



Temecula Valley Astronomer

The monthly newsletter of the Temecula Valley Astronomers Aug 2019

Events:

General Meeting :

Monday, August 5, 2019 at the Ronald H. Roberts Temecula Library, Room B, 30600 Pauba Rd, at 7:00 PM. On the agenda this month is “What’s Up” by Skip Southwick followed by a presentation topic : “The Road to Tranquility: One Small Step for a Man – Part 3” by Sam Pitts.

Please consider helping out at one of the many Star Parties coming up over the next few months. For the latest schedule, check the Calendar on the [web page](#).



*[NASA APOD](#) - IC 1795: The Fishhead Nebula
Image Credit & Copyright: [Alan Pham](#)*

General information:

Subscription to the TVA is included in the annual \$25 membership (regular members) donation (\$9 student; \$35 family).

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WHAT’S INSIDE THIS MONTH:

Cosmic Comments

by President Mark Baker

Looking Up Redux

compiled by Clark Williams

Chill Out: Spot an Ice Giant in August

by David Prosper

Send newsletter submissions to Mark DiVecchio [<markd@silogic.com>](mailto:markd@silogic.com) by the 20th of the month for the next month’s issue.

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Cosmic Comments by President Mark Baker

July 20, 1969 was a momentous day in human history...and I'm so glad so many of us took the time to stop and celebrate that moment 50 years later. Sadly, as I read reports from many I associate with, a lot of well-planned and publicized events were poorly attended and were met with a harsh lack of interest and complacency... I guess they didn't get the word that this was the very pinnacle of human accomplishment!!!

TVA, however, took the word to the streets with each and every Star Party and event we've participated in this summer... Summers, in the past a death knell for Outreach, have been really busy again this year, as you may have noticed from all the emails our Outreach Coordinator has been burying you with. Working in conjunction with events hosted by the City of Temecula and RivCo Parks and Recreation has proven a boon to us both, and the compliments have been extensive. But it has also opened a dialog about Lunar landings past and future. At least the majority of those I've talked to and heard others discuss with, appear to be very enthusiastic for a bright future...I have only heard "derogatory" comments about Space Science in jest, to be honest!!! Which is a good thing as I am a little prejudiced...

And I'm especially proud of those that have "stepped outside the box" and contributed at least a presence at these events...you ALL make a difference!!!

So here's to finishing up this Summer strong and paving the way for more allowances to let us be out there, doing our thing, across the whole calendar year.

I take pride in my association with you all of TVA, so once again, Thanks for all you do...!!!

Clear, Dark Skies my Friends...





Looking Up Redux compiled by Clark Williams

from these sources:

SeaSky.org

Wikipedia.com

in-the-sky.org

The American Meteor Society, Ltd.

cometwatch.co.uk

NASA.gov

TVA App (2.0.1296)

FullAndNewMoon App (2.0)

Starry Night Pro Plus 7 (7.6.3.1373)

SkySafari 6 Pro (6.1.1)

Stellarium (0.18.2)

timeanddate.com/astronomy



ALL TIMES ARE LOCAL PDT WILDOMAR/MURRIETA/TEMECULA

Times are given in 24-hour time as: (hh is hours, mm minutes, ss seconds)

hh:mm:ss or hhmmss

hhmm+ (time of the next day)

hhmm- (time of the previous day)

hhmm (seconds not shown)

yyymmddThhmmss (Full date as: year month day Time separator hours minutes seconds)

Moon Phases for the month by date:

Wednesday the 7th @ 1038 FIRST QTR in Libra

Thursday the 15th @ 0529 FULL in Aquarii

Friday the 23rd @ 0757 THIRD QTR in Tarus

Thursday the 30th @ 0338 NEW in Leonis

Apogee comes on 2019-08-30 @ **1051** – 406 243 km (252, 952 mi)

Perigee comes on 2019-08-17 @ **0710** – 359 397 km (223, 3 19 mi)

Perigee comes on 2019-08-30 @ **1559** – 357 175 km (221, 938 mi)

2019 has: (13) new moons, (12) 1st Qtr moons, (12) Full moons, (12) 3rd Qtr moons
(0) Blue moons and (1) Black moon

Daylight Savings: Pacific time is Timezone Uniform -8 GMT (-7 GMT PDT)

Luna: Luna is heading toward FIRST QTR on the 7th of the month so you should have some dark nights for twelve days of the month. Luna by mid-month is Full and 100% illuminated. Luna is rising by **1928** - and glowing without mercy while insisting on staying up until **0613**. This is a perfect time for some lunar exploring with binoculars, a small scope or just your peepers. All of the Apollo landing sites will be visible. Not the detritus of course. Luna will be Full by the 15th. The end-of-the-month we're deep into the third-quarter and dark night viewing will be back. In fact on the 31st Luna has hit the pillow by **2037** and you will have a full dark night for viewing.



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Highlights: (distilled from SeaSky.org and Clark's planetary Orrey program[s])

August 1 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 03:12 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

August 9 – Mercury. Mercury at Greatest Western Elongation. The planet Mercury reaches greatest western elongation of 19.0 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.

August 12, 13 - Perseids Meteor Shower. The Perseids is one of the best meteor showers to observe, producing up to 60 meteors per hour at its peak. It is produced by comet Swift-Tuttle, which was discovered in 1862. The Perseids are famous for producing a large number of bright meteors. The shower runs annually from July 17 to August 24. It peaks this year on the night of August 12 and the morning of August 13. The nearly full moon will block out most of the fainter meteors this year, but the Perseids are so bright and numerous that it could still be a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Perseus, but can appear anywhere in the sky.

August 15 - Full Moon. The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 12:30 UTC. This full moon was known by early Native American tribes as the Full Sturgeon Moon because the large sturgeon fish of the Great Lakes and other major lakes were more easily caught at this time of year. This moon has also been known as the Green Corn Moon and the Grain Moon.

August 30 - New Moon. The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 10:37 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.



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Algol minima: (All times **PDT**)

08/03/19	0122
08/06/19	1011
08/09/19	0700
08/12/19	0348
08/15/19	0037
08/17/19	0925
08/20/19	0614
08/23/19	0303
08/26/19	1151
08/29/19	0840



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		Rise	Transit	Set
08/01/19	Sun	055936	0125519	0195041
	Moon	063000	0133855	0204238
08/15/19	Sun	060936	0125325	0193653
	Moon	192804	0005055	0061348
08/31/19	Sun	062044	0124912	0191722
	Moon	074059	0141104	0203700

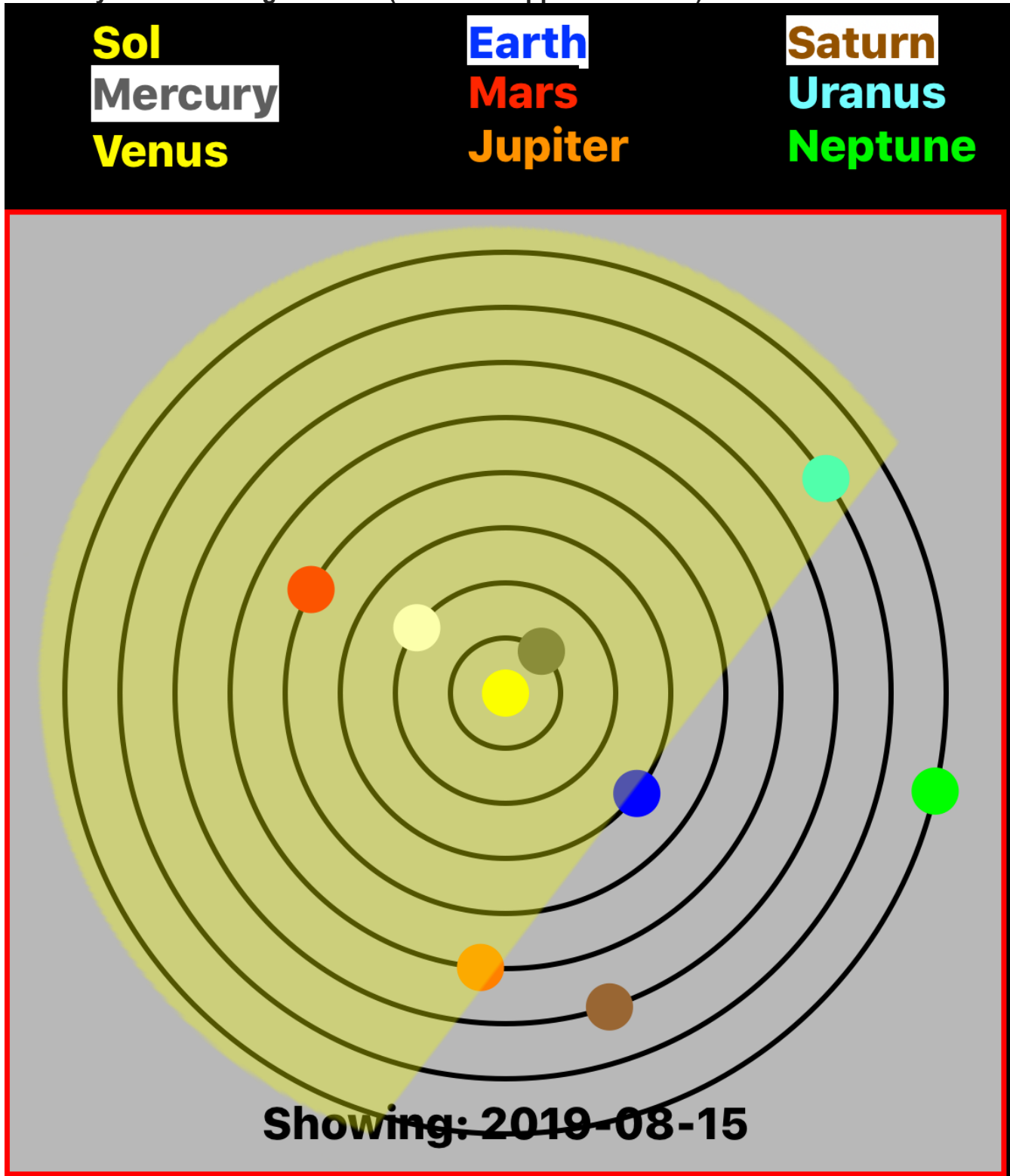


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Planets:

Planetary Positions August 2019: (from TVA App iOS version)





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- **Mercury:** Mercury is a morning object in the beginning of the month. Look for it about **0456** in the ENE. About an hour ahead of sunrise. Only about 14° of Mercury is illuminated so--difficult to see. Mercury is at Greatest Western Elongation of 19.0° from the Sun By mid-month Mercury has ballooned to 61% illumination and should be much easier to pull out of the early morning haze. Mercury's rise time is about **0445** with Sol following at **0609**. Mercury is into the realm of the Sun by the 31st rising within 17 minutes of the sun. Mercury's orbital plane is also appearing to flatten as Mercury appears to approach the ecliptic for the Transit of Mercury that is coming on Veteran's Day, 2019 November 11. This hasn't happened since 2016. **DON'T LOOK DIRECTLY AT THE SUN!**
- **Venus:** Is the Morning Star. Venus rises at **0445** on the first followed by the Sun at **0559**. By mid-month Venus is rising about 45-seconds after sunrise at **0609**. Venus now slips into being the Evening Star setting about 15 minutes after the Sun by the 31st at **1935**.
- **Mars:** Mars is chasing the Sun setting within 35-minutes of each other on the first and separated by about one degree. Mid-month finds Mars still locked in the Sun's glow setting around **2056**. By the end of August Mars and Sol are still clutched with Mars setting at **1921** about 3-minutes after the Sun.
- **Jupiter:** Jupiter is still in the evening sky rising at **1559** on the first of the month, transiting at **2100**. By mid-month Jove is up by **1504** and transits by **2050**. The end-of-the-month sees a rise time of **1404** and a transit at **1904**.
- **Saturn:** Saturn is trailing Jove rising at **1813** on the first and transiting about **2314**. Saturn is rising about **1715** by mid-month and transiting about **2215**. By the end of the month Saturn rises at **1610** and transits at **2110**.
- **Uranus:** On the first Uranus rises at **2344**; transits at **0623+**. By the ides Uranus is rising at **2249**; transiting at **0528** however, there is a bright moon looming only 65° toward the west. End-of-month finds Uranus rising at **2145** and not transiting until **0424**. You won't be finding Uranus easily or with a scope less than about 12-inches aperture.
- **Neptune:** Neptune is rising at **2136** in the Eastern sky at the beginning of the month; transiting about **0324+**. By the 15th Neptune is rising at **2040** and transiting **0228+**. Unfortunately, just $17\frac{1}{2}^\circ$ separates Luna from Neptune. Luna is shining brightly at 99% illumination. By the end of the month Neptune is rising by **1936**. This should give you about 6-hours to find the blue planet sitting in a perfectly black sky.
- **Pluto:** Pluto is back rising at **1838** and transiting **2339**. Pluto is in a dark sky only $5^\circ 55'$ E of Saturn along the ecliptic. So finding this elusive dot is much easier. Mid-month finds Pluto transiting at **2243** but lost in the glare of a Waning gibbous Moon at 99% illumination only $39\frac{1}{2}^\circ$ to the east. Month end finds Pluto rises about **1638**; transiting at **2139** and setting at **0239+**.

Asteroids:

- Still a dearth of asteroids. I searched for asteroids in 2019 with a reasonable magnitude; say less than or equal to +10 in August there is nothing except the regulars: Juno, Vesta, Hebe, Eros and Herculina. So consult your local planetarium software or try <https://www.asteroidsnear.com/year?year=2019>.

Meteors:

- The annual Perseid meteor shower is on deck and swinging. Since the Perseids peak around the summer months, the Perseids are popular in the Northern Hemisphere. They have also



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been fairly prolific. The 2019 Perseid meteor shower may well reflect the prolific nature. The greatest number of meteors are expected on the mornings of August 11th through the 13th. Don't put off looking for them as the 2019 Perseid meteor shower has already begun the persistent rise to peak. The moon is just past new in the beginning of the month so the morning hours are , meaning are moon-free. The Perseids are active from August 3rd through August 15th with a mini-peak centered on August 30. This early pre-peak shower rarely produces in excess of five meteors per hour. For more information see: (American Meteor Society)**Comets:**

Comets: come in various classifications:

- 1) Short Period comets – further broken down into:
 - Halley Type: The Halley Types are believe to come from the Kuiper Belt and have periods in excess of 20-years.
 - Jupiter Type: The Jupiter types have a period less than or equal to 20-years.
 - Short period comets August have a near circular orbit or an elliptical orbit. The latter being far more common.
- 2) Long Period comets – thought to originate from the Oort cloud these comets have periods of over 200 years and have random inclinations around the celestial sphere.
- Unless some bright long period comets are discovered it promises to be a disappointing year for comet enthusiasts. (<https://www.ast.cam.ac.uk>)



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Deep Sky:

Notes:

L/Z abbreviation for ALT/AZ

R/D abbreviation for Right Ascension/Declination

α is right ascension

δ is declination

In each case, unless otherwise noted, you should look for the following on or about the 15th Day of August 2019 at 2100 PDT and you will have about 20 minutes of viewing time total.

Lets look for some familiar objects:

- o **NGC 7000:**



The North America Nebula is large, covering an area of more than four times the size of the full moon; but its surface brightness is low, so normally it cannot be seen with the unaided eye. Binoculars and telescopes with large fields of view (approximately 3°) will show it as a foggy patch of light under sufficiently dark skies. However, using a UHC filter, which filters out some unwanted wavelengths of light, it can be seen without magnification under dark skies. Its prominent shape and especially its reddish color (from the hydrogen H α emission line) show up only in photographs of the area. The portion of the nebula resembling Mexico and Central America is known as the Cygnus Wall. This region exhibits the most concentrated star formation. The North America Nebula and the nearby Pelican Nebula (IC 5070) are parts of the same interstellar cloud of ionized hydrogen (H II region). Between the Earth and the nebula complex lies a band of interstellar dust that absorbs the light of stars and nebulae behind it, and thereby determines the shape as we see



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it. The distance of the nebula complex is not precisely known, nor is the star responsible for ionizing the hydrogen so that it emits light. If the star inducing the ionization is Deneb, as some sources say, the nebula complex would be about 1,800 light-years' distance, and its absolute size (6° apparent diameter on the sky) would be 100 light-years. The nebula was discovered by William Herschel, from Slough, England, on October 24, 1786 or by his son John Herschel before 1833. (Wikipedia)

- **Ste 1 (Stephenson 1):**



*By Scott Roy Atwood - Own work, CC BY-SA 3.0,
<https://commons.wikimedia.org/w/index.php?curid=7377608>*



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Delta Lyrae cluster is a sparse open cluster of stars located about 1,220 light years away in the northern constellation of Lyra. Centered on the member star Delta2 Lyrae for which it is named, it was first suspected in 1959 by American astronomer Charles B. Stephenson, then was later concluded not to exist by German astronomer Werner Bronkalla in 1963. However, subsequent photometric observations at the Palomar and Mount Wilson observatories led American astronomer Olin J. Eggen to demonstrate that there was an actual cluster, at least for the observed stars down to absolute magnitude +5.5. Eggen's study found at least 33 members. The cluster has a visual magnitude of 3.8 and spans an angular diameter of 20 arc minutes. The tidal radius of the cluster is 38 ly (11.5 pc) and it has an estimated combined mass of 589 times the mass of the Sun. Based upon its estimated age and motion through space, it may be associated with the Gould Belt. It includes an Algol variable star, BD+36° 3317, discovered in 2007 from Spain: this is a spectroscopic binary star system that undergoes regular eclipses because the orbital plane is nearly aligned with the line of sight to the Earth. ([Wikipedia](#))

August is great for both viewing and imaging. Spend some time outside with your scope. Summer is here.

For now – Keep looking up.



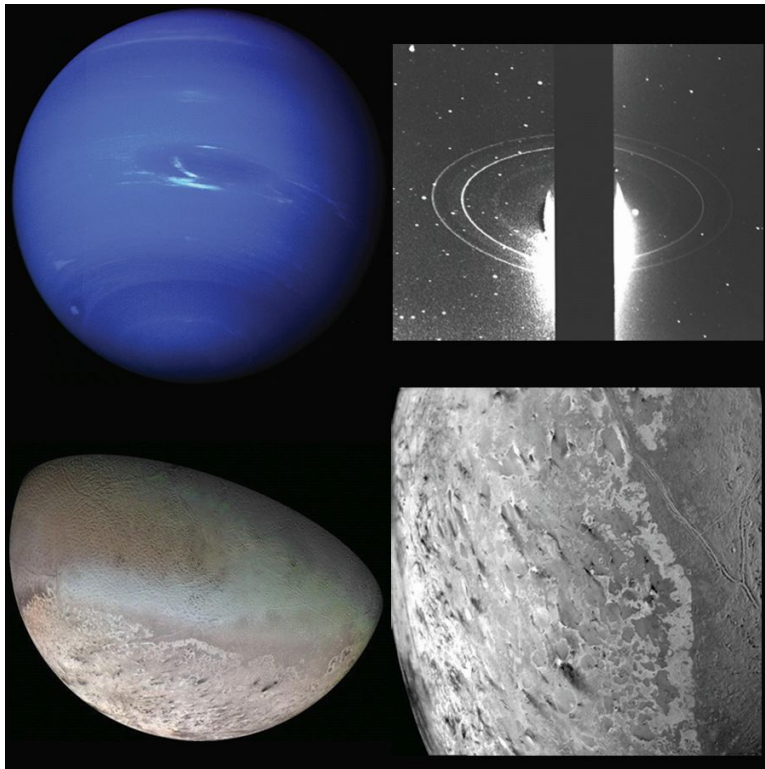
Chill Out: Spot an Ice Giant in August by David Prosper

Is the summer heat getting to you? Cool off overnight while spotting one of the solar system's ice giants: **Neptune!** It's the perfect way to commemorate the 30th anniversary of Voyager 2's flyby.

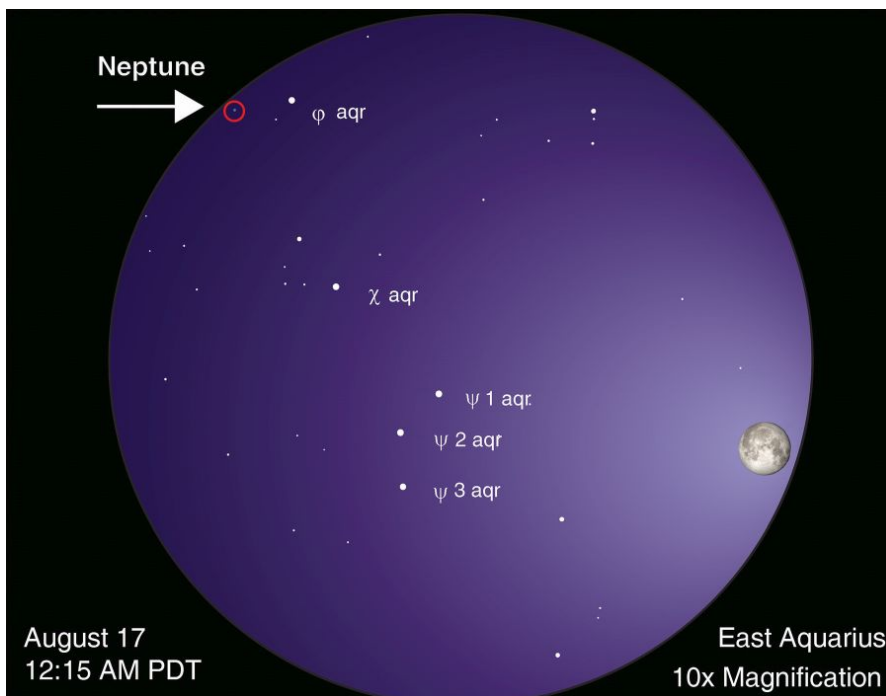
Neptune is too dim to see with your unaided eye so you'll need a telescope to find it. Neptune is at opposition in September, but its brightness and apparent size won't change dramatically as it's so distant; the planet is usually just under 8th magnitude and 4.5 billion kilometers away. You can see Neptune with binoculars but a telescope is recommended if you want to discern its disc; the distant world reveals a very small but discernible disc at high magnification. Neptune currently appears in Aquarius, a constellation lacking in bright stars, which adds difficulty to pinpointing its exact location. Fortunately, the Moon travels past Neptune the night of August 16th, passing less than six degrees apart (or about 12 Moon widths) at their closest. If the Moon's glare overwhelms Neptune's dim light, you can still use the its location that evening to mark the general area to search on a darker night. Another Neptune-spotting tip: Draw an imaginary line from bright southern star Fomalhaut up to the Great Square of Pegasus, then mark a point roughly in the middle and search there, in the eastern edge of Aquarius. If you spot a blue-ish star, swap your telescope's eyepiece to zoom in as much as possible. Is the suspect blue "star" now a tiny disc, while the surrounding stars remain points of white light? You've found Neptune!

Neptune and Uranus are ice giant planets. These worlds are larger than terrestrial worlds like Earth but smaller than gas giants like Jupiter. Neptune's atmosphere contains hydrogen and helium like a gas giant, but also methane, which gives it a striking blue color. The "ice" in "ice giant" refers to the mix of ammonia, methane, and water that makes up most of Neptune's mass, located in the planet's large, dense, hot mantle. This mantle surrounds an Earth-size rocky core. Neptune possesses a faint ring system and 13 confirmed moons. NASA's Voyager 2 mission made a very close flyby on August 25, 1989. It revealed a dynamic, stormy world streaked by the fastest winds in the solar system, their ferocity fueled by the planet's surprisingly strong internal heating. Triton, Neptune's largest moon, was discovered to be geologically active, with cryovolcanoes erupting nitrogen gas and dust dotting its surface, and a mottled "cantaloupe" terrain made up of hard water ice. Triton is similar to Pluto in size and composition, and orbits Neptune in the opposite direction of the planet's rotation, unlike every other large moon in the solar system. These clues lead scientists to conclude that this unusual moon is likely a captured Kuiper Belt object.

Discover more about Voyager 2, along with all of NASA's past, present, and future missions, at nasa.gov



Clockwise from top left: Neptune and the Great Dark Spot traced by white clouds; Neptune's rings; Triton and its famed icy cantaloupe surface; close of up Triton's surface, with dark streaks indicating possible cryovolcano activity. Find more images and science from Voyager 2's flyby at bit.ly/NeptuneVoyager2 Image Credit: NASA/JPL



Finder chart for Neptune. This is a simulated view through 10x50 binoculars (10x magnification). Please note that the sizes of stars in this chart indicate their brightness, not their actual size. Moon image courtesy NASA Scientific Visualization Studio; chart created with assistance from Stellarium.



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This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach.

Visit <https://nightsky.jpl.nasa.org> to find local clubs, events, and more!





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The TVA is a member club of [The Astronomical League](#).

