Chagrin Valley Astronomical Society

Sky Report September 2025 – by Laz Ilyes

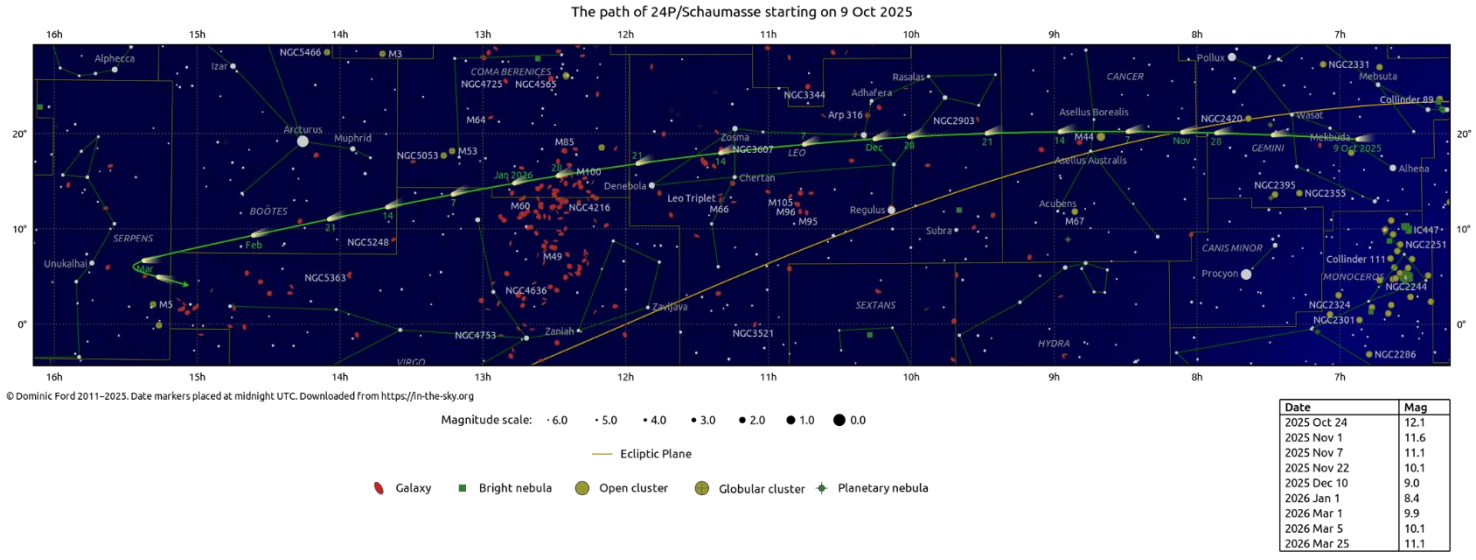
Note: In NE Ohio, we are currently observing Eastern Daylight Time (UTC -4)

Comets and Meteor Showers

Comet 24P/Schaumasse is a periodic comet discovered by Alexandre Schaumasse on 1 December 1911. Its period is approximately 8 years and it next comes to perihelion on **8 January 2026** and is expected to be the brightest **comet** visible in the Northern Hemisphere in the remainder **2025**, though it will likely require binoculars to see. We'll need to be patient. The **comet** is presently at approximate magnitude +18.6 and not expected to reach its peak brightness until the very end of the year.

Comet 24P/Schaumasse is in the constellation of Taurus, at a distance of 312,450,687.0 kilometers from Earth. The estimated magnitude of comet 24P/Schaumasse, computed using JPL Horizons's data, is 18.63.

Comet 24P/Schaumasse's path as of October 9th 2025 is illustrated below. For an up-to-date ephemeris, please refer to the following link: https://www.cobs.si/comet/56/



Date	Mag
2025 Oct 24	12.1
2025 Nov 1	11.6
2025 Nov 7	11.1
2025 Nov 22	10.1
2025 Dec 10	9.0
2026 Jan 1	8.4
2026 Mar 1	9.9
2026 Mar 5	10.1
2026 Mar 25	11.1

Comet 3I/ATLAS is a rare interstellar visitor to our **solar system**, as determined by its calculated trajectory. It is only the third interstellar body known by us to have entered our system. It will be observable in our evening sky through the beginning of **September** and will then become a morning object in **November** and **December**. It will be closest to the **Sun** in **October** passing just inside the orbit of **Mars**. Despite its proximity and size, it is not considered likely that this comet will ever be visible to unaided vision. At best, a pair of binoculars or a small telescope will be required to see this **comet**.

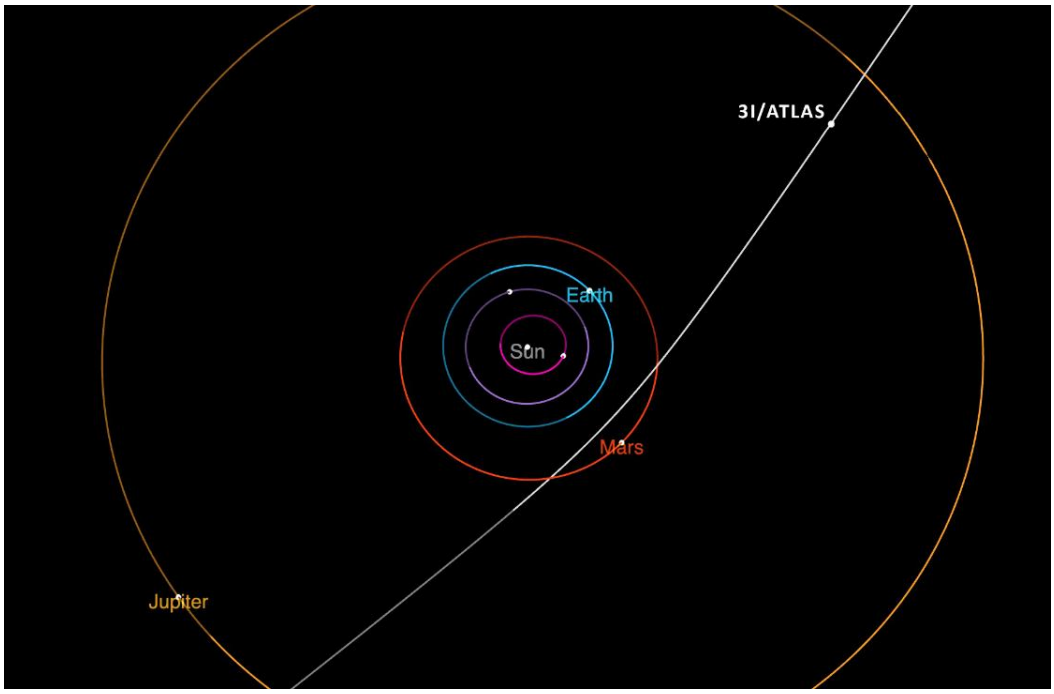
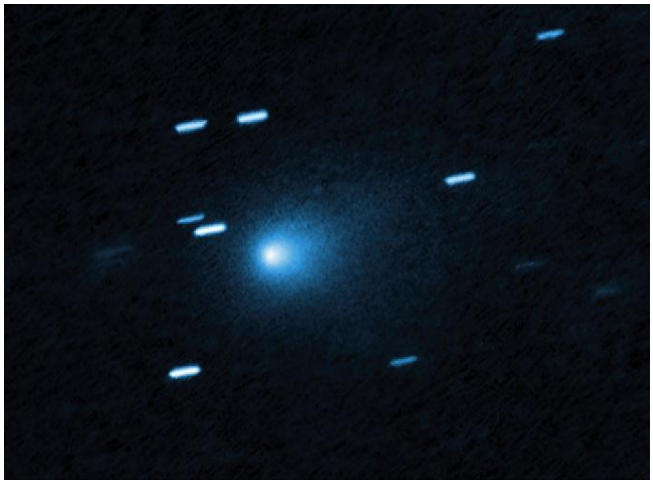


Diagram showing trajectory comet **3I/ATLAS** as it passes through the **Solar System** – **NASA/JPL-Caltech**

NASA's Hubble Space Telescope captured the image below of interstellar comet **3I/ATLAS** on July 21, 2025, when the comet was 277 million miles from **Earth. Hubble** revealed a teardrop-shaped cocoon of dust coming off of the comet's solid, icy nucleus. Because Hubble was tracking the comet moving along a hyperbolic trajectory, the stationary background stars are streaked in the exposure.

Hubble's observations allow astronomers to more accurately estimate the size of the comet's nucleus. The upper limit on its **diameter is 3.5 miles (5.6 kilometers),** though it could be as small as **1,000 feet (320 meters)** across, researchers report**. NASA** is planning to use optical sources already in place on **Mars** to get a better view, so stay tuned for some possible extraterrestrial images coming this **Fall**!


Comet 3I/ATLAS as imaged by the **Hubble Space Telescope** on **July 21, 2025**

Currently, **comet 3I/ATLAS** has an apparent **magnitude** of +**15.3**. For up-to-date ephemeris and light-curve, please refer to the following link: https://www.cobs.si/comet/2643/

In **September 2025**, you can watch the minor **Aurigid** and **September ε-Perseid meteor showers**, which peak around **September 1 and 9 respectively**, and are generally less active. The larger **Orionid meteor shower** is also active later in the month, becoming more prominent in **October**, and the faint **Daytime Sextantids** may be visible **before dawn** in **late September,** peaking on **September 27th**.

Moon

September 2025

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Waxing gibbous 63.4% 9 days	2 Waxing gibbous 72.6% 10 days	3 Waxing gibbous 81.1% 11 days	4 Waxing gibbous 88.5% 12 days	5 Waxing gibbous 94.5% 13 days	6 Waxing gibbous 98.4% 14 days
7 Full Corn Moon 2:10 P.M. 15 days	8 Waning gibbous 98.9% 16 days	9 Waning gibbous 95.0% 17 days	10 Waning gibbous 88.6% 18 days	11 Waning gibbous 80.0% 19 days	12 Waning gibbous 69.9% 20 days	13 Waning gibbous 58.8% 21 days
14 Last Quarter 6:35 A.M. 22 days	15 Waning crescent 36.5% 23 days	16 Waning crescent 26.3% 24 days	17 Waning crescent 17.4% 25 days	18 Waning crescent 10.1% 26 days	19 Waning crescent 4.7% 27 days	20 Waning crescent 1.4% 28 days
21 New Moon 3:54 P.M. 0 days	22 Waxing crescent 0.7% 1 day	23 Waxing crescent 3.3% 2 days	24 Waxing crescent 7.5% 3 days	25 Waxing crescent 13.3% 4 days	26 Waxing crescent 20.4% 5 days	27 Waxing crescent 28.5% 6 days
28 Waxing crescent 37.4% 7 days	29 First Quarter 7:54 P.M. 8 days	30 Waxing gibbous 56.6% 9 days				

Moon Visualization:

Almanac.com/Astronomy

Educator Guide: Moon Phases | NASA/JPL Edu,

Daily Moon Guide | Observe – Moon: NASA Science

Moon, Saturn and Neptune (close approach) –

On the morning of **Monday**, **September 8, 2025**, the **Moon**, **Saturn** and **Neptune** will make a close approach, passing within **3°30' of each other**. From **NE Ohio**, the trio will be visible in the morning sky, becoming accessible on at around **midnight above the eastern horizon**. They will then reach their highest point in the sky on the **September 8** at **02:17**, **45° above the southern horizon**. They will be lost to dawn twilight around **06:22**, **19°** above your **western horizon**.

The **Moon** will be at **mag -12.7**; **Saturn** will be at **mag 0.6**; and **Neptune** will be at **mag 7.8**. The trio will lie in the constellation **Pisces**.

They will be too widely separated to fit within the field of view of a telescope, but will be visible to the naked eye or through a pair of binoculars.

Moon and M45 (Pleiades Open Star Cluster) (close approach) –

On the morning of **Friday**, **September 12, 2025**, the **Moon and M45 (Pleiades Open Star Cluster)** will make a close approach, passing within a mere **58.4 arcminutes** of each other. From **NE Ohio**, the pair will be visible in the morning sky, becoming accessible around **midnight**, when they reach an altitude of **13° above** the **eastern horizon**. They will then reach their **highest point** in the sky at **05:47 EDT**, **72° above** your **southern horizon**. They will be **lost to dawn twilight** around **06:19 EDT**, **71° above** the **south-western horizon**.

The **Moon** will be at **mag -12.3**; and **M45** will be at **mag 1.3**. Both objects will lie in the constellation **Taurus**. (**Uranus** will be near the **Pleiades** as well on the same evening at **mag +5.68**)

The **Moon and M45** will be a little too widely separated to fit comfortably within the field of view of a telescope, but will be visible to the naked eye or through a pair of binoculars.

Moon and Venus (close approach) –

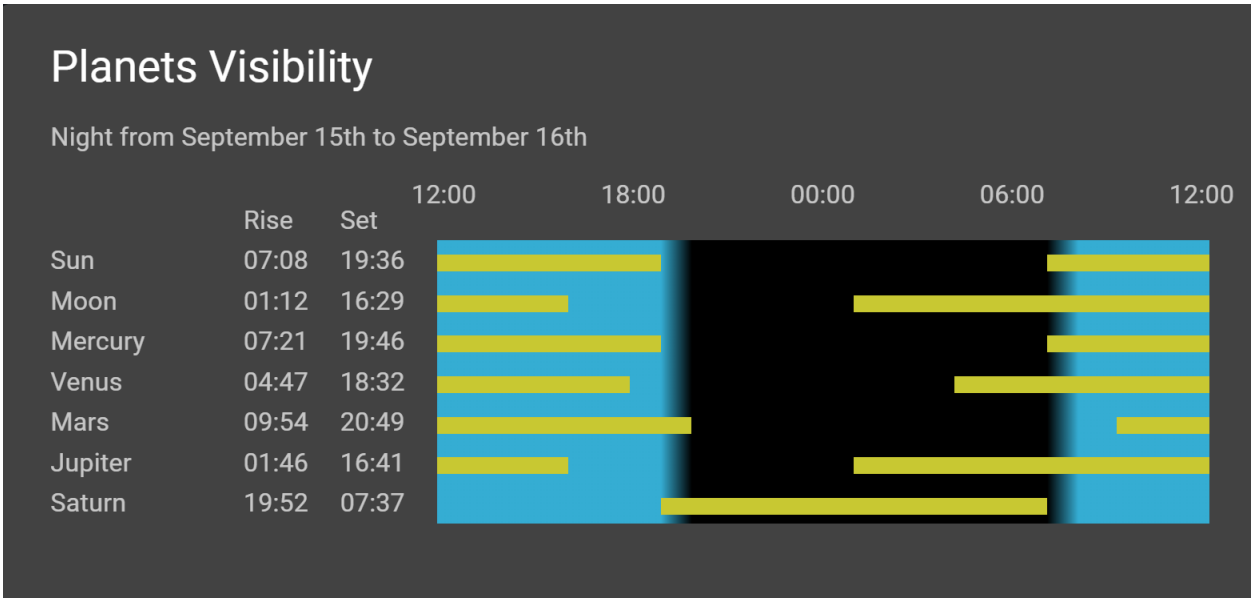
The **Moon** and **Venus** will make a close approach on the morning of **Friday**, **September 19**, passing within a mere **43.6 arcminutes** of each other. From some parts of the world (though not in **NE Ohio**), the Moon will pass in front of Venus, creating a lunar occultation

In **NE Ohio**, the pair will be visible in the dawn sky, rising at **04:51 (EDT)** – 2 hours and 17 minutes before the **Sun** – and reaching an altitude of **21° above** the **eastern horizon** before fading from view as dawn breaks at around **06:51 EDT**. Both objects will lie in the constellation Leo.

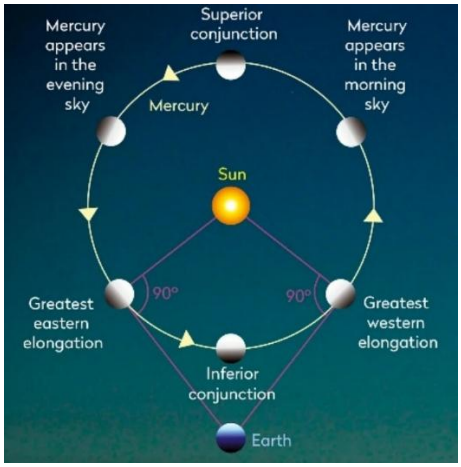
For further reference, consult the link: https://in-the-sky.org//newsindex.php?feed=appulses

Planets

Here is a chart summarizing the visible planets on **September 15, 2025 in NE Ohio**. https://stellarium-web.org/



Mercury can best be spotted low in the pre-dawn eastern sky during early in the month, but it will quickly become too difficult to see as it moves too close to the Sun, reaching **superior conjunction** on **September 13th**.



Venus will appear as a bright morning star, rising about three hours before the **Sun** on September 1st and remaining visible in the east before sunrise throughout the month. Look for it to pass near the **Beehive Cluster** (**M44**) on **September 1st** and later approach the bright star **Regulus** in the constellation **Leo**, culminating in a close alignment with the **Moon** on **September 19th**. Binoculars will enhance the view, especially for the **Beehive Cluster**.

Earth will experience the **autumnal equinox**, also called the **fall equinox**, on **Monday**, **September 22.** During an **equinox**, the **Sun** crosses what is called the **"celestial equator"**—an imaginary extension of **Earth's** equator line into space. The **equinox** occurs precisely when the **Sun's** center passes through this line. At that time, the length of day and night are similar but not exactly the same because of light refracted by Earth's atmosphere.

Mars cannot be seen in **September 2025**. It is no longer visible in the evening sky, and becoming progressively fainter throughout the month.

Jupiter can be observed in the east-southeast morning sky before sunrise. **Jupiter** will be a bright "morning star" in the constellation **Gemini**, slowly trekking eastward with **Venus** and appearing higher in the sky as the month progresses. At the end of the month, it will reach its peak altitude of 50° under deep twilight, making it a great time for observation. And for details on the locations of all of the **Galilean moons**, refer to the online tool available at the "Sky and Telescope" website.

Saturn continues to ride high in our nighttime sky, rising in the east-southeast before sunset.

There will be two opportunities to see a **transit** of **Saturn's** largest satellite**, Titan.** According to Sky & Telescope, the best date for viewing it is **September 20**. **Saturn** is going to be at **opposition** on **September 21**, so **Earth** and **Saturn** will be at their closest in **2025**. **Saturn** will then be at its brightest, allowing for the best chance to see the event. That transit of **Titan** in **NE Ohio** will begin on the morning of **September 20, 2025** at **1:00am EDT** and continue until about **03:30 EDT**. From our perspective, the shadow cast by this transit will pass through Saturn's northern hemisphere for 2 ½ hours. At almost the exact same time, the much smaller satellite **Enceladus** will also be transiting **Saturn** and casting a shadow just above the rings but the tiny shadow from **Enceladus** will not be visible in our terrestrial telescopes.

On the morning of **September 4**, a transit will begin at **1:25am EDT** and last for 3 hours and 25 minutes. The longer transit time is due to **Titan's** shadow passing closer to **Saturn's** equator rather than its pole.

If those two dates don't work out due to our **Ohio** weather, you'll have a very brief window on **October 6**, as the shadow will briefly appear on the **Saturnian North Pole**. If that is no good, you will have to wait until **2040** for the correct alignment to repeat itself.

Uranus can be found in the pre-dawn sky in the east-southeast, near the **Pleiades star cluster** in the constellation **Taurus**. As the month progresses, it will climb higher into the sky, reaching its peak altitude for viewing in darkness after **September 22nd**.

Neptune can be observed by us in **September**. An especially good time will be on the **23rd** when it is at its closest point to **Earth** (opposition) and appears brightest. Look for it near the constellation **Pisces**, not far from the planet **Saturn**, in the evening sky. Through a small telescope, you may see **Neptune** as a pale blue disk, and possibly nearby at the same time, its largest moon, **Triton**.

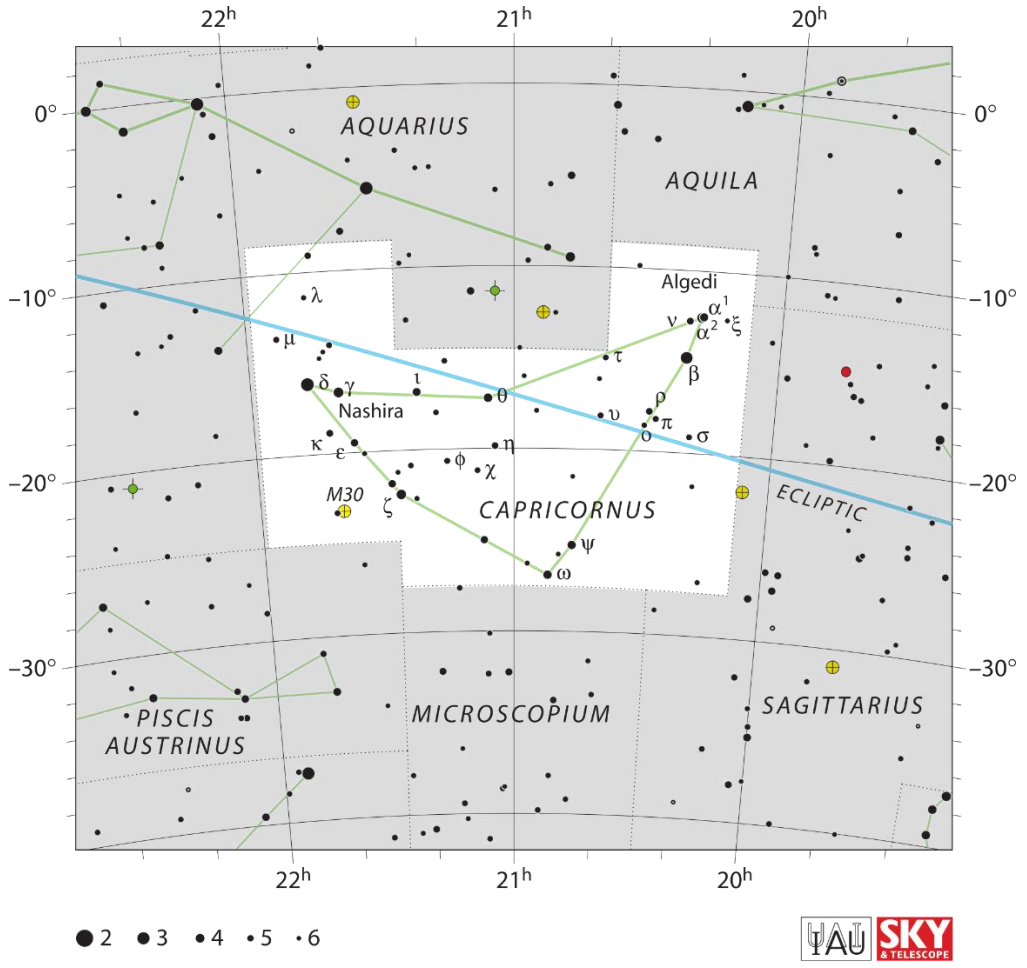
For a detailed ephemeris for these planets, consider using NASA Jet Propulsion Laboratory's "Horizons System" tool at https://ssd.jpl.nasa.gov/horizons/app.html#/

Constellations

Capricornus (Cap)

Capricornus is a southern constellation that sits between **Sagittarius** and **Aquarius** along the zodiac; the ecliptic line passing through at an approximate declination of -15°. **Capricornus** is one of the faintest zodiac constellations, so try observing it on a clear, dark night or, if your sky is bright, take binoculars and try to spot individual stars in the constellation.

To find **Capricornus**, look for a wide triangle in the sky — one tip is marked by the star **Algedi** (sometimes called **Giedi** or, **α[1] Capricorni** – magnitude +3.58). Another is the brightest star in the constellation, **Deneb Algedi** (or **δ Capricorni** – magnitude +2.87). The 7th brightest star in the constellation, **Omega Capricorni** (magnitude +4.11), completes this triangle.



The most significant deep sky object in Capricornus is Messier 30 (**M30**). **M30** was discovered by Charles Messier in 1764. It is located roughly **28,000 light-years** from **Earth**. It has an apparent **magnitude of 7.7** and can be seen through a pair of binoculars. According to NASA, although globular clusters such as **Messier 30** are mainly populated by old stars, the density of the stellar swarm leads to some old stars apparently reclaiming their youth as “blue stragglers.”

Astronomers have identified two types of blue stragglers in **M30**: those that form in near head-on collisions between two stars, and those that are in binary systems where one star siphons "life-giving" hydrogen from a second more massive companion.

Hubble Image of **M30** – by NASA

Somewhat less prominent deep sky objects in **Capricornus** include the barred spiral galaxy **NGC 6907** (~3'x2' – apparent magnitude 11.7) and its interacting companion galaxy **NGC 6908**.

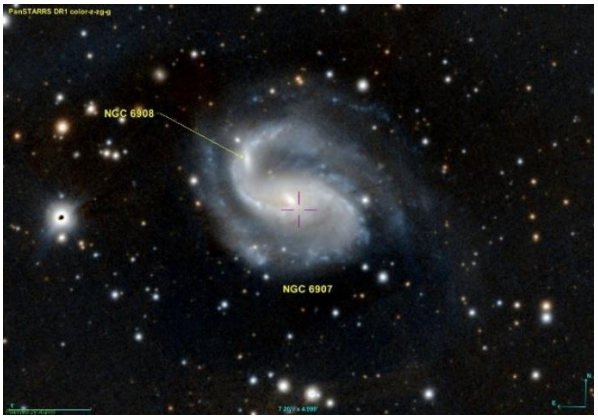
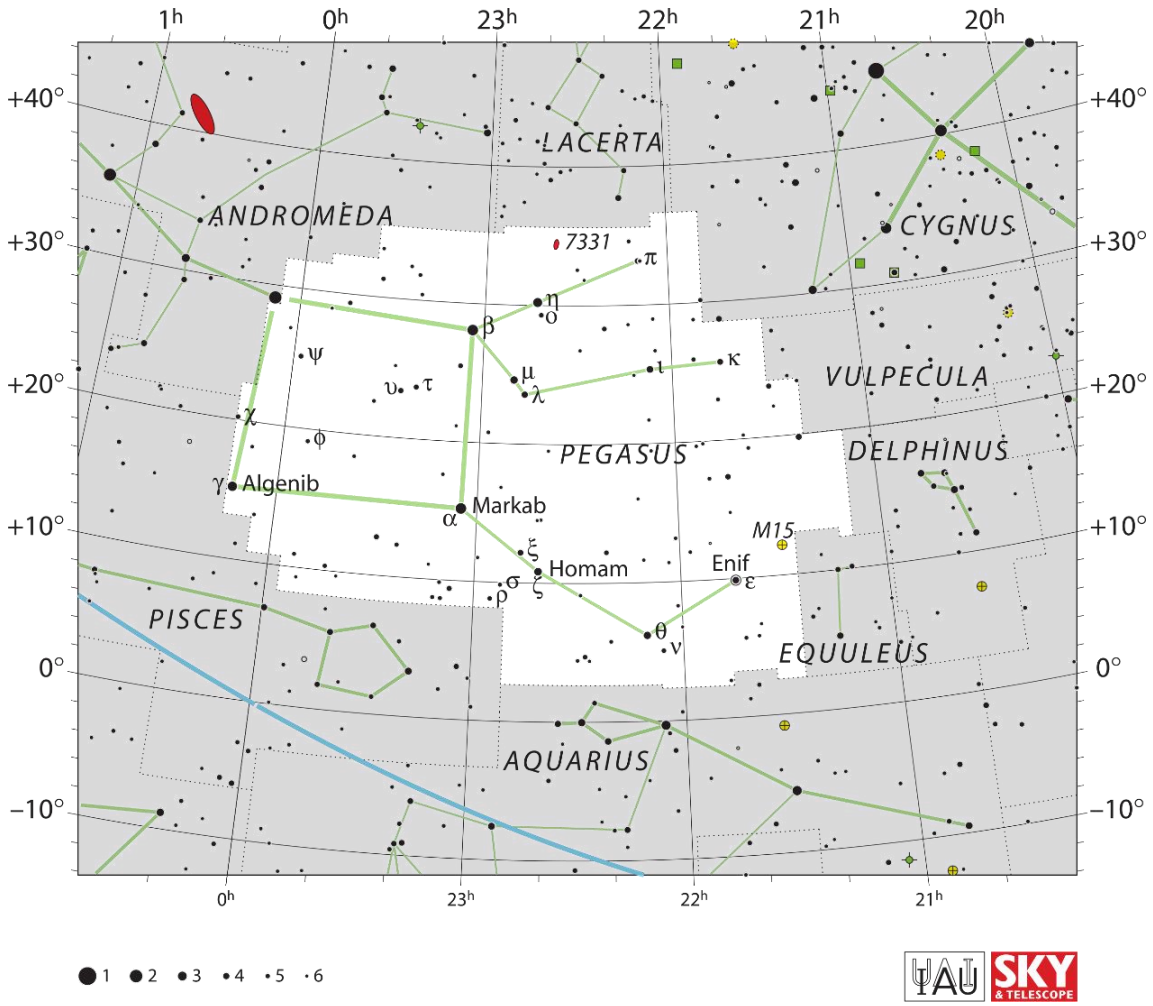


Image of **NGC 6907** & **NGC 6908** – PAN STARRS CC by SA 4.0

Pegasus (Peg)

Pegasus is a constellation in the northern sky, named after the winged-horse **Pegasus** in Greek mythology. It was one of the 48 constellations listed by the 2nd-century astronomer **Ptolemy**, and is one of the 88 constellations recognized today.



With a apparent magnitudes varying between 2.37 and 2.45, the brightest star in **Pegasus** is the orange supergiant **Epsilon Pegasi**, also known as **Enif**, which marks the horse's muzzle. **Alpha** (**Markab**), **Beta** (**Scheat**), and **Gamma** (**Algenib**), together with **Alpha Andromedae** (**Alpheratz**) form the large asterism known as the **Square of Pegasus**.

Twelve star-systems in **Pegasus** have been found to have exoplanets. **51 Pegasi** was the first **Sun-like** star discovered to have an exoplanet companion.

The constellation **Pegasus** contains two rather interesting deep sky objects. One of these is **Messier 15** (**M15**), a spectacular swarm of stars discovered in 1746 by **Jean-Dominique Maraldi**, an Italian astronomer on the hunt for comets. This globular cluster is one of the densest ever discovered, with very hot blue stars and cooler orange stars becoming more concentrated toward its bright core. **M15** is located **33,600 light-years** from **Earth**. Shining with an apparent **magnitude of 6.2**, the cluster can be spotted with a pair of binoculars and can be found approximately **3.7° away from** the bright star **Enif** (also known as **Epsilon Pegasi**).

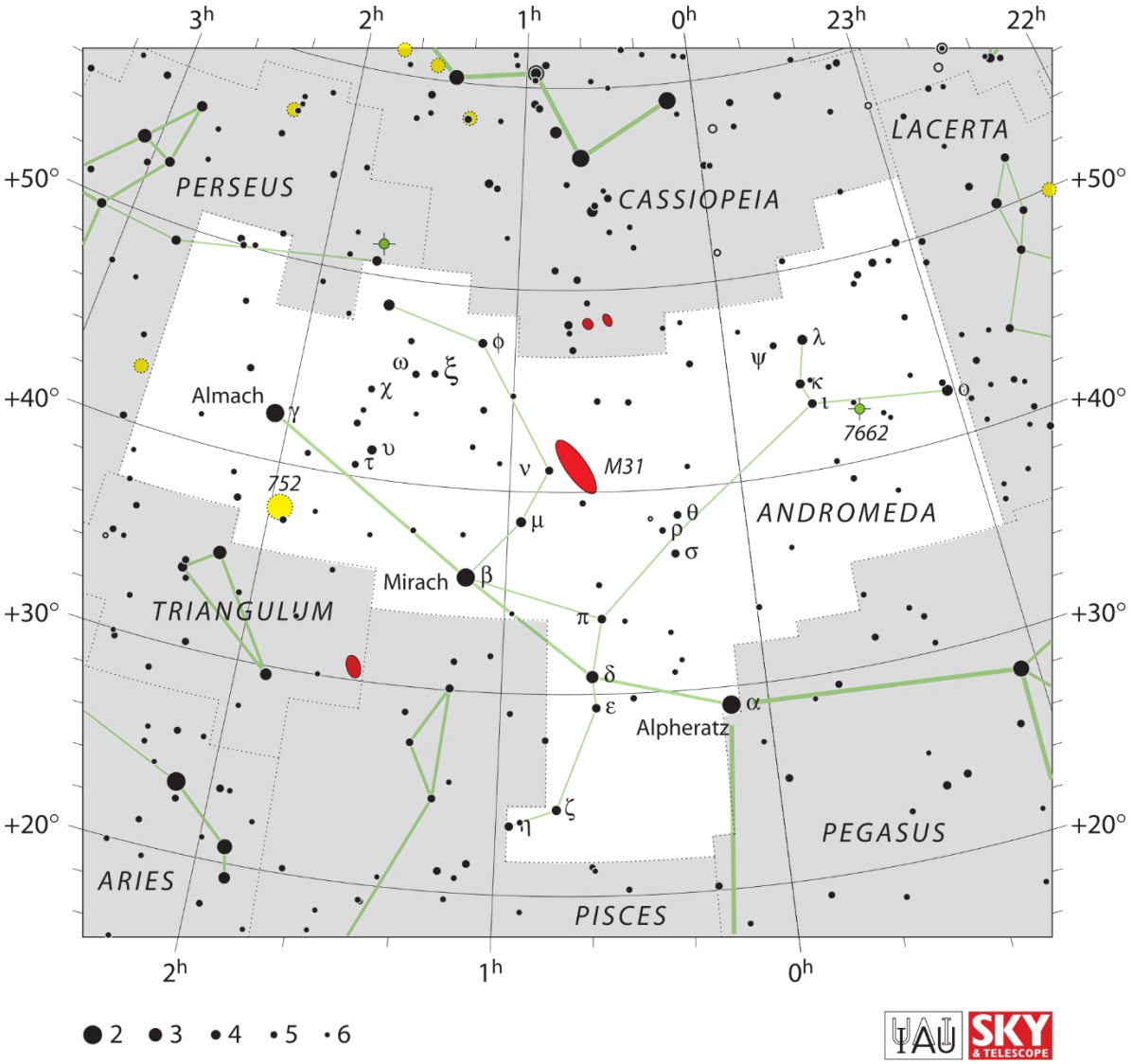
Hubble Image of M15 – by NASA

The second notable deep sky object in the constellation Pegasus is the galaxy **Caldwell 30**, pr **NGC 7331**. **Caldwell 30** was **discovered** in **1784** by famed astronomer **William Herschel**, who also discovered the planet **Uranus**. The galaxy is located about **45 million light-years** away from us, at the northern boundary of the constellation **Pegasus**. The galaxy is only about half a degree away from a group of five galaxies known as **Stephan's Quintet**. **Caldwell 30** and the quintet may appear to be near each other in our sky, but the quintet is actually about six times farther away from **Earth**.

Galaxy Caldwell 30 – by Adam Block/Mt. Lemmon Sky Center under license CCA 3.0

Andromeda (And)

Andromeda is one of the 48 constellations listed by the 2nd-century Greco-Roman astronomer **Ptolemy**, and one of the 88 modern constellations. Located in the northern celestial hemisphere, it is named for **Andromeda**, daughter of **Cassiopeia**, in the Greek myth, who was chained to a rock to be eaten by the sea monster **Cetus**.



Andromeda has three stars brighter than magnitude 3.00. The brightest star in the constellation is **Alpha Andromedae**, also known by its traditional name, **Alpheratz**. One counted as part of the constellation **Pegasus**, it has been included in **Andromeda** since 1930 when the **International Astronomical Union** (IAU) formalized constellation boundaries. As mentioned before, **Alpheratz** is one of 4 stars that comprise the large asterism known as the **Square of Pegasus**.

The **Andromeda** constellation contains several prominent deep-sky objects, most notably the **Andromeda Galaxy** (**M31**), the closest spiral galaxy to our own and visible to the naked eye. Other significant deep-sky objects include the companion galaxies **M32** and **M110**, which orbit **M31**.

The **Andromeda galaxy** is approximately **2.5 million light-years away from Earth**. It is the largest member of the "**Local Group of galaxies**," and it is comprised of over a trillion stars. Up until recently, it had been thought that an inevitable collision between the **Andromeda galaxy** and our **Milky Way Galaxy** will ultimately merge them together billions of years from now but that theory is changing. Newer simulations now suggest that the odds of this happening is 50/50 or less (when taking into account the gravitational influences of the nearer galaxies).

The **Andromeda galaxy** has a very large apparent size (3 degrees to be specific). If our eyes were sensitive enough to see the entire **Andromeda galaxy**, and not just the core/center, we'd see a deep sky object that is six times the diameter of the full **Moon**! So, both the relative size and brightness of **M31** makes it an ideal target for smaller telescopes. The image below was taken by that author at our own **Indian Hill Observatory** using a 200mm telephoto camera lens mounted on a astrophotography camera.

Image of **M31** (center), and Companion Galaxies **M32** (left) and **M110** (right) – by Laz Ilyes

Another interesting deep sky object in the constellation **Andromeda** is distant spiral galaxy **NGC 891** also known as **Caldwell 23** or the **Silver Sliver Galaxy**. This unbarred spiral galaxy located approximately 30-35 million light-years from **Earth**. It is viewed edge-on from our perspective, making it a challenging but rewarding object for amateur astronomers. Its distinct features include a prominent dust lane bisecting its disk and wispy tendrils of gas and dust ejected into its galactic halo.

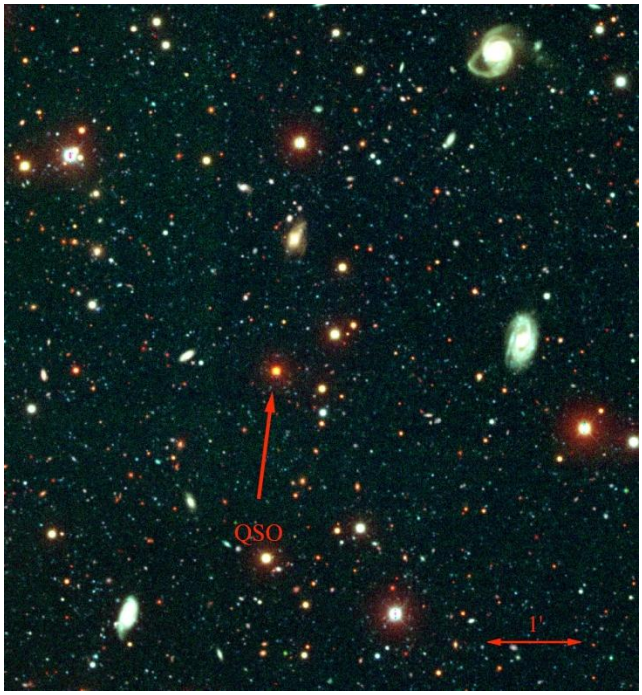
Image of NGC 891 from BBC Sky at Night Magazine – by Mark Griffith, Swindon, Wiltshire, UK

Some of you may already be familiar with a notable planetary nebula in **Andromeda**, the **Blue Snowball Nebula** (also known as **Caldwell 22** or **NGC 7662**). This nebula was discovered October 6, **1784** by the German-born English astronomer **William Herschel**. The **Blue Snowball Nebula** is located 1,800 light-years from **Earth** and is estimated to have a radius of **0.8 light-years**. Its apparent **magnitude is +8.3** and has an **apparent size of 32"x 28"**.

Hubble Image of the **Blue Snowball Nebula** in the Constellation **Andromeda** – by NASA

Fall Observing Challenge

Do you think you can photograph something that is **12.1 billion light-years away**? That's how far **Quasar** APM 08279+5255 is from us, here on Earth. At that extreme distance, it represents an object that is a very early member in our Universe, which began expanding from the Big Bang a little over 14 billion years ago.



A **quasar** is powered by an enormous black hole that steadily consumes a surrounding disk of gas and dust. As it eats, the **quasar** spews out huge amounts of energy. This particular quasar (**APM 08279+5255**) is thought to harbor a black hole 20 billion times more massive than the sun and produces as much energy as a thousand trillion suns.

APM 08279+5255 is a broad absorption **line quasar** located in the constellation **Lynx**. It appears to be a giant elliptical galaxy with a supermassive black hole and associated accretion disk. It is magnified and split into multiple images by the gravitational lensing effect of a foreground galaxy through which its light passes.

Quasar APM 08279+5255 has an R-band apparent **magnitude of 15.2** and appears as a tiny red "star". While it is only the brightness of a 15th-magnitude object, its intrinsic luminosity is estimated to be around 100 billion times that of the Sun, making it the most intrinsically luminous object known. The gravitational lensing allows its immense intrinsic luminosity to be seen from Earth, despite its extreme distance. Seen at this distance (and due to its red-shift) the quasar looks like a faint red star to us.

The challenge is to see if you can locate and photograph this distant object during Fall – 2025.

Epilogue

Interested in Making More Observations?

Consider the opportunities offered by the Astronomical League. Perhaps you'd like to go on a "safari" to hunt down galaxies. Maybe star clusters are your main interest. There are always bright nebulae out there to find. Did you ever try to find carbon stars? And there are still five more opportunities to get a silver certificate by participating in the Hubble Night Sky Challenge (see below). Take a look at the list of programs and awards that are available through your membership in the league! Here is a link to an alphabetical list of available programs. Talk to other members about your interests. It's always fun to observe together! Ask an officer in our club if you need help getting started.

T CrB

At the time of writing this, **T CrB** has still not gone nova. Continue watching for news of the event if it should occur. We will try to notify you by email should there be any updates.

Hubble's Night Sky Challenge

As mentioned in previous sky reports, you can be recognized for your observing in 2025. Here are links:

https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubbles-night-sky-challenge/

https://www.astroleague.org/nasa-observing-challenges-special-awards/

https://www.astroleague.org/wp-content/uploads/2024/12/Hubble-35-v2.pdf

If you completed requirements for the **August challenge** then the deadline for submitting your is **September 30, 2025**. For a list of NASA's **September** targets please refer to the latest updates. You will have until **October 31, 2025** to submit your **September** observation(s).

Special thanks to **Russ Swaney** for suggesting the Fall Challenge proposed in this month's sky report. And big thanks to **Connie Meier** and **Russ Swaney** for getting the report to all of you.

Clear Skies and Excellent Observing!

Laz