



# Temecula Valley Astronomer

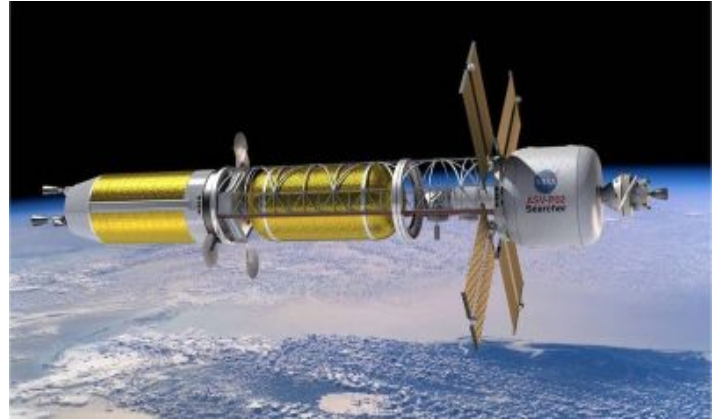
The monthly newsletter of the Temecula Valley Astronomers Oct 2019

## Events:

### General Meeting :

**Monday, October 7, 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 Search for Extrasolar Planets” by Shreyas Vissapragada, CalTech grad student and exoPlanetary Scientist.**

**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](#).**



[Nuclear Propulsion Could Be 'Game-Changer' for Space Exploration, NASA Chief Says.](#)

Source NASA/Marshall, Public Domain

### General information:

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

President: Mark Baker 951-691-010

[<shknbk13@hotmail.com>](mailto:shknbk13@hotmail.com)

Vice President: Skip Southwick

[<skipsouthwick@yahoo.com>](mailto:skipsouthwick@yahoo.com)

Past President: John Garrett [<garrjohn@gmail.com>](mailto:garrjohn@gmail.com)

Treasurer: Curtis Croulet [<calypte@verizon.net>](mailto:calypte@verizon.net)

Secretary: Deborah Cheong [<geedeb@gmail.com>](mailto:geedeb@gmail.com)

Club Librarian: Vacant

[Facebook](#): Tim Deardorff [<tim-deardorff@yahoo.com>](mailto:tim-deardorff@yahoo.com)

Star Party Coordinator and Outreach: Deborah Cheong

[<geedeb@gmail.com>](mailto:geedeb@gmail.com)

Address renewals or other correspondence to:

Temecula Valley Astronomers

PO Box 1292

Murrieta, CA 92564

Members' Mailing List:

[tvastronomers@googlegroups.com](mailto:tvastronomers@googlegroups.com)

Website: <http://www.temeculavalleyastronomers.com/>

## WHAT'S INSIDE THIS MONTH:

### Cosmic Comments

by President Mark Baker

### Looking Up Redux

compiled by Clark Williams

### Find Strange Uranus in Aries

by David Prosper

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

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## Cosmic Comments by President Mark Baker

It's at this time of year where I become retrospective of the last Astronomy Outreach season in preparation for the upcoming one. We have been a busy group this last year, thanks to Deborah Baker, our dedicated Outreach Coordinator... in spite of uncommon weather issues. We again were a presence in Temecula this summer and have become a mainstay at their community movie nights. We added a venue at [Hurkey Creek Park](#) where once a month we set up scopes on a Friday and Saturday, and provided presentations as well...although Club support was limited – primarily the Garrett family – it was a huge hit with the campers there!!! But quantity aside, TVA continues to provide QUALITY inspiration to our community and many are now looking up because of our efforts...

I wish I could convey how gratifying it is to participate in the plethora of Star Parties, Star-B-Q's, meetings, and related events with my TVA teammates. And it's not that so many of you do it, as much as you keep doing it – over, and over, and over...!!!

I personally appreciate the dedication and sacrifices so many of you make just to maybe touch the spirit of even one individual and get them to look up and wonder...although I know we inspire dozens at most events. And it's often adults that are the most awestruck after seeing a planet, or cluster, or fuzzy and are the most expressive. Still, that aside, the only reward I find necessary is the simple statement by a child, such as "Wow" or "Cool", when seeing a celestial object for the first time and instantly expanding their horizon. I can almost hear the wheels turning...

So even though I am at a loss for words, please accept my humble thank you for all you do... we know not what seeds we plant!!

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:

<b>Saturday</b>	<b>the 5<sup>th</sup></b>	<b>@ 0948</b>	<b>FIRST QTR in Sagittarius</b>
<b>Sunday</b>	<b>the 14<sup>th</sup></b>	<b>@ 1409</b>	<b>FULL in Cetus</b>
<b>Monday</b>	<b>the 21<sup>st</sup></b>	<b>@ 0540</b>	<b>THIRD QTR in Cancer</b>
<b>Sunday</b>	<b>the 27<sup>th</sup></b>	<b>@ 2039</b>	<b>NEW in Virgo</b>

Apogee comes on 2019-10-10 @ **1830** – **405,901 km (252,215 mi)**

Perigee comes on 2019-10-26 @ **1042** – **361,314 km (224,510 mi)**

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

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

**Luna:** Luna is just past NEW on the 1<sup>st</sup> of the month setting by **2101**, so you should have some dark nights for twelve days of the month. Luna by mid-month is 95% illuminated. Luna is rising by **1940** and glowing without mercy while insisting on staying up all night. 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. By the-end-of-the-month Luna is a Full moon, 99% illuminated transiting by **0008+**.



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

October 8 - Draconids Meteor Shower. The Draconids is a minor meteor shower producing only about 10 meteors per hour. It is produced by dust grains left behind by comet 21P Giacobini-Zinner, which was first discovered in 1900. The Draconids is an unusual shower in that the best viewing is in the early evening instead of early morning like most other showers. The shower runs annually from October 6-10 and peaks this year on the the night of the 8th. The first quarter moon will set shortly after midnight leaving fairly dark skies for observing. Best viewing will be in the early evening from a dark location far away from city lights. Meteors will radiate from the constellation Draco, but can appear anywhere in the sky.

October 13 - 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 21:09 UTC. This full moon was known by early Native American tribes as the Full Hunters Moon because at this time of year the leaves are falling and the game is fat and ready to hunt. This moon has also been known as the Travel Moon and the Blood Moon.

October 20 - Mercury at Greatest Eastern Elongation. The planet Mercury reaches greatest eastern elongation of 24.6 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 evening sky. Look for the planet low in the western sky just after sunset.

October 21, 22 - Orionids Meteor Shower. The Orionids is an average shower producing up to 20 meteors per hour at its peak. It is produced by dust grains left behind by comet Halley, which has been known and observed since ancient times. The shower runs annually from October 2 to November 7. It peaks this year on the night of October 21 and the morning of October 22. The second quarter moon will block some of the fainter meteors this year, but the Orionids tend to be fairly bright so it could still be a good show. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Orion, but can appear anywhere in the sky.

October 27 - Uranus at Opposition. The blue-green planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view Uranus. Due to its distance, it will only appear as a tiny blue-green dot in all but the most powerful telescopes.

October 28 - New Moon. The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 03:39 UTC. This is the best time of the month to observe faint objects



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such as galaxies and star clusters because there is no moonlight to interfere.

## Algol minima: (All times PDT)

<b>10/02/19</b>	<b>1823</b>
<b>10/05/19</b>	<b>1512</b>
<b>10/08/19</b>	<b>1200</b>
<b>10/11/19</b>	<b>0849</b>
<b>10/14/19</b>	<b>1653</b>
<b>10/17/19</b>	<b>0227</b>
<b>10/19/19</b>	<b>2315</b>
<b>10/22/19</b>	<b>2004</b>
<b>10/25/19</b>	<b>1653</b>
<b>10/28/19</b>	<b>1342</b>
<b>10/31/19</b>	<b>1031</b>

		<b>Rise</b>	<b>Transit</b>	<b>Set</b>
<b>10/01/19</b>	Sun	064151	123828	183457
	Moon	095509	152826	210115
<b>10/15/19</b>	Sun	065214	123434	181650
	Moon	194000	023037	092550
<b>10/31/19</b>	Sun	070610	123225	175837
	Moon	171830	000802+	070228+

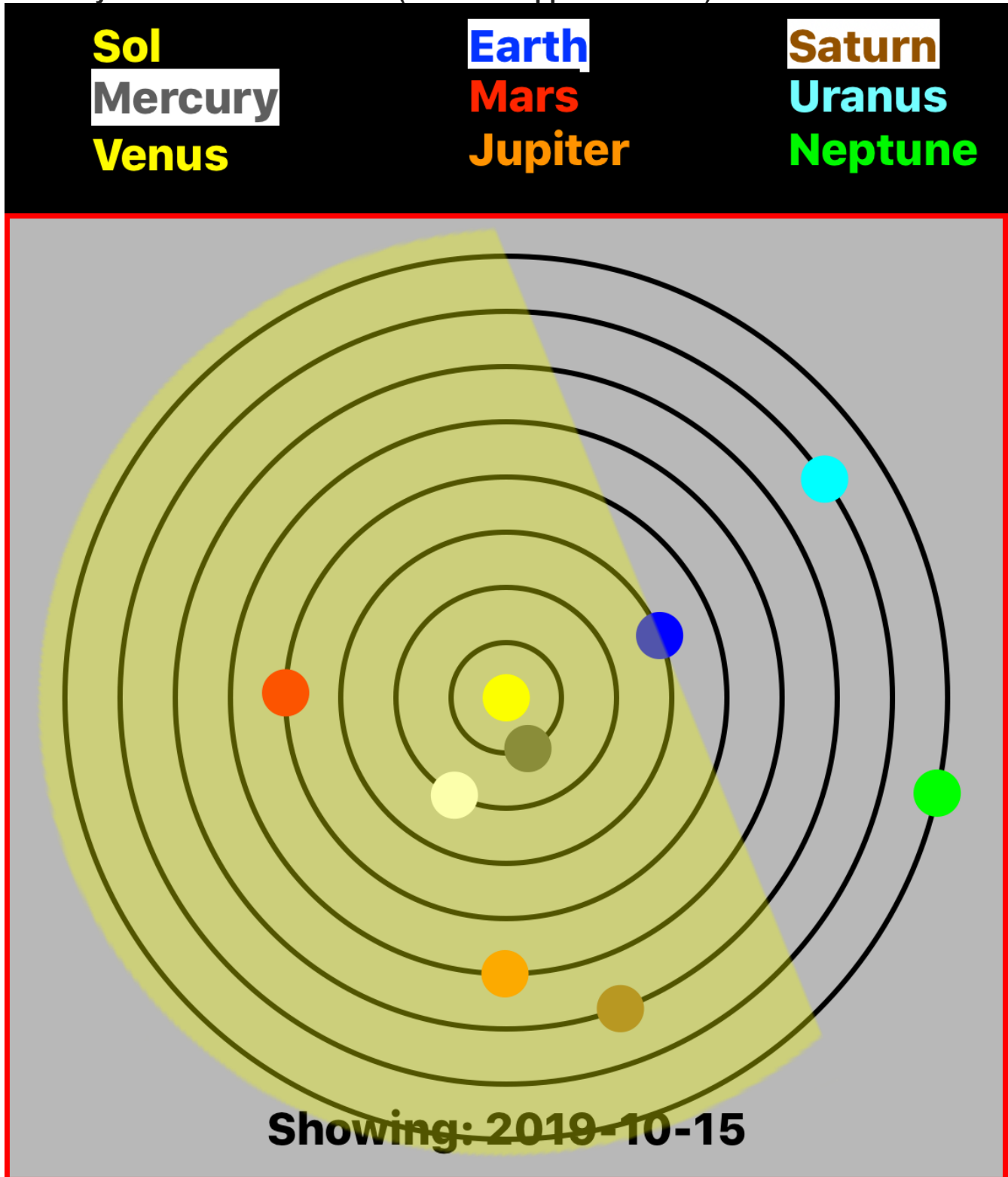


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Planets:

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





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- **Mercury:** Mercury is an evening object in the beginning of the month. It is well illuminated at 85% and -0.19 apparent magnitude. Mercury's set time by mid-month is about **1916** with Sol preceding at **1819**. By the 31<sup>st</sup> Mercury is setting 50 minutes after 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 Evening Star. Venus sets about 37-minutes after the sun on the first at **1912**. By mid-month Venus is setting about 50-minutes after sunset at **1905**. By the 30<sup>th</sup> Venus is setting 64-minutes later than the sun at **1903**.
- **Mars:** Mars is a morning object chasing after the Sun. It will be lost in the glow of the fiery chariot for the month.
- **Jupiter:** Jupiter is still in the evening sky transiting at **1716** on the first of the month. By mid-month Jove sets by **2129**. The end-of-the-month set time is **2038**. Jupiter is fading fast.
- **Saturn:** Saturn is trailing Jove transiting about **1907** on the 1<sup>st</sup>. Saturn is setting about **2314** by mid month. By the end-of-the-month Saturn sets at **2216**.
- **Uranus:** On the first Uranus rises at **1941**; transits at **0219+**. The apparent magnitude is 5.68 so we're right on the ragged edge of being naked-eye visible. By the ides Uranus is rising at **1844**; transiting at **0122+** however, there is a waning gibbous moon looming only 15° toward the west at 95% illumination. End-of-month finds Uranus transiting until **0017+**. You won't be finding Uranus easily or with a scope less than about 12-inches aperture.
- **Neptune:** Neptune is leading Uranus, rising at **1732** in the Eastern sky at the beginning of the month; transiting about **2319**. By the 15<sup>th</sup> Neptune is transiting **2222**. Unfortunately, just 62° separates a 96% illuminated Luna from Neptune. By the end of the month Neptune is transiting at **2118**. This should give you plenty of time to find the blue planet sitting in a perfectly black sky.
- **Pluto:** Pluto is hanging out within 6° of Saturn on the 1<sup>st</sup> transiting at **2136**. So finding this elusive dot is much easier. Mid-month finds Pluto transiting at **1841**. You will have to contend with a waning gibbous Moon at 96% illumination to the east. Month end finds Pluto setting at **2239**.

## Asteroids:

- Still a dearth of asteroids. I searched for asteroids in 2019 with a reasonable magnitude; say less than or equal to +10 in October 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 Orionids are a medium strength shower that sometimes reaches high strength activity. In a normal year the Orionids produce 10-20 shower members at maximum. In exceptional years, such as 2006-2009, the peak rates were on par with the Perseids (50-75 per hour). Recent displays have produced low to average displays of this shower.

Shower details - Radiant: 06:20 +15.5° - ZHR: 20 - Velocity: 41 miles/sec (swift - 67km/sec) - Parent Object: 1P/Halley



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Next Peak - The Orionids will next peak on the Oct 21-22, 2019 night. On this night, the moon will be 45% full.. For more information see: (American Meteor Society)

**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 October 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.

Nothing really available this month in comets.

**Deep Sky:**

Notes:

**L/Z** abbreviation for **ALT/AZ**

**R/D** abbreviation for **Right Ascension/Declination**

**$\alpha$**  is right ascension

**$\delta$**  is declination

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

Lets look for some familiar objects:

- **Westerhout 5:**

**M74 – AKA Sharpless 2-199, IC 1848, Heart and Soul:** is an emission nebula located in Cassiopeia. Several small open clusters are embedded in the nebula: CR 34, 632, and 634 (in the head) and IC 1848 (in the body). The object is more commonly called by the cluster designation IC 1848. Small emission nebula IC 1871 is present just left of the top of the head, and small emission nebulae 670 and 669 are just below the lower back area. The galaxies Maffei 1 and Maffei 2 are both nearby the nebula, although light extinction from the Milky Way makes them very hard to see. Once thought to be part of the Local Group, they are now known to belong to their own group- the IC 342/Maffei Group. This complex is the eastern neighbor of IC1805 (Heart Nebula) and the two are often mentioned together as the "Heart and Soul". (Wikipedia)





By

NASA/JPL-Caltech/UCLA - WISE, Public Domain,  
<https://commons.wikimedia.org/w/index.php?curid=10514366>

o **M 31:**

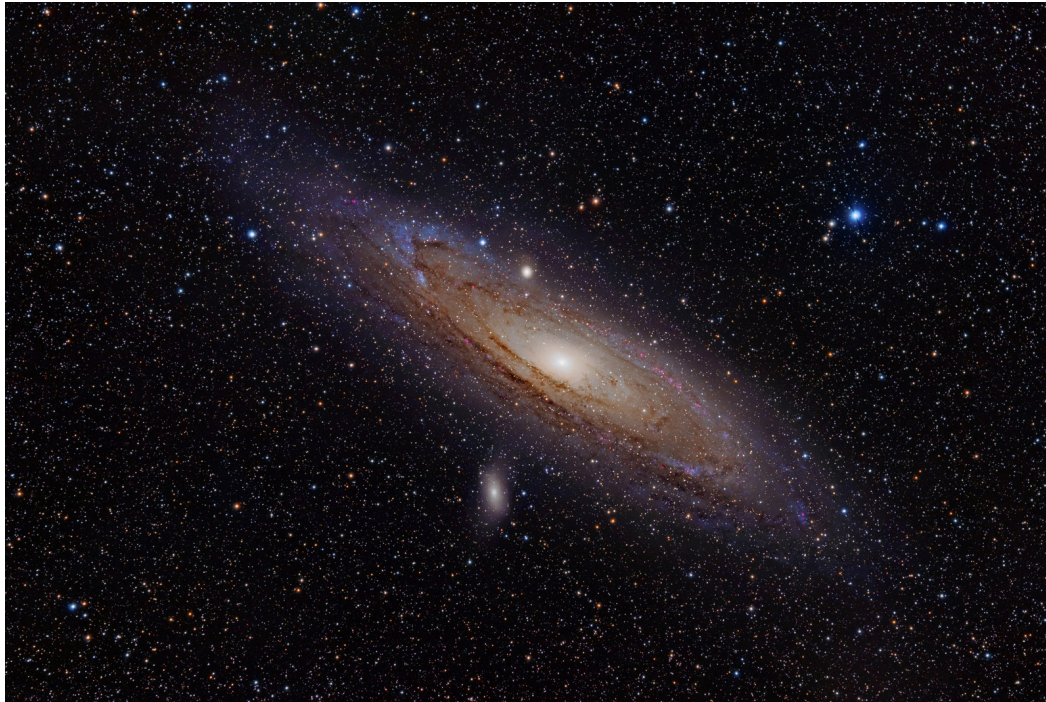
**The Andromeda Nebula: – AKA –** Messier 31, M31, or NGC 224 and originally the Andromeda Nebula (see below): is a spiral galaxy approximately 780 kiloparsecs (2.5 million light-years) from Earth, and the nearest major galaxy to the Milky Way. The galaxy's name stems from the area of the Earth's sky in which it appears, the constellation of Andromeda. The virial mass of the Andromeda Galaxy is of the same order of magnitude as that of the Milky Way, at a trillion solar masses ( $1 * 10^{12}$ ). The mass of either galaxy is difficult to estimate with any accuracy, but it was long thought that the Andromeda Galaxy is more massive than the Milky Way by a margin of some 25% to 50%. This has been called into question by a 2018 study which cited a lower estimate on the mass of the Andromeda Galaxy, combined with preliminary reports on a 2019 study estimating a higher mass of the Milky Way. The Andromeda Galaxy has a diameter of about 220,000 light-years, making it the largest member of the Local Group at least in terms of extension, if not mass. The number of stars contained in the Andromeda Galaxy is estimated at one trillion ( $1 * 10^{12}$ ), or roughly twice the number estimated for the Milky Way. The Milky Way and Andromeda galaxies are expected to collide in ~4.5 billion years, merging to form a giant elliptical galaxy or a large lenticular galaxy. With an apparent magnitude of 3.4, the Andromeda Galaxy is among the brightest of the Messier objects making it visible to the naked eye from Earth on moonless nights, even when viewed from areas with moderate light pollution. (Wikipedia)



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*By Adam Evans - M31, the Andromeda Galaxy (now with h-alpha) Uploaded  
by NotFromUtrecht, CC BY 2.0,  
<https://commons.wikimedia.org/w/index.php?curid=12654403>*

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

For now – Keep looking up.



## Find Strange Uranus in Aries

by David Prosper

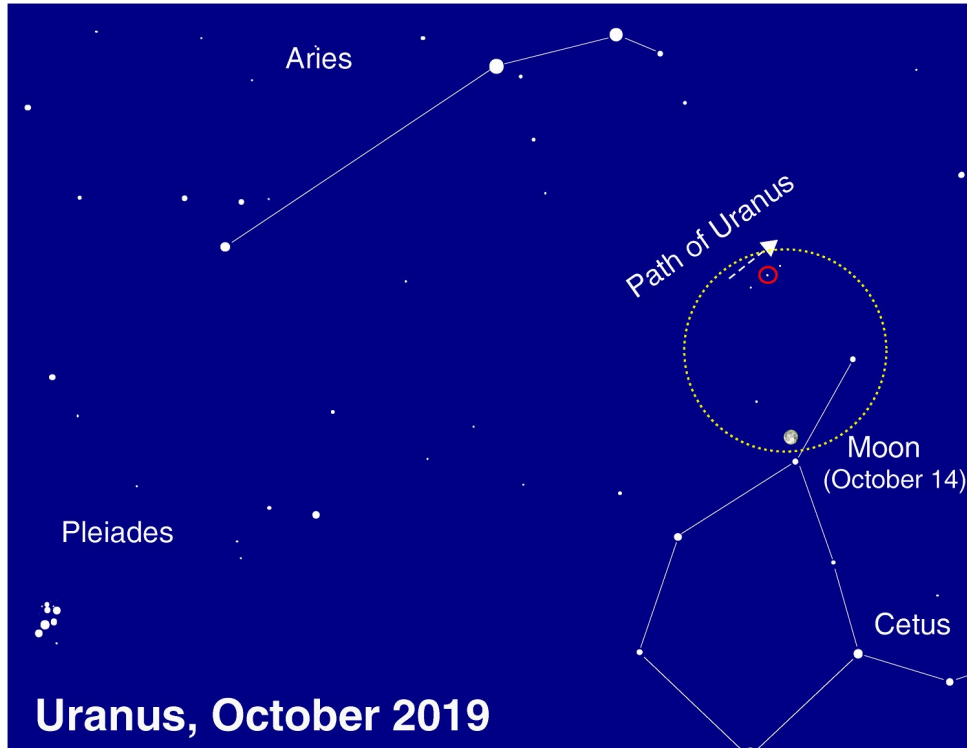
Most of the planets in our solar system are bright and easily spotted in our night skies. The exceptions are the ice giant planets: Uranus and Neptune. These worlds are so distant and dim that binoculars or telescopes are almost always needed to see them. A great time to search for Uranus is during its opposition on October 28, since the planet is up almost the entire night and at its brightest for the year.

Search for Uranus in the space beneath the stars of Aries the Ram and above Cetus the Whale. These constellations are found west of more prominent Taurus the Bull and Pleiades star cluster. You can also use the Moon as a guide! Uranus will be just a few degrees north of the Moon the night of October 14, close enough to fit both objects into the same binocular field of view. However, it will be much easier to see dim Uranus by moving the bright Moon just out of sight. If you're using a telescope, zoom in as much as possible once you find Uranus; 100x magnification and greater will reveal its small greenish disc, while background stars will remain points.

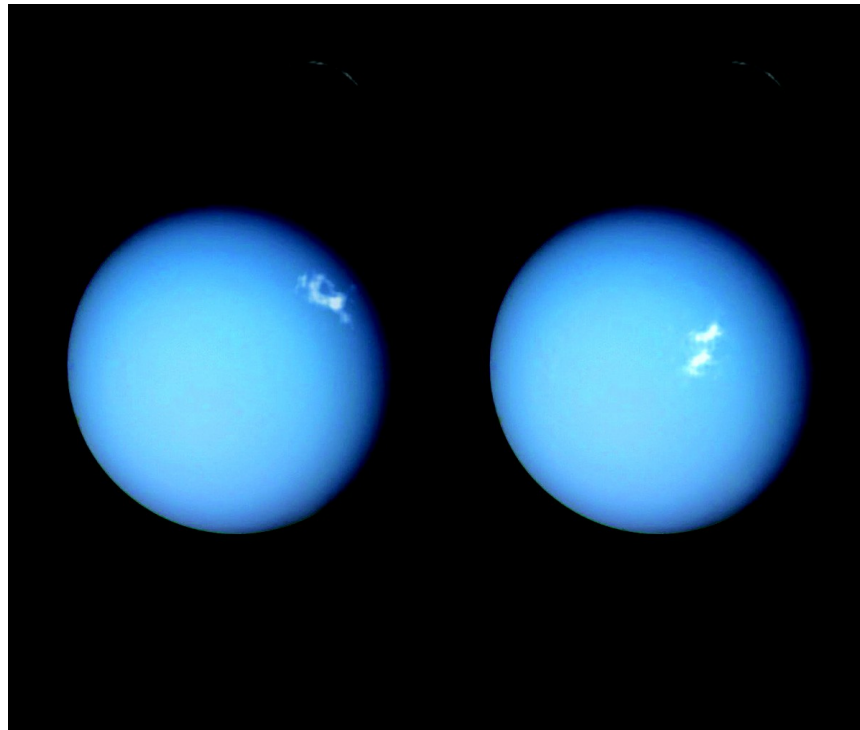
Try this observing trick from a dark sky location. Find Uranus with your telescope or binoculars, then look with your unaided eyes at the patch of sky where your equipment is aimed. Do you see a faint star where Uranus should be? That's not a star; you're actually seeing Uranus with your naked eye! The ice giant is just bright enough near opposition - magnitude 5.7 - to be visible to observers under clear dark skies. It's easier to see this ghostly planet unaided after first using an instrument to spot it, sort of like "training wheels" for your eyes. Try this technique with other objects as you observe, and you'll be amazed at what your eyes can pick out.

By the way, you've spotted the first planet discovered in the modern era! William Herschel discovered Uranus via telescope in 1781, and Johann Bode confirmed its status as a planet two years later. NASA's Voyager 2 is the only spacecraft to visit this strange world, with a brief flyby in 1986. It revealed a strange, severely tilted planetary system possessing faint dark rings, dozens of moons, and eerily featureless cloud tops. Subsequent observations of Uranus from powerful telescopes like Hubble and Keck showed its blank face was temporary, as powerful storms were spotted, caused by dramatic seasonal changes during its 84-year orbit. Uranus's wildly variable seasons result from a massive collision billions of years ago that tipped the planet to its side.

Discover more about NASA's current and future missions of exploration of the distant solar system and beyond at [nasa.gov](http://nasa.gov)



The path of Uranus in October is indicated by an arrow; its position on October 14 is circled. The wide dashed circle approximates the field of view from binoculars or a finderscope. Image created with assistance from Stellarium.



Composite images taken of Uranus in 2012 and 2014 by the Hubble Space Telescope, showcasing its rings and auroras. More at [bit.ly/uranusauroras](http://bit.ly/uranusauroras) Credit: ESA/Hubble & NASA, L. Lamy / Observatoire de Paris



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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](#).

