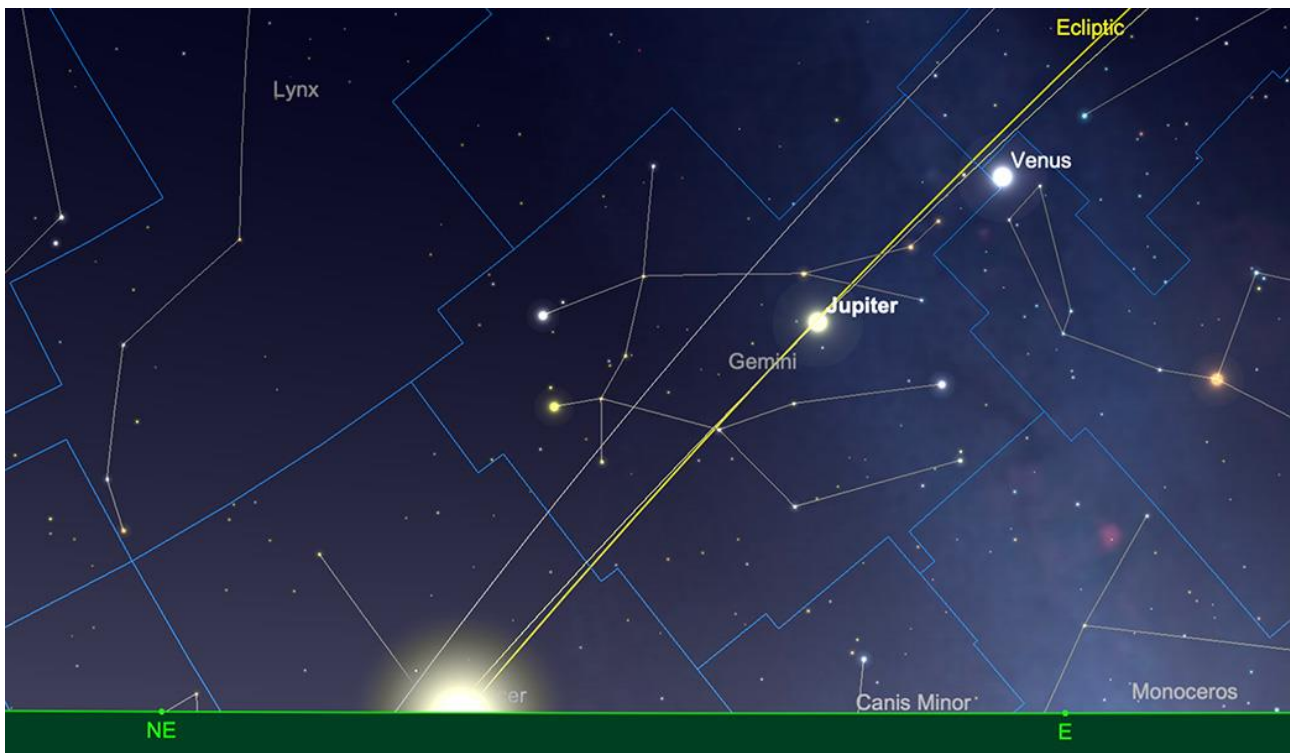
Mars and the Moon, sunset 28th July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

Jupiter

Jupiter's superior conjunction with the Sun occurred on June 24th, so the first part of July finds the solar system's largest planetary resident off the observing list, being far too close to the Sun to find.

After the middle of July has past, Jupiter will slowly re-emerge into visibility in the morning sky - but it will be a while until it is in a better position in relation to the Sun for meaningful observations to begin in earnest again.

By the 31st, we can find the King of the Planets in Gemini, at around 19 degrees elevation, as the Sun rises (as observed from 50 degrees N). At -1.9 magnitude, Jupiter is not at its brightest, but should be easy to pick out in the morning twilight - especially with the brighter Venus flanking it to the NW by around 11 degrees., acting as a brilliant nearby guide.



Jupiter, sunrise, 31st July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

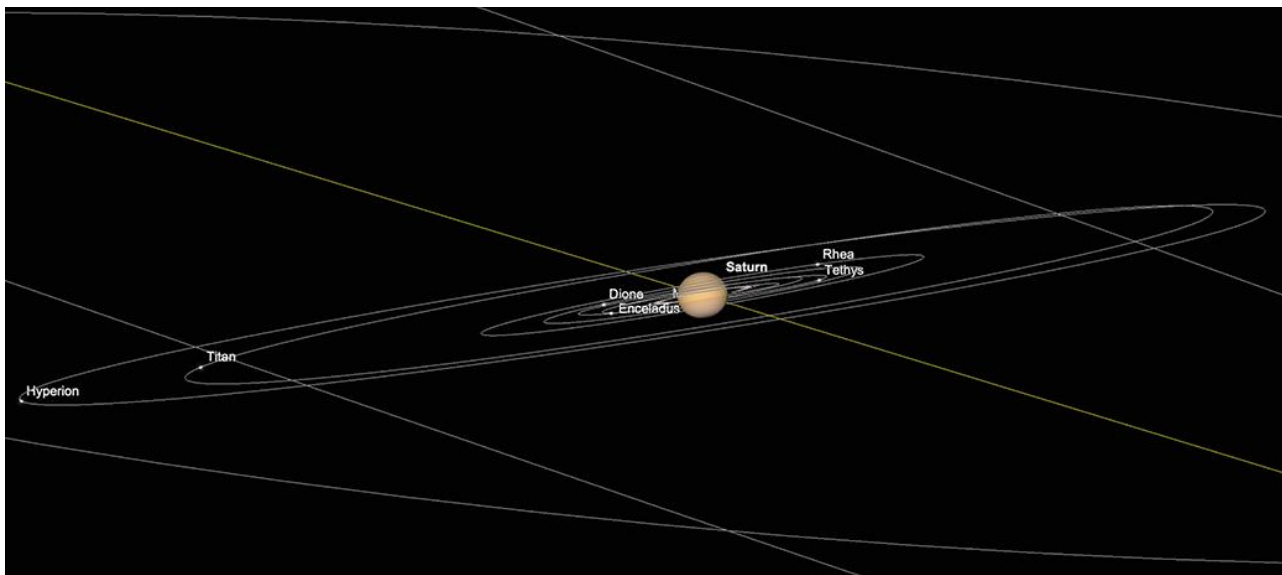
Saturn

A resident of Pisces, Saturn is an early morning target during July. Rising at a little before 1 am (BST) on the 1st, the planet is just under 98 degrees to the west of the Sun at +1.0 magnitude and just under 17.7 arc seconds diameter. It will have reached a height above the horizon of just under 34 degrees by sunrise. While it will certainly be possible to observe Saturn telescopically a little before daybreak, the practical amount of time with Saturn above the ideal minimum altitude of 30 degrees (as observed from 50 degrees N) is limited. Observers can look at Saturn telescopically before this, but will in all likelihood have to modify the magnification that can be used when observing it. As Saturn is fainter than Venus, Jupiter and Mars at its best, it is often remarked that Saturn tolerates less clement seeing conditions better than the brighter members of the solar system. However, this should

be balanced with a common sense approach to using higher powers to observe detail within the Saturnian disc. Larger magnification does not always equal better detail - particularly when Saturn is below the elevation of 30 degrees.

By mid-month, not much has changed as far as Saturn is concerned. Saturn has increased in brightness fractionally to +0.9 mag, while expanding a tiny amount to 18.1 arc seconds across. By this point, Saturn will rise at a little before midnight (BST).

When we get to the end of July, Saturn has brightened fractionally further to +0.8 magnitude and is now 18.6 arc seconds across. The Ringed Planet will rise at a little before 11am (BST) and will have attained a height above the horizon of just under 37 degrees at dawn (as observed from 50 degrees N). Saturn has increased its separation from the Sun to just over 126 degrees on the 31st. We still have some time to go before Saturn is at opposition, in September, but the planet is getting slowly more observable. Noticeable now is that Saturn's ring system is slowly opening up again and is now much more visible than it was closer to March 2025's ring plane crossing. For those who are up early enough, Saturn should be a rewarding target during July.



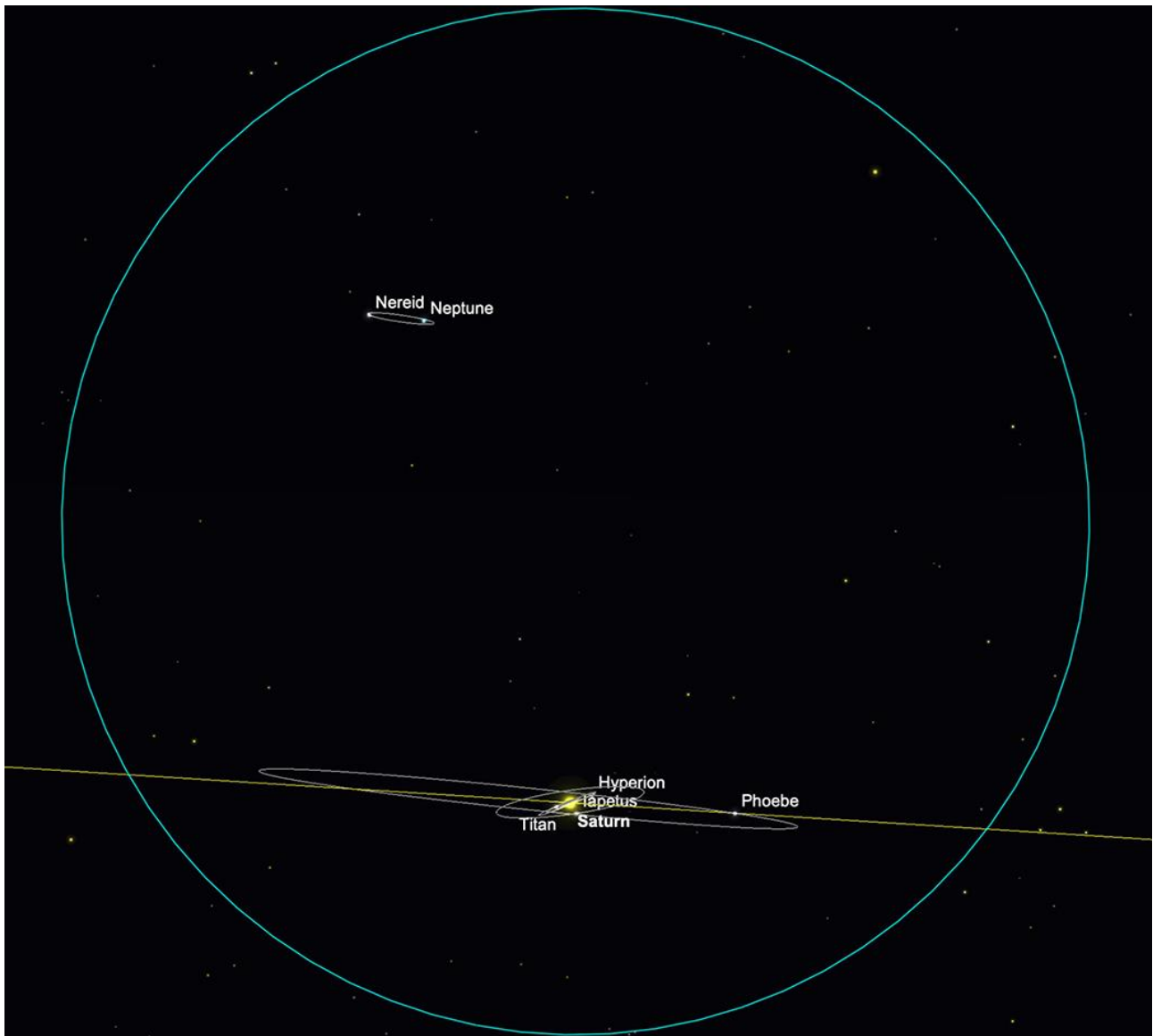
Saturn and inner moons, sunrise, 31st July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastromy.com.

Uranus and Neptune

Uranus is emerging from its relatively recent superior conjunction with the Sun and will be a difficult (if not impossible) find in the morning glare in Taurus - certainly in the first part of the month. Though its proximity to the very brilliant Venus gives us a clue as to its rough whereabouts.

Neptune is further west in the ecliptic and is extremely close to Saturn, in Pisces, during the early part of the month - the two separated by under a degree on the morning of the 1st - and

indeed keep track with each other by not much more than this for the rest of the month. As Neptune will appear in the same low power telescopic field as Saturn, in many instruments, it is worth tracking down. It is separated from the Sun by a decent angular amount and while the lighter skies and encroaching dawn will make it tricky to find, it is by no means impossible.



Neptune and Saturn in 2 degree field of view, sunrise, 1st July. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastromy.com.

Comets

C/2025 F2 (SWAN) is still technically the brightest comet currently. However, this is a southern hemisphere object, at poor elongation from the Sun and won't be visible from the northern hemisphere as a result during July. At current brightness prediction of around 11th-12th magnitude, it is hardly an easy target for those who can observe it. All other observable comets currently visible are in the region of 12th-14th magnitude range, so even less conspicuous.

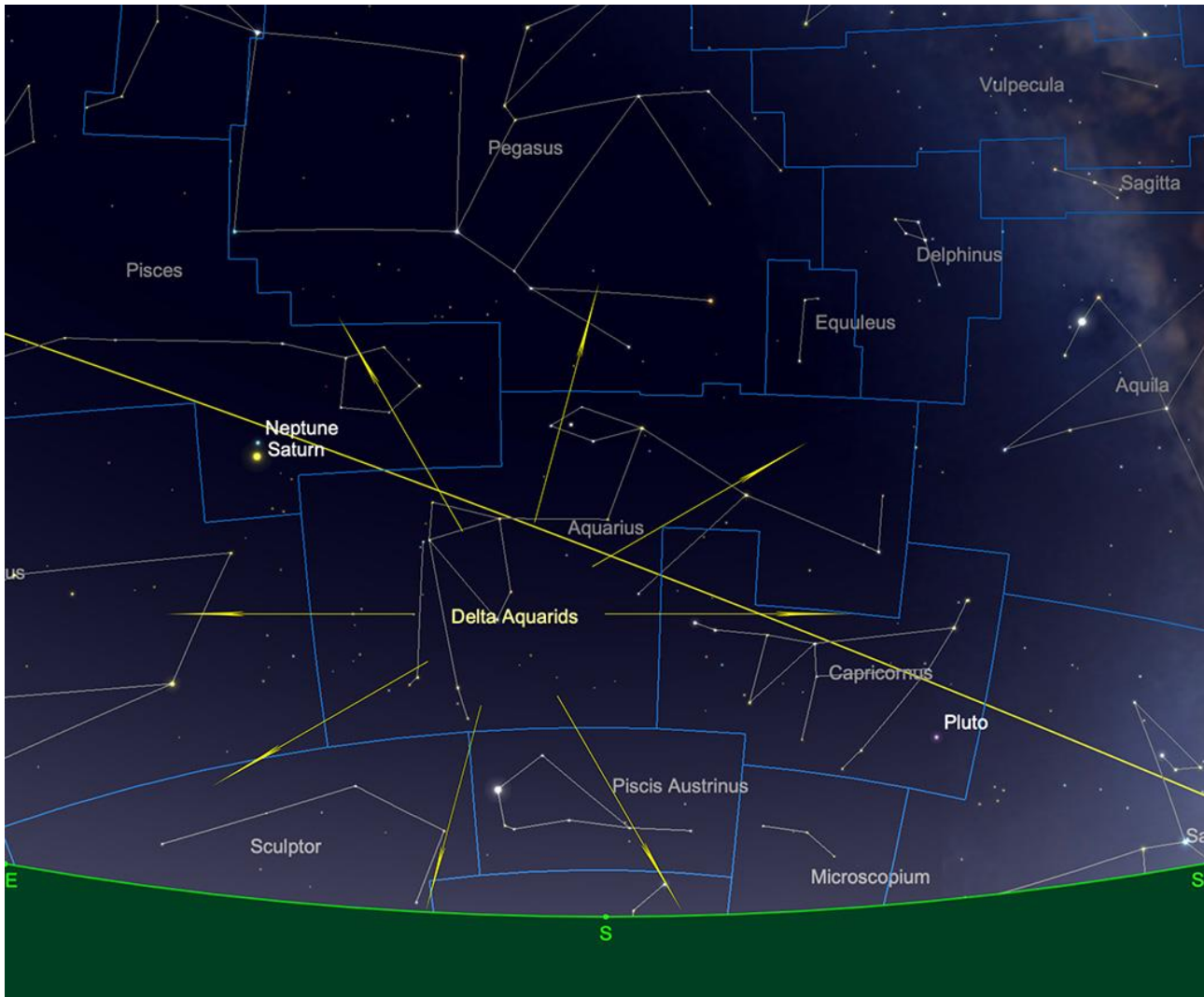
C/2025 K1 is a recently discovered object, tracking through Pegasus into Vulpecula during July, at around 13th magnitude. This comet looks interesting, principally as it passes the Earth at reasonable (but perfectly safe) distance in November of this year, post-perihelion. It will have to survive a fairly close brush with the Sun first though. It is highly unlikely to be anything other than a telescopic/binocular target at best - though is worth keeping an eye on.

Meteors

The Perseid shower actually begins in late July, so it's worthwhile to keep an eye out for some early participants in this year's event towards the end of the month - though it will be August before it reaches its spectacular and reliable peak. The influence of the Moon, nearing new in very late July, will largely be out of the way - creating conditions that are close to ideal for meteor watching.

Another notable shower, the Delta Aquariids, reaches its maximum on the night of July 28th/29th and is considered the major meteor shower for July. While the Moon will be lurking in Leo during the night of the 28th/29th, it is a very new crescent and this will set early and leave the sky free of moonlight, during the latter evening and early morning. While the shower is at its best when the radiant is at its highest in the sky from the northern hemisphere, this doesn't happen until the early morning, so at least the skies will be clear from moonlight during the peak of the shower.

Traditionally, the Delta Aquariids shower favours observers in the southern hemisphere to some extent, but it can still be seen from various parts of the world. It's important to note that while the radiant of the shower is located in Aquarius, meteors from the Delta Aquariids can be spotted anywhere in the sky. The best time to view them is after midnight. These meteors have a relatively slower speed, averaging around 41 km/25 miles per second. Consequently, they are not as energetic and bright as some other meteor showers. Nevertheless, the Delta Aquariids are generally reliable and actually represent the more active of the two Delta Aquariid showers (the northern equivalent is less active and peaks in mid-August). The Delta Aquariids originate from Comet 96/P Macholtz, a short-period comet that will next reach perihelion in January 2023. In 2012, observations indicated that a couple of smaller fragments of the comet had detached from the main body, potentially leading to an increase in the Zenithal Hourly Rates of the meteor shower. Currently, the Zenithal Hourly Rates stand at around 15-20 meteors per hour. To capture the shower effectively, the recommended method is to use multiple widefield images. Utilizing a DSLR with a widefield lens or a USB imager with an "All Sky" super-widefield lens would be ideal for this purpose. However, it's worth mentioning that while observing the Delta Aquariids, you are just as likely to witness an early Perseid meteor. By tracing the path of a specific meteor, you can accurately identify the radiant it originated from.



The Delta Aquariid radiant. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastronomy.com.

Noctilucent Clouds

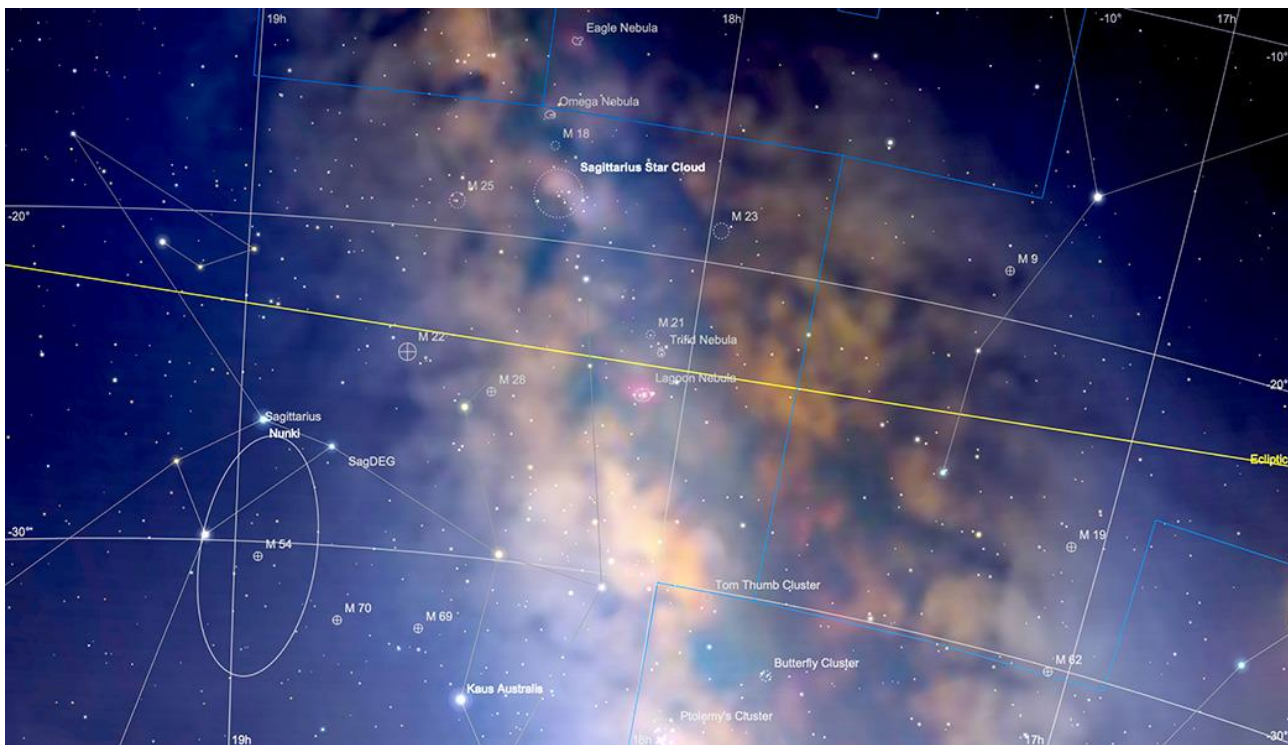
Noctilucent Clouds are often seen in July - their bright gossamer/web-like structures can normally be seen low on the northerly horizon, between latitudes of 50-65 degrees, when the Sun is between 6 and 16 degrees below the horizon. These clouds are mysterious - there were no recorded sightings of them before 1885. Some researchers believe they are formed as a result of volcanism, human-induced atmospheric pollution, or even the condensation of water vapour along the trails of meteors. Interestingly, a significant link between the power of the Northern Polar Stratospheric Vortex and the production of NLCs in the Southern Polar Mesosphere (the atmospheric layer above the Stratosphere) has been found by analysis of ground based data and that gleaned from NASA climate satellites. It would appear that when the Northern Polar Vortex is particularly strong, this negatively affects the production of NLCs over the Southern pole over 12,000 miles away. These interconnections are a sure sign of how little we truly understand the mechanics of the atmosphere of our home planet and how much is still potentially to be uncovered.

Whatever their origins, now is the best time to see NLCs from Northern latitudes. Interestingly, whilst Noctilucent Clouds have been observed in the Southern Hemisphere, their incidence appears much fewer than their Northern Hemispherical counterparts.

Deep Sky Delights in Northern Sagittarius and Serpens Caput

July is not the best time for observing really challenging Deep Sky objects from the Upper Northern Hemisphere, due to the Summer Solstice and the lack of true astronomical darkness, but there's still plenty to see, even if the sky is not at its darkest. While we are normally rather Northerly-biased in the sky guide, this month (as we promised in June's sky guide) the emphasis is most definitely on a particularly rich part of the southern sky - the northern parts of Sagittarius and neighbouring Serpens Caput.

The area of sky we will cover is pretty small - a patch of around 12 by 8 degrees, cover most objects of interest. This is just slightly larger than the southern part of Orion, including the belt area. While Orion is not short of interesting targets, this area of sky is littered with them. This engrossing part of the sky sits just to the north of the so-called "teapot" asterism of stars which make up the central part of Sagittarius. Although this area of sky sits very low for northern hemisphere observers, it is still not impossible to observe them well from higher latitudes. All of these targets are readily visible in decent binoculars from a reasonably dark site and many of the brighter ones are visible in distinctly more challenging areas of light pollution.



Sagittarius and Serpens Cauda. Image created with SkySafari 6 for Mac OS X, ©2010-2024 Simulation Curriculum Corp., skysafariastromy.com.

Starting just north of the line between Nunki, Sigma Sagittarii, the second brightest star in the constellation (marking the top of the handle of the “Teapot”) and its neighbour Kaus Borealis, Lambda Sagittarii, we come the jewel of the Sagittarian globulars, the lovely M22. At +5.09 mag, this cluster outshines all the others in its class, bar Omega Centauri and 47 Tucanae. Lying on the plane of the Milky Way means this cluster is probably not as well-defined and noticeable in its particular location as it would be were it in another, darker part of the sky. However, an observer can still make out M22 from a dark location with the naked eye. Through a telescope or binoculars it is stunning - an elliptical blizzard of stars, easily resolved in all types of optics, though it is true that its core is not particularly well-condensed. At 6.7 arc minutes across, M22 is larger than most globulars, including 47 Tucanae. Only the massive Omega Centauri, at 10 arc minutes across is appreciably bigger.

M22 may have been recorded by Hevelius, but its discovery is normally credited to the 17th century German Astronomer Abraham Ihle, who first reported it in 1665. Halley included it as part of his 6 nebulous objects of 1715. Messier found and cataloged M22 on June 5th 1764.

The reason for M22’s comparative brightness has nothing to do with its physical dimensions - at 97 light years diameter and 210,000 solar masses, it is quite average. M22 is so bright and large because it is close to us as globulars go - around 10,000 light years from Earth.



Messier 22, HST Image. Image credit: NASA/ESO, Public Domain.

2 1/2 degrees from M22 to the SW sits the aforementioned Kaus Borealis. This star marks the tip of the “Teapot’s” lid and also provides a useful star hopping point for the next globular Sagittarius has on offer - M28. This globular can be found a little under a degree to the west of Kaus Borealis. M28 is a little less bright and large than its neighbour, but is a lovely object in its own right. At +6.78 and just under 4 arc minutes diameter, M28 lurks on the very limit of human naked eye resolution. By all means attempt to find it without binoculars or telescope, but you will need a very, very dark location and good night adaption in order to make the attempt. However, in binoculars and telescopes, M28 really delivers. More compact and condensed than M22, M28 has a distinct core, surrounded by a halo of looser granular stars. Binoculars will pick up this granularity, but won’t resolve individual stars - a larger telescope (probably 8-inches +) will.

M28 was discovered by Messier at some point in July 1764, a month after its neighbour M22. It is now known to lie some 18,000 light years away from us and be around 60 light years in diameter. Again, like M22, M28 is a cluster well worth seeking out.

M28 was discovered by Messier at some point in July 1764, a month after its neighbour M22. It is now known to lie some 18,000 light years away from us and be around 60 light years in diameter. Again, like M22, M28 is a cluster well worth seeking out.



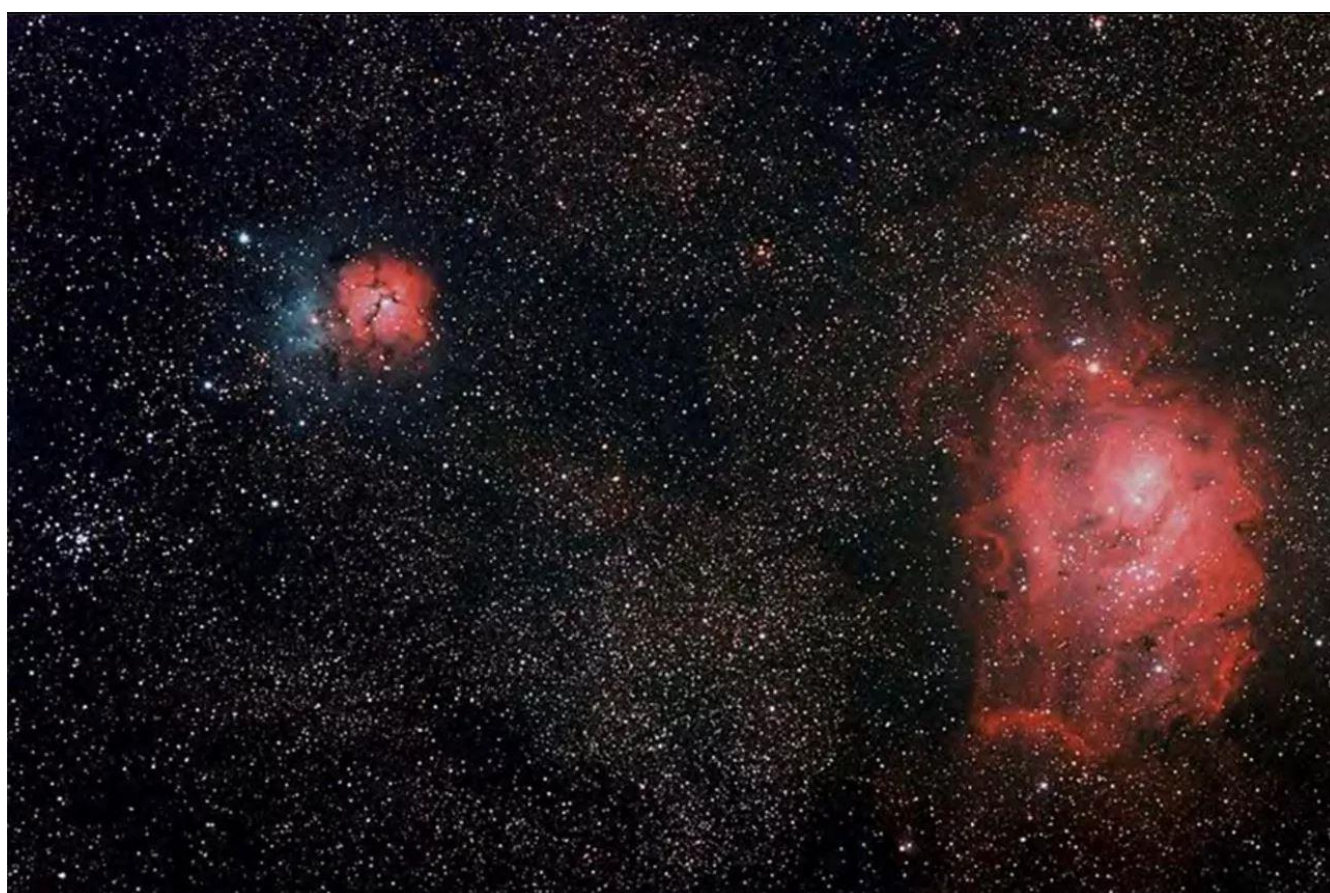
Messier 28, HST Image. Image Credit: NASA/ESA. Public Domain.

We now take a break from the delights of globular clusters for a little while to explore one of the best parts of the sky for nebulae - the heart of the Sagittarius Milky Way.

Moving westwards from M28, by $4\frac{3}{4}$ degrees, we arrive at the fabulous Lagoon Nebula, M8. At 4300 Light Years distance, the Lagoon appears as a titanic object in our skies. It is a degree and a half in length and over half a degree wide – roughly three full Moon's width by a Moon's width – comparable in area to the Orion Nebula M42/M43 complex, though not quite

as bright. Still at +6 mag it is an easy object in large binoculars and small telescopes, though at a maximum of 14 1/2 degrees above the horizon at its highest for the UK, it can be a tricky object for those without a clear southern horizon. The Lagoon is so prominent, it was first catalogued by the telescopic observer Giovanni Battista Hodierna in, or slightly before, 1654. It was also noted by English Astronomer Royal John Flamsteed around 1680 and French Astronomers de Cheseaux and Le Gentil in 1747 and 1748 respectively. Messier catalogued the Lagoon in 1764, noting both the cluster that lies within the nebula and the nebulosity.

The Lagoon is home to numerous young stars and the Hourglass section of its interior is actively observed to be in the process of stellar formation. It is these stars that cause the nebula to glow its distinctive pink colour, which make the Lagoon another very attractive target for astrophotographers.



The Trifid Nebula and The Lagoon Nebula. Image Credit: Ljubinko Jovanovic. Creative Commons.

1 1/2 degrees north of the Lagoon lies the magnificent Trifid Nebula, or M20. This is one of the best deep sky objects in the sky to observe and can be easily found in binoculars and telescopes. At +6.30 mag and half a degree across, the Trifid is an impressive sight. Progressively larger instruments will show the dark lanes that trisect this object and a UHC filter will also help isolate the lanes and enhance the brighter HII regions. It was the trisecting pattern of dark material that gave rise to the Trifid's popular name. John Herschel was the first

to describe it as such and the name stuck, though it was first discovered by the French observer Le Gentil in 1750 and later catalogued by Charles Messier, if he rediscovered it on June 5th 1764. Located around 5000 Light Years from us, the Trifid is the stellar nursery for a number of stars which also illuminate the bright blue reflection nebula to the North of the object's edge. The beautiful range of colours in this target and the starkness of the dark lanes gives M20 an amazing three-dimensionality and makes it a perennial subject for astrophotography. As M20 and M8 lie so close together in the sky, they make for a fantastic pairing in wider field images. It is thought that the Trifid and the Lagoon are both constituent parts of a much larger molecular cloud (much as the separate components of the Orion Nebula are), though the Trifid lies a little further from us and is potentially somewhat younger - current estimates put it at around 300,000 years old, which would make it around 10 light years across.

2/3 of a degree to the NE of the Trifid, sits the open cluster M21. At +5.90 mag and 14 arc minutes across, M21 is fairly prominent and can normally be found in the same binocular field as its neighbour. Containing upwards of 50 stars, this cluster is thought to lie around 4000 light years away - somewhat closer than its neighbour and due to the spectral signature of its stars is assumed to be around 4-5 million years old.

Just under 4 degrees to the NW of M21 sits yet another Messier object - the lovely open cluster M23. A little brighter than M21, M23 is +5.5 mag and is twice the diameter at 29 arc minutes wide and a glorious sight in telescopes and binoculars. This cluster is practically the same width in the sky as the Full Moon and its brightest members form a fan shape in its central region. M23 lies around 2000 light years from our solar system and is thought to be around 20 light years in diameter. It is a little older than its neighbour as spectral data reveals the oldest of its stars to be around 300 million years of age.

Drifting eastwards, about equidistant from M23 on the other side of the +3.8 mag star Polis, Mu Sagittarii, we come to yet another of Sagittarius' fine clusters, M25. Discovered by de Cheseaux in 1746, M25 was independently rediscovered by Messier in 1764. It is bright at +4.59 mag and an easy target for those with binoculars and small telescopes. At 29 arc minutes diameter, it is the same dimensions in the sky as M23, though a little more concentrated in brightness. There are under 40 easily observable stars in M25, though there are many more - up to 600 - in the cluster as a whole. Some of the brighter members of the cluster form a star chain that appears to be akin to the letter W on its side - or maybe more pertinently, the Sigma sign. This can be seen easily through telescopes at moderate power. As M25 contains G class giant stars, this suggests that the cluster is around the 90 million year old mark and the cluster is thought to lie similar distance from us as M23 - around 2000 light years.

Crossing back westwards from M25, back in the direction of Polis, we come to another Messier target - M24. This object is often known as the Sagittarius Star Cloud, as it represents one of the brightest parts of the Milky Way in this any of the sky. Describing M24 as "a large nebula, containing many stars" Messier listed M24 with dimensions of 1.5 degrees across. Although a fainter cluster, NGC6603 is contained within these boundaries, it is clear

from Messier's description that this is not what he was cataloguing. Easily seen in binoculars and wide field telescopes, M24 represents the truncated end of the Sagittarius-Carina Arm of our galaxy - the arm adjacent to the Orion-Cygnus Spur which our solar system sits in. A gap in the surrounding dust clouds frame this area and this void allows M24 to appear particularly bright from our location - though this is simply a line of sight effect. Binoculars reveal a huge number of stars within this area - over 1000 visible in such a small area. Although strictly speaking not a nebula or a star cluster, M24 is a very interesting area of sky to examine and is well worth tracking down.

Found $1 \frac{1}{3}$ degrees north of the Sagittarius Star Cloud is M18 - though at +7 mag and loose conformation, it is one of the less exciting of the Messier list in this part of the sky. This open cluster contains around 30 visible members spread over a 5 arc minute field and is thought to be around 4-5000 light years away. A comparatively young cluster at around 30 million years of age, M18 is about 17 light years in diameter. Long duration astrophotography reveals faint nebulosity surrounding this cluster - whether this is the remnants of the nebula the cluster formed from or material it is encountering in its way around the galaxy is still the matter for debate.

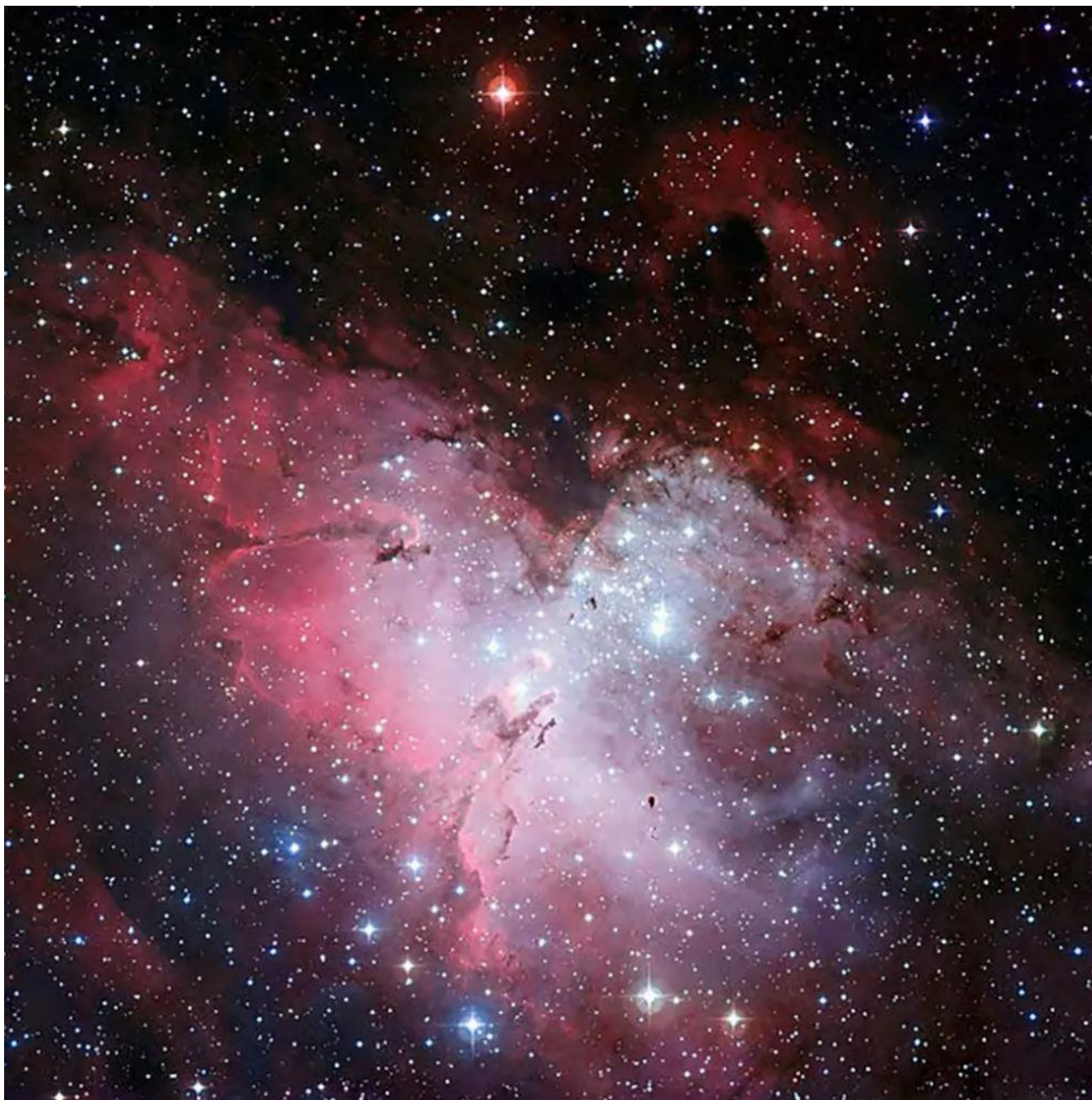
Lying $1 \frac{1}{4}$ degrees to the N of M18 is the final object of note we shall be covering in Sagittarius - and what a way to end. The Omega Nebula, otherwise known as the Swan, Lobster or Horseshoe (take your pick) or more properly, M17, is a bright nebula of +6 magnitude and a healthy 46×37 arc minutes in size. This object is capable of being resolved by the naked eye under ideal conditions (rarely from the UK due to atmospheric conditions), but is easily picked up in binoculars and marvellous in telescopes of all sizes. Discovered by de Cheseaux in early 1746, Messier discovered it independently in 1764.



M17 - The Omega Nebula. Image credit: ESO, Creative Commons.

While not as extensive as the Orion Nebula, M42, M17 has a brightly condensed core and as such is arguably the second most prominent emission nebula in the sky. A telescope will reveal the looped structure of the gas clouds against which are silhouetted dark clouds of material, which causes the distinctly swan like shape. The looped area of the “neck” of the Swan is what gave rise to the Omega and Horseshoe nicknames - as this section does resemble the Greek letter, or indeed the shoe of a horse. The Lobster nickname comes from the tail-like section of the nebula - the opposing end to the swan’s neck - and the red-pink colour of the nebula revealed in long duration astrophotography. The glowing gas clouds of this nebula are powered by newly-formed stars hiding in its interior. These massive stars can’t be seen optically, but studies of the nebula at other wavelengths have revealed their presence. These stars are big and extremely luminous - it is estimated they are anything up to 30 times the mass of the Sun and 6 times hotter. It is estimated there is enough material left in the Omega Nebula to form up to 800 stars the mass of the Sun - a much higher number than that the Orion Nebula is capable of producing. M17 is thought to lie around 5-6000 light years from us.

Leaving Sagittarius, we briefly cross over its northern border into the constellation of Serpens Cauda - the tail of Serpens. Just under 2 1/2 degrees to the north of M17 sits a magnificent 35 x 28 arc minute target: this object is the +6.40 mag star cluster and nebula, M16 – otherwise known as the Eagle Nebula. Made famous by the famous “Pillars of Creation” Hubble Space Telescope picture, this object is well seen in all kinds of telescope, but the larger the instrument, naturally, the more you can see of it! The star cluster formed from the surrounding nebulosity, which can be glimpsed in a sub-6-inch telescope. An instrument of the class of a 12-inch+ Dobsonian will be needed to see the “Pillars” and OIII or UHC-type filter will help considerably with this. Photographically, the Eagle Nebula is a fantastic subject. Amateur CCD images of the nebula may lack the resolution of the Hubble image, but can reveal a surprising amount of equivalent detail.



The Eagle Nebula. Image Credit: ESO. Creative Commons.

The Eagle was discovered by de Cheseaux in 1745 or 46 - though he simply listed the star cluster as the point of focus. Messier, independently recovering it nearly 20 years later in 1764, not only mentions the star cluster, but also the impression that the stars within it were "enmeshed in a faint glow" - a clear sign that nebulosity was evident to him in his observations. Certainly the nebulous regions of M16 start to be visible in a telescope of around 8-inches of aperture, but as previously mentioned, 12-inches of aperture will be needed to start making out structure within the nebula itself.

Modern astrometry puts the Eagle at about 7000 light years from our neck of the cosmic woods - similar in distance to the aforementioned Omega Nebula. Some theorists postulate that the two objects may be linked by the same molecular cloud and form two parts of a constituent whole. Certainly, there can be little doubt that they both lie in the same part of our galaxy - the Sagittarius-Carina spiral arm, but are they more closely related?

The age of the stars in the cluster seem to suggest that the M16's stellar population itself is around 5.5 million years old. Some astronomers have pointed out that while the "Pillars of Creation" area of the Eagle Nebula is prominent from our perspective today, that stellar compression by cosmic wind and the sheer luminance of the newly formed stars has probably already eroded these completely - in 7000 years-or-so, we'll find out if this is actually true!