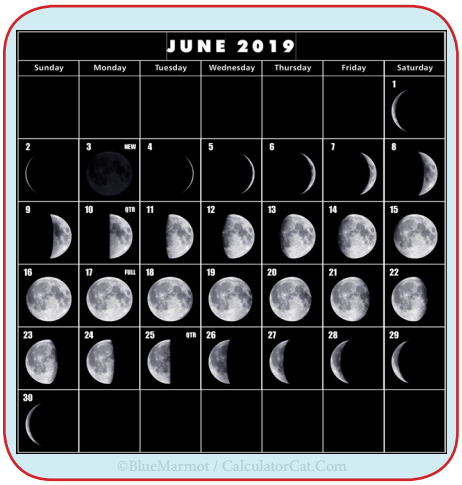
THE OBSERVER

Newsletter of The Tri-State Astronomers

June 2019 Volume 34 Number 6

MONTH AT A GLANCE



New Moon Star Party
Fri May 31 only, if clear, Dusk
Club Members only

New Moon
Mon Jun 03

Jupiter Double Moon shadow
Tue Jun 04, 8:33 PM - 9:46 PM

First Quarter Moon
Mon Jun 10

Jupiter Opposition/Best visibility of the Year
Mon Jun 10, 12:29 PM

Jupiter Double Moon shadow
Tue Jun 11, 11:33 PM - 12:28 AM

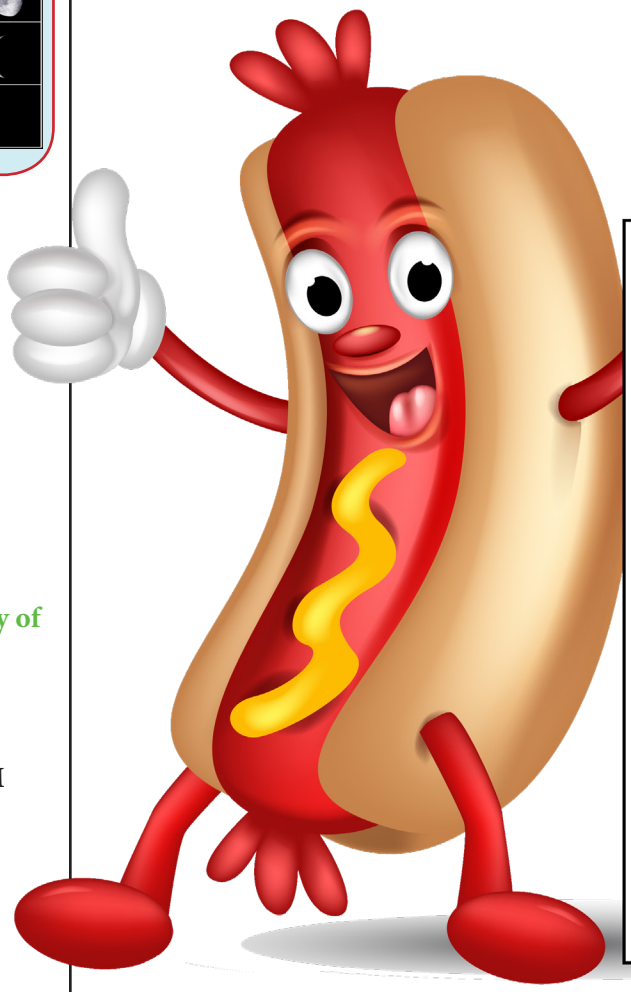
Full Moon(Strawberry Moon)
Mon Jun 17

Moon/Saturn Conjunction 1.1°
Tue Jun 18, 10:34 PM

Summer Solstice
Fri Jun 21, 11:54 AM

Last Quarter Moon
Tue Jun 25

Grillin' & Gazin' June 22nd



A TSA tradition has been our summertime Grillin' & Gazin' events for club members. Since the club does not hold official meetings during the summer months (June, July, and August) we have Grillin' & Gazin' instead. We get together on a Friday or Saturday evening (clear or cloudy) and have a cookout (the Grillin' part). If the skies are clear, we stay until it is dark and then do some observing (the Gazin' part).

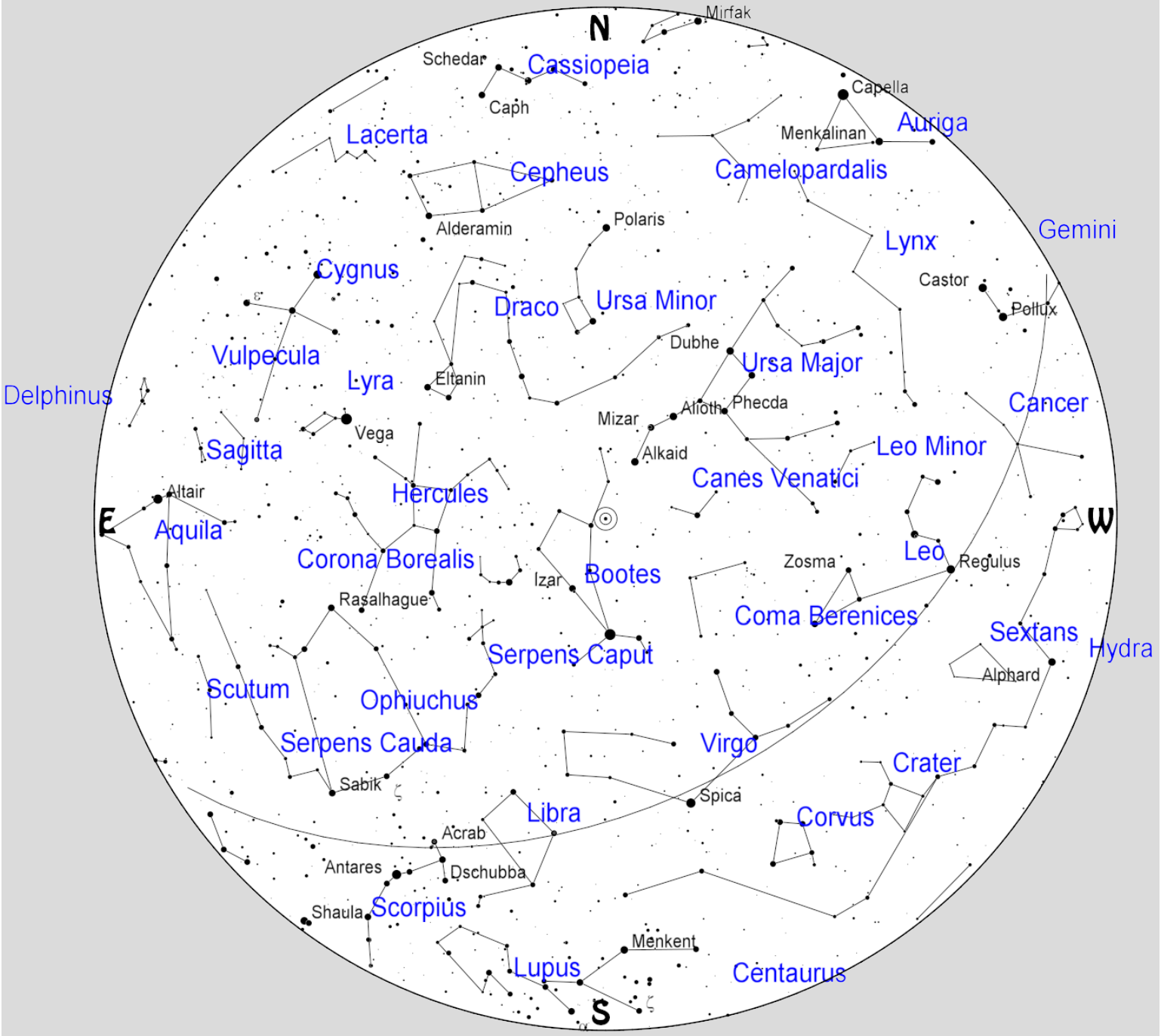
Generally, it is an outdoor/backyard event. TSA will provide hamburgers & hot dogs, buns, chips and soda. Please bring a dessert, side dish, main course, drinks, or whatever you would like to share. It is open to all TSA current members, their immediate family or a guest. We ask you to RSVP so we know how much food to purchase.

Vicki George is hosting June 22nd. Visit TSA Google Groups for more details.

TRI-STATE ASTRONOMERS
TristateAstronomers.org

June Sky Map

Early June 10:30 PM - Late June 9:30 PM



Our Friendly Skies

By Chris Kopco, WCPS Planetarium Teacher
and Andy Smetzer, Tristate Astronomers

THE JUNE SKY

With summer drawing near, you've got to go out pretty late in the evening to see the darkest of skies, but the wait will be worth it! Let's take a look at a few of the things you can find when you look up this month.

We begin this month by looking north to find the familiar shape of the Big Dipper. Though all of the stars here appear to be in the same general area of space, in reality only the five central stars are truly part of a cluster together in space known as the Ursa Major Moving Cluster. The star at the end of the cup, Duhbe, is further away from the Earth, and the star at the end of the handle, Alkaid, is over twice the distance from the Earth as the cluster. This means that these two stars are not moving through the Milky Way along with the stars of the cluster, so if you were to travel a hundred thousand years into the future, the five main stars would appear to be in about the same spot in relation to one another, but Duhbe and Alkaid would have moved far enough to make the Big Dipper unrecognizable.

Next we'll go back to the two stars on the outside of the cup and draw an imaginary line out through Duhbe about five times the distance between those two stars. This will take you to a star that is almost directly north, Polaris, the current North Star. You'll notice that Polaris is not the brightest star in the night sky, in fact it's far from it as it's only about the 50th brightest star in the skies of Earth. You also may have noticed that it is referred to above as the 'current North Star'. This is because the Earth wobbles on its axis as it moves through space and over long periods of time, this causes the north pole of the Earth to point at different spots in space. Over the next thirteen thousand years or so, the north pole of the Earth will slowly move to point at Vega, the brightest star in the constellation Lyra the Harp, making it the new North Star, with other, dimmer stars taking the mantle at times in between.

THE JUNE SOLAR SYSTEM

Evening Planets

MERCURY, now an evening planet, can be found low in the west/northwest at dusk in the constellation Taurus. Shining just above magnitude -1.0, Mercury sets only about an hour after the sun and before it gets completely dark at the beginning of June. Mercury moves quickly against the background stars, setting later each evening for the first half of June, moving into the constellation Gemini June 4th where it will be joined by a waxing crescent moon. Each evening you will see Mercury move closer to Mars, until it reaches conjunction with Mars on the 18th. From this point on Mercury will begin to set a little earlier each night, though it won't actually reach greatest eastern elongation until the 23rd, when it will be at its highest point above the horizon in the evening sky. Mercury moves into the constellation Cancer on the 24th, where is spends the rest of the month. By the end of the month Mercury sets just after 10:00 p.m. in the west/northwest, having dimmed significantly to magnitude 1.1.

MARS begins the month in the constellation Gemini, shining dimly for Mars at about magnitude 1.75. Mars sets just a little before 11:00 a.m. at the beginning of June and can be found with a waxing crescent moon on the 5th. Mars sets a little earlier each evening this month, moving into Cancer on the 28th, and will be difficult to spot by the end of the month, setting at dusk, and shining at almost its dimmest possible magnitude of 1.8.

JUPITER rises into the dusk just a little after 9:00 p.m. at the beginning of June, and will be in the sky for the rest of the night. Shining at magnitude -2.6 this month, Jupiter can be found in the constellation Ophiuchus, reaching opposition, or the point directly opposite the sun in the skies of Earth, on June 10th. Jupiter can be found with the waning gibbous moon on June 15th and 16th.

SATURN rises about 2 hours after Jupiter at the beginning of June, shining much dimmer at magnitude 0.3 in the constellation Sagittarius. Saturn rises earlier each evening throughout the month and will be up only about 15 minutes after sunset by the end of June, shining a little brighter at magnitude 0.1. Look for Saturn to the west of a waning gibbous moon on the 19th.

Morning Planets

NEPTUNE can be found rising in the east a little after 2:00 a.m. to start the month and closer to midnight by month's end. However, as always, Neptune is too distant to reflect enough sunlight back to our eyes to be seen without optical aid from Earth. A good star finder chart and a knowledge of where to look for Neptune can help you to spot this distant world with a good pair of binoculars or backyard telescope.

VENUS spends the entire month rising a little before 5:00 a.m. in the east/northeast, shining at magnitude -3.9. Venus begins the month of June in the constellation Aries with a thin, waning crescent moon, but continues its northward trek through the morning sky, entering the constellation Taurus on the 3rd.

URANUS begins the month rising right around 4:00 a.m. in the east in the constellation Aries. Uranus rises earlier each evening, rising into the eastern sky around 2:00 a.m. by the end of June. Uranus is most easily spotted with optical aid, but can be found with the naked eye under dark viewing conditions.

THE JUNE SUN AND MOON

On June 1st sunrise is at 5:45 a.m., while the sun sets at 8:32 p.m. for 14 hours and 47 minutes of daylight. By June 30th sunrise is at 5:46 a.m. with the sun setting later in the evening at 8:43 p.m. for 14 hours and 57 minutes of daylight, a 10 minute increase from the beginning of the month.

The Sun enters the constellation Gemini from Taurus June 21st. The change is caused by the Earth's revolution around the Sun. The Sun seems to line up with distant background stars from our point of view from Earth, so the sky changes by seasons and months.

The moon is new on June 3rd, at first quarter on the 10th, is full on the 17th and is at third quarter on June 25th. The full moon this month is known as the "Strawberry Moon".

SPECIAL EVENTS

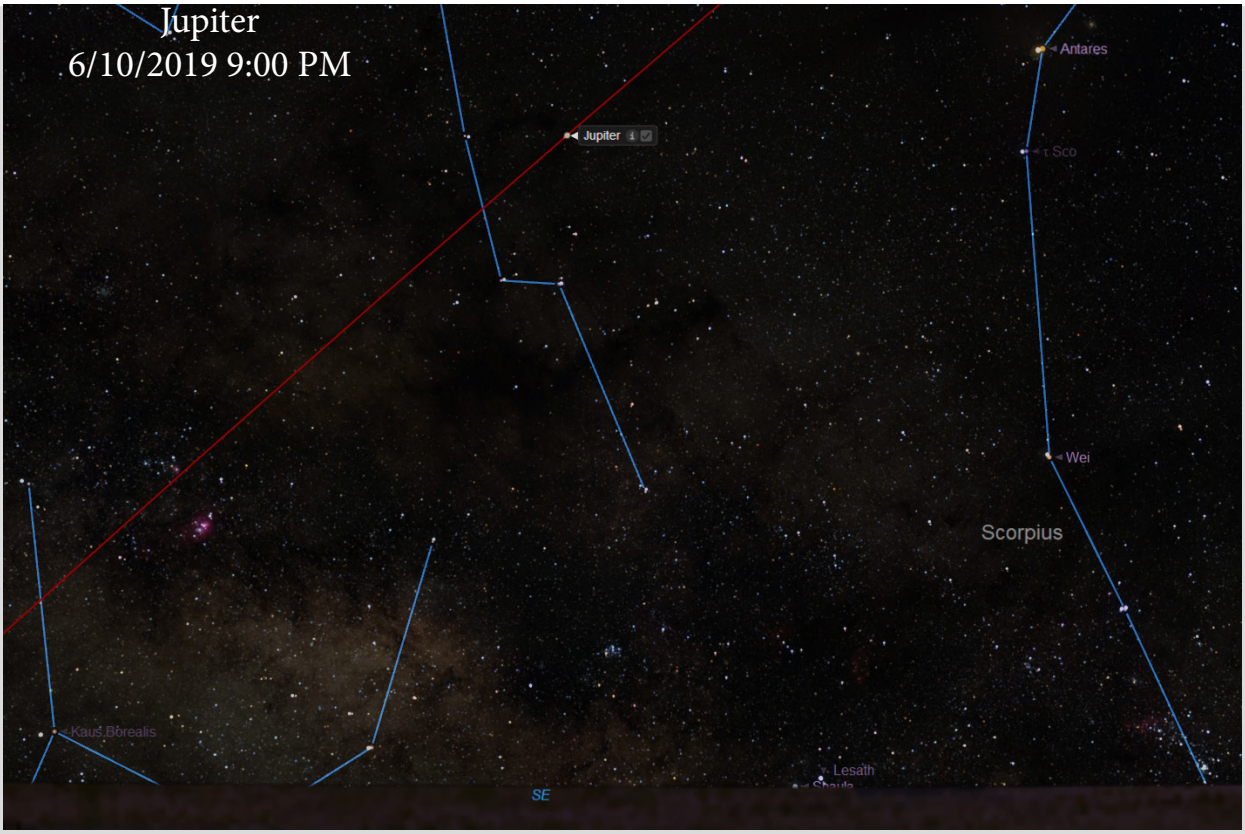
June is a relatively quiet month for astronomical events, except for the Summer Solstice, which occurs on June 21st. As the earth moves in its orbit around the sun, the seasons change due to the 23.5 degree tilt of the earth on its axis. Here in North America, the sun appears highest in the sky on the first day of summer due to the tilt of the northern hemisphere toward the sun. As the earth continues its journey around the sun, the northern hemisphere tilts less toward the sun, causing the days to shorten as we move toward the fall.

WILLIAM BRISH PLANETARIUM / TRISTATE ASTRONOMERS

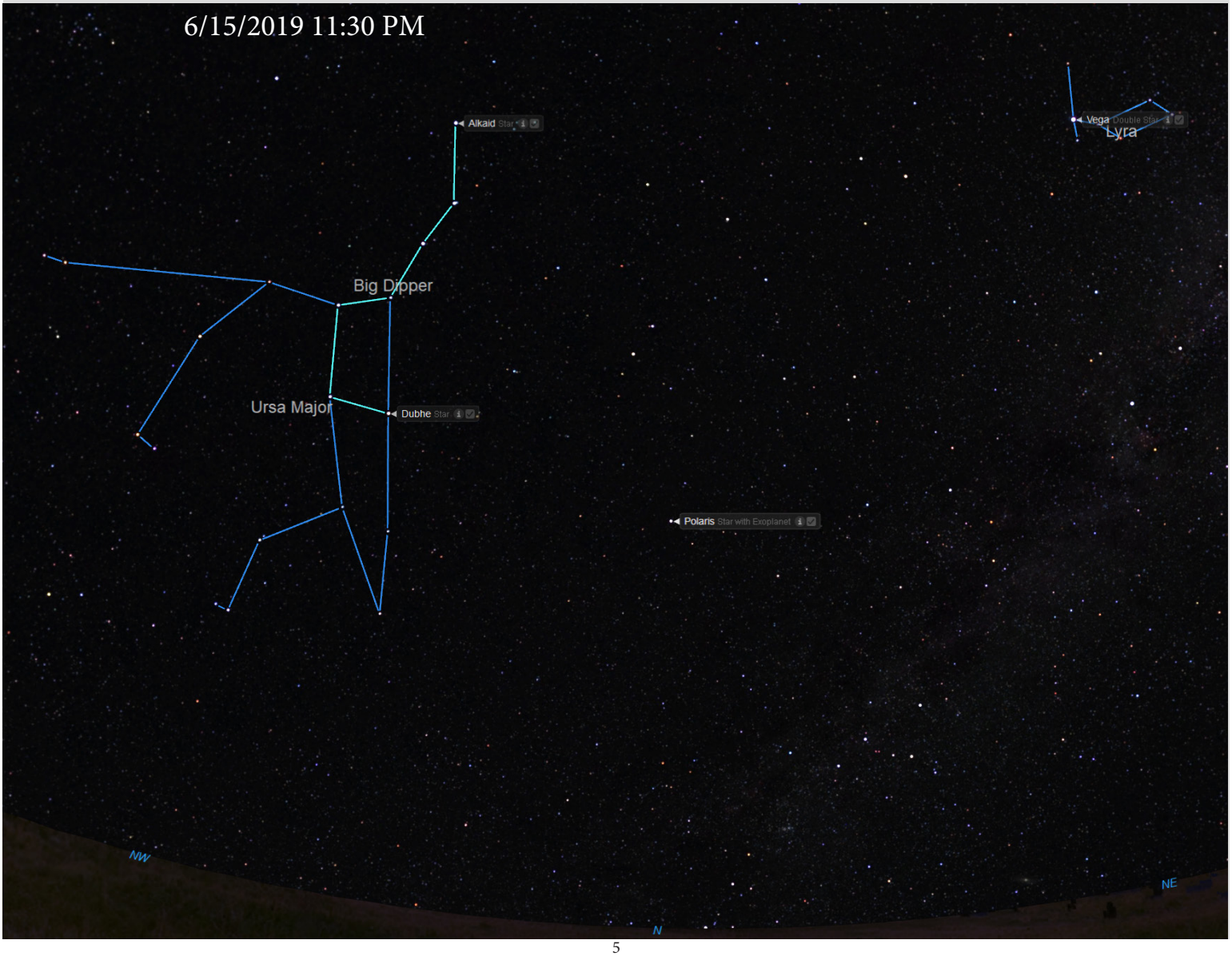
The William Brish Planetarium will hold a variety of shows throughout the day on June 25th. All shows also include a current night sky tour. For more information visit: www.wbplanetarium.weebly.com.

The TriState Astronomers will not meet at the planetarium again until September. The next meeting will be from 7:00 - 9:00 p.m. on Wednesday, September 18th. For more information visit www.tristateastronomers.org.

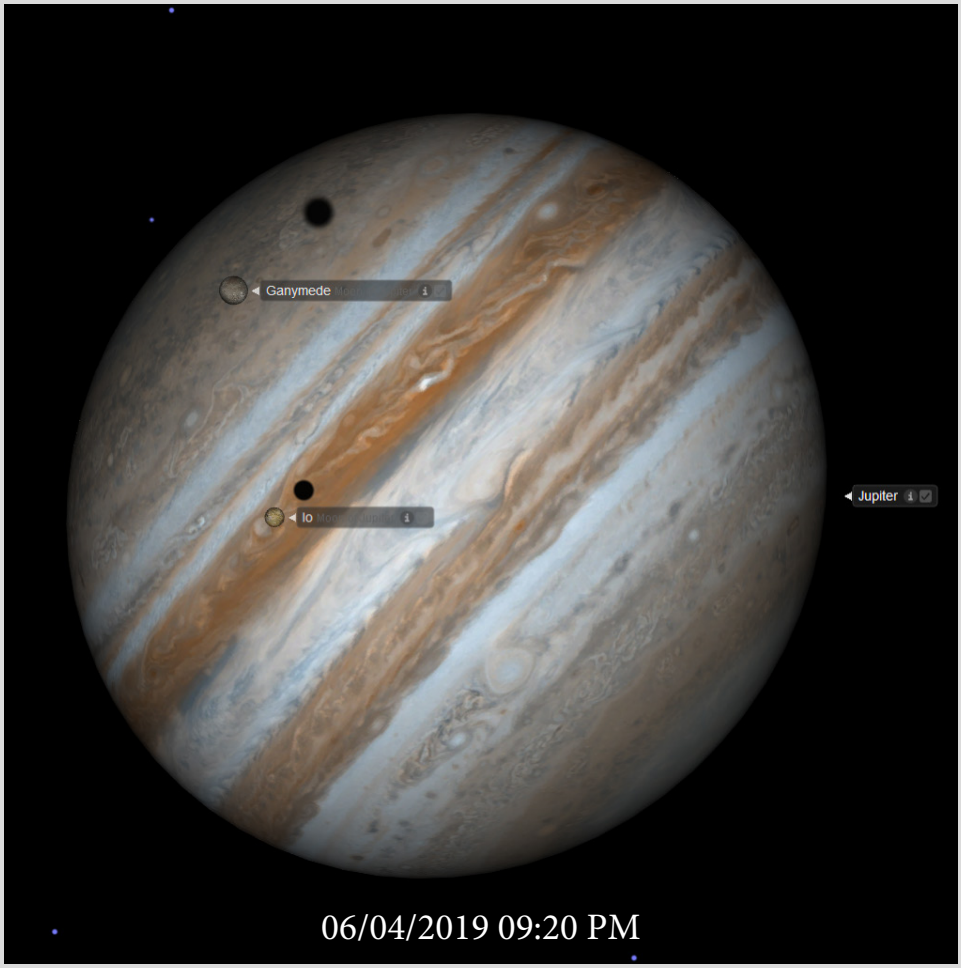
Jupiter
6/10/2019 9:00 PM

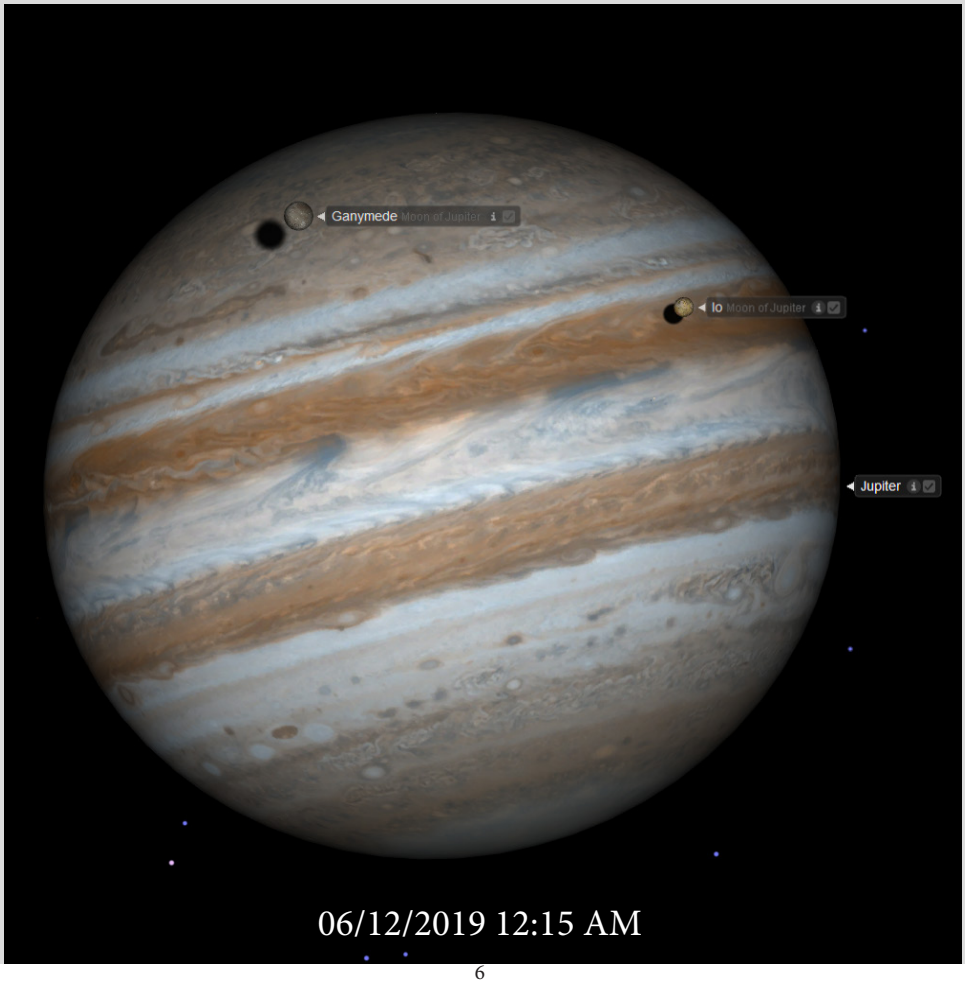


6/15/2019 11:30 PM



Jupiter Double Moon Shadows





Images from Starry Night Pro Plus 8.0

Boonesboro GreenFest
May 18, 2019

June Outreach

Ft. Frederick Dark Skies Program
Sat Jun 01, 8:00 PM - 11:00 PM
Fort Frederick State Park
Big Pool, MD

MASON-DIXON A.T. OUTDOOR FESTIVAL
Sat Jun 08, 10:00 AM - 4:00 PM
Red Run Park
Waynesboro, PA

Woodmont Lodge Ladies June Weekend
Sat Jun 08, 9:00 PM - 11:00 PM
11761 Woodmont Rd
Hancock, MD

Jupiter Shines in June

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 nightsky.jpl.nasa.org to find local clubs, events, and more!

Jupiter stakes its claim as the king of the planets in June, shining bright all night. Saturn trails behind Jupiter, and the Moon passes by both planets mid-month. Mercury puts on its best evening appearance in 2019 late in the month, outshining nearby Mars at sunset.

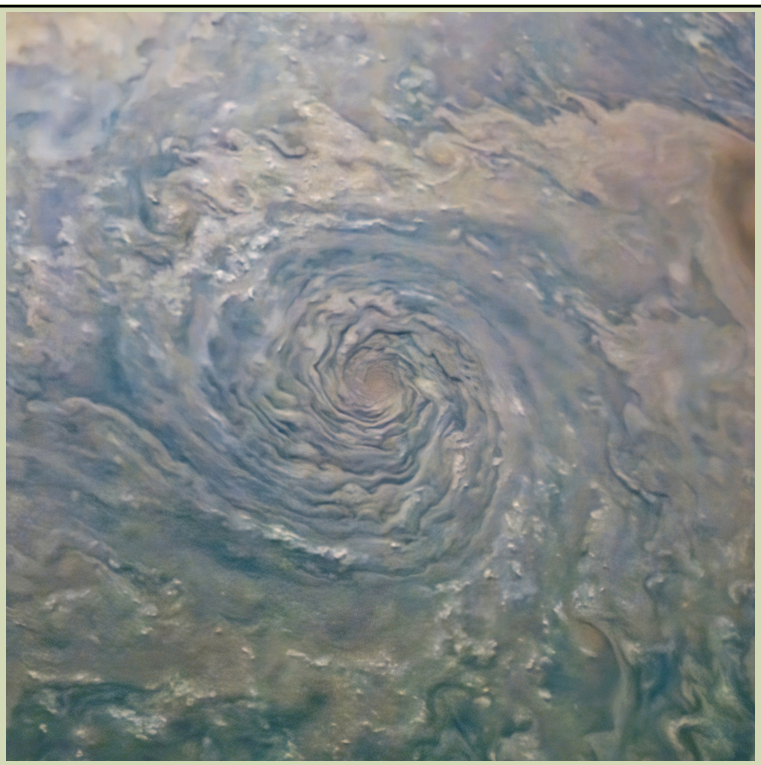
Jupiter is visible almost the entire evening this month. Earth will be between Jupiter and the Sun on June 10, meaning Jupiter is at opposition. On that date, Jupiter rises in the east as the Sun sets in the west, remaining visible the entire night. Jupiter will be one of the brightest objects in the night sky, shining at magnitude -2.6. Its four largest moons and cloud bands are easily spotted with even a small telescope.

What if your sky is cloudy or you don't have a telescope? See far more of Jupiter than we can observe from Earth with NASA's Juno mission! Juno has been orbiting Jupiter since 2016, swooping mere thousands of miles above its cloud tops in its extremely elliptical polar orbits, which take the probe over 5 million miles away at its furthest point! These extreme orbits minimize Juno's exposure to Jupiter's powerful radiation as it studies the gas giant's internal structure, especially its intense magnetic fields. Juno's hardy JunoCam instrument takes incredible photos of Jupiter's raging storms during its flybys. All of the images are available to the public, and citizen scientists are doing amazing things with them. You can too! Find out more at bit.ly/JunoCam

Saturn rises about two hours after Jupiter and is visible before midnight. The ringed planet rises earlier each evening as its own opposition approaches in July. The Moon appears near both gas giants mid-month. The Moon's tour begins on June 16 as it approaches Jupiter, and its visit ends on June 19 after swinging past Saturn.

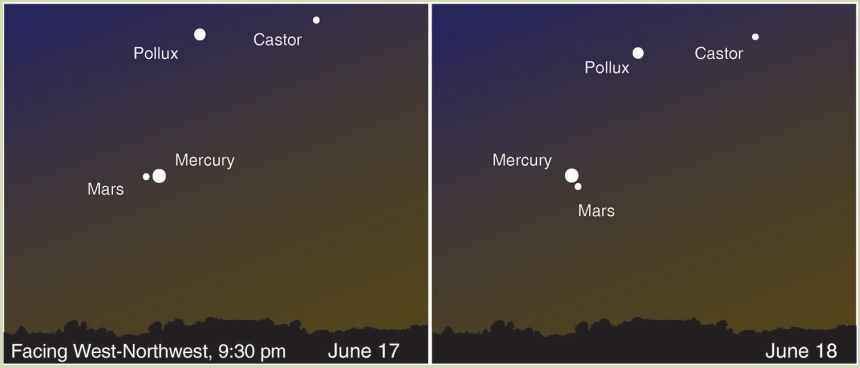
Mercury is back in evening skies and will be highest after sunset on June 23, just two days after the summer solstice! Spot it low in the western horizon, close to the much dimmer and redder Mars. This is your best chance this year to spot Mercury in the evening, and nearly your last chance to see Mars, too! The two smallest planets of our solar system pass close to each other the evenings of June 17-18, coming within just ¼ degree, or half the width of a full Moon, making for a potentially great landscape photo at twilight.

Discover more about NASA's current and future missions at nasa.gov



Caption: A giant storm in Jupiter's north polar region, captured by JunoCam on February 4, 2019. Image processing performed by citizen scientists Gerald Eichstädt and Seán Doran.

Source: bit.ly/JupiterSpiral



Caption: Mars and Mercury after sunset the evenings of June 17-18, 2019. Image created with assistance from Stellarium.

Hubble Celebrates its 29th Birthday with Unrivaled View of the Southern Crab Nebula

This incredible image of the hourglass-shaped Southern Crab Nebula was taken to mark the NASA/ESA Hubble Space Telescope's 29th anniversary in space. The nebula, created by a binary star system, is one of the many objects that Hubble has demystified throughout its productive life. This new image adds to our understanding of the nebula and demonstrates the telescope's continued capabilities.

More info:
https://www.spacetelescope.org/news/heic1907/

Image credit: NASA, ESA, and STScI

TRISTATE ASTRONOMERS
Observing in Maryland, Pennsylvania & West Virginia

The Observer is the monthly newsletter of the Tristate Astronomers, Inc. (TSA), a 501(c)(3) non-profit organization founded in 1985. The purpose of the TSA is to educate the public about the science of astronomy in Maryland, Pennsylvania and West Virginia. The group conducts educational outreach events for the public, as well as a monthly meeting on the 3rd Wednesday of each month from September through May and a variety of informal observing sessions.

TSA Officers

Chairperson .....Alicia Robertson
Vice Chairperson .....Chris Kopco
Secretary .....Chris Stitley
Treasurer ..... Robert Brenneman
Outreach.....Dan Kaminsky
Newsletter.....Mike Sager
Webmaster ..... Andy Smetzer

Contact Information

Tristate Astronomers, Inc.
823 Commonwealth Avenue
Hagerstown, MD 21740
www.tristateastronomers.org

Membership

Adults (≥18) $25
Youth (<18) $15
2nd Family Member.....$15
Other Family Members.....$5
New adult memberships are prorated to $15 between July – December. Cash, check and PayPal accepted.