

# ASTRONOMY NEWS

## Night Sky 2022 - June

Sunrise	Sunset	Mercury Rises	Venus Rises
1 <sup>st</sup> – 5:02am 10 <sup>th</sup> – 4:57am 20 <sup>th</sup> – 4:56am 30 <sup>th</sup> – 5:00am	1 <sup>st</sup> – 9:16pm 10 <sup>th</sup> – 9:24pm 20 <sup>th</sup> – 9:29pm 30 <sup>th</sup> – 9:29pm	5 <sup>th</sup> – 4:35am 10 <sup>th</sup> – 4:20am 20 <sup>th</sup> – 3:59am 30 <sup>th</sup> – 3:57am	1 <sup>st</sup> – 3:46am 10 <sup>th</sup> – 3:34am 20 <sup>th</sup> – 3:22am 30 <sup>th</sup> – 3:16am
Moon Rise	Moon Set	Moon Rise	Moon Set
1 <sup>st</sup> – 5:58am (NE) 2 <sup>nd</sup> – 6:46am (NE) 3 <sup>rd</sup> – 7:45am 4 <sup>th</sup> – 8:52am 5 <sup>th</sup> – 10:02am 6 <sup>th</sup> – 11:15am (ENE) 7 <sup>th</sup> – 12:29pm 8 <sup>th</sup> – 1:43pm 9 <sup>th</sup> – 3:00pm (E) 10 <sup>th</sup> – 4:21pm 11 <sup>th</sup> – 5:46pm (ESE) 12 <sup>th</sup> – 7:15pm 13 <sup>th</sup> – 8:46pm 14 <sup>th</sup> – 10:10pm (SE) 15 <sup>th</sup> – 11:18pm 17 <sup>th</sup> – 12:07am 18 <sup>th</sup> – 12:41am 19 <sup>th</sup> – 1:05am 20 <sup>th</sup> – 1:23am (ESE)	1 <sup>st</sup> – 11:42pm (NW) 3 <sup>rd</sup> – 12:27am (NW) 4 <sup>th</sup> – 1:02am 5 <sup>th</sup> – 1:28am 6 <sup>th</sup> – 1:49am 7 <sup>th</sup> – 2:05am (WNW) 8 <sup>th</sup> – 2:20am 9 <sup>th</sup> – 2:33am (W) 10 <sup>th</sup> – 2:47am 11 <sup>th</sup> – 3:03am (WSW) 12 <sup>th</sup> – 3:22am 13 <sup>th</sup> – 3:48am 14 <sup>th</sup> – 4:25am 15 <sup>th</sup> – 5:18am (SW) 16 <sup>th</sup> – 6:29am 17 <sup>th</sup> – 7:53am 18 <sup>th</sup> – 9:22am 19 <sup>th</sup> – 10:48am (WSW) 20 <sup>th</sup> – 12:10pm	21 <sup>st</sup> – 1:38am 22 <sup>nd</sup> – 1:51am (E) 23 <sup>rd</sup> – 2:05am 24 <sup>th</sup> – 2:19am (ENE) 25 <sup>th</sup> – 2:35am 26 <sup>th</sup> – 2:56am 27 <sup>th</sup> – 3:22am 28 <sup>th</sup> – 3:57am (NE) 29 <sup>th</sup> – 4:42am (NE) 30 <sup>th</sup> – 5:38am (NE) ----- All times in notes are set for <b>Somerton</b> unless stated	21 <sup>st</sup> – 1:27pm (W) 22 <sup>nd</sup> – 2:42pm 23 <sup>rd</sup> – 3:55pm 24 <sup>th</sup> – 5:08pm (WNW) 25 <sup>th</sup> – 6:20pm 26 <sup>th</sup> – 7:31pm 27 <sup>th</sup> – 8:38pm 28 <sup>th</sup> – 9:37pm (NW) 29 <sup>th</sup> – 10:25pm (NW) 30 <sup>th</sup> – 11:03pm ----- Moon Phases First Quarter – 7 <sup>th</sup> Full Moon – 14 <sup>th</sup> Last Quarter – 21 <sup>st</sup> New Moon – 29 <sup>th</sup>
A useful site: <a href="http://www.heavens-above.com">www.heavens-above.com</a>	A S Zielonka	E Mail: adrian1418 @btinternet.com	Tel: 01458 251750 or Mob: 07724 892764

A crew of four persons are gearing up to participate in NASA's next simulated mission to Phobos, one of Mars moons. Crew members will soon enter the Human Exploration Research Analog (HERA), at NASA's Johnson Space Center in Houston. Once inside HERA, they will live and work like astronauts for 45 days while "traveling" to the Martian moon. The crew are Robert Carlino, Alejandro Diaz, Brad Hensley and Jennifer Milczarski. Their mission starts on May 27<sup>th</sup>. They will "return" to Earth by stepping outside HERA on July 11<sup>th</sup>. (See below for further details).

The targeted launch date window of the Capstone – Cubesat Pathfinder Mission is now May 31<sup>st</sup> – June 22<sup>nd</sup>\*. CAPSTONE will validate new navigation technologies and verify dynamics in Gateway's planned orbit. It will launch aboard a Rocket Lab Electron rocket from New Zealand.

The Parker Solar probe is at its twelfth perihelion on the 1<sup>st</sup>. The Parker Solar probe was launched on the 12<sup>th</sup> August 2018.

There is a close conjunction of the asteroid Ceres (8.8 mag) and the Moon on the 1<sup>st</sup>. At 10:00pm Ceres is just  $\frac{1}{2}$  a degree to the upper right of the thin crescent Moon low in WNW. (For further information on this or others listed please see the “Asteroid” section in the website above).

On the 1<sup>st</sup> at 10:30pm the star Mabsuta (3 mag) in Gemini is 3 degrees to the left of the thin crescent Moon and  $\frac{3}{4}$  of a degree above.

The Moon is at apogee (406,192km) on the 2<sup>nd</sup> at 2:14am. At 11:00pm the star Pollux (1.1 mag) in Gemini is 5 degrees from the crescent Moon with the star Upsilon Geminorum (4 mag) midway between them.

On the 3<sup>rd</sup> at 11:00pm the Pleiades star cluster is 7 degrees to the left of the crescent Moon.

At 11:00pm on the 4<sup>th</sup> the Pleiades star cluster is  $6\frac{1}{2}$  degrees to the lower right of the crescent Moon.

From the 5<sup>th</sup> – 10<sup>th</sup> Ceres passes close to the star Mabsuta (3 mag) in Gemini. On the 8<sup>th</sup> at 10:00pm Ceres is just  $1\frac{3}{4}$  degrees to the upper right of Mabsuta.

On the 5<sup>th</sup> at midnight the star Eta Leonis (3.4 mag) is just 2 degrees to the upper left of the crescent Moon.

At midnight on the 6<sup>th</sup> the star Rho Leonis (3.8 mag) is  $4\frac{1}{2}$  degrees below the crescent Moon and  $\frac{1}{2}$  a degree to the right.

On the 7<sup>th</sup> at 10:30pm the star Sigma Leonis (4 mag) is  $2\frac{1}{2}$  degrees below the Moon and  $1\frac{1}{2}$  degrees to the right.

At midnight on the 8<sup>th</sup> the star Zaniah (3.8 mag) in Virgo is 2 degrees to the lower left of the Moon.

On the 9<sup>th</sup> at midnight the star Theta Virginis (4.3 mag) is  $\frac{3}{4}$  of a degree to the left of the Moon.

From the 10<sup>th</sup> – 14<sup>th</sup> Venus passes close to Uranus. On the 12<sup>th</sup> at 4:15am Uranus is  $1\frac{1}{2}$  degrees above Venus and less than  $\frac{1}{2}$  a degree to the left.

At midnight on the 10<sup>th</sup> the star Kappa Virginis (4.1 mag) is  $3\frac{1}{4}$  degrees to the left of the Moon and 2 degrees above.

On the 11<sup>th</sup> at 11:00pm the star Zubenelgenubi (2.7 mag) in Libra is just  $\frac{1}{2}$  a degree above the Moon.

At midnight on the 12<sup>th</sup> the star Dschubba (2.2 mag) in Scorpius is 2 degrees to the left of the Moon and  $\frac{1}{2}$  a degree below.

On the 13<sup>th</sup> at midnight the star Antares is 6 degrees to the left of the Moon. The Moon is also 6 degrees from the star Theta Ophiuchi (3.2 mag) and midway between the two.

At midnight on the 14<sup>th</sup> the star Alnasl (2.9 mag) in Sagittarius is 3 degrees below the Moon.

The Moon is at perigee (357,432km) on the 15<sup>th</sup> at 12:24am. At midnight the star Nunki (2 mag) in Sagittarius is 4 degrees to the upper right of the Moon.

Mercury reaches maximum western elongation on the 16<sup>th</sup>.

On the 18<sup>th</sup> at 4:00am the star numbered 106039 in the Hipparcus Catalogue ID (4.5 mag) in Capricornus is  $\frac{1}{2}$  a degree below the Moon in the south. Saturn is 9 degrees above left of the Moon.

At 4:00am on the 19<sup>th</sup> Saturn is  $8\frac{1}{2}$  degrees to the right of the Moon and  $4\frac{1}{2}$  degrees above.

On the 20<sup>th</sup> at 4:00am the star Psi Aquarii (4.4 mag) is just above left of the Moon.

At 4:00am on the 21<sup>st</sup> Jupiter is 7½ degrees to the upper left of the Moon. Neptune is 6 degrees to the upper right of the Moon.

On the 22<sup>nd</sup> at 4:00am Jupiter is 7 degrees above right of the Moon. Mars is 8 degrees to the left of the crescent Moon and ½ a degree above.

The second Mercury flyby of the Bepi Colombo mission to the planet occurs on the 23<sup>rd</sup>. Mercury's orbits insertion will be in December 2025.

At 4:00am on the 23<sup>rd</sup> Mars is 4½ degrees to the upper right of the crescent Moon.

An occultation of the planet Uranus by the Moon occurs on the 24<sup>th</sup>. This will only be visible from North and West Australia, Indonesia and Hawaii. At 4:00am Uranus is 9½ degrees to the left of the crescent Moon and 1¾ degrees below.

At 4:00am on the 25<sup>th</sup> Uranus is 3 degrees to the upper right of the crescent Moon. The Pleiades star cluster is 11 degrees to the left of the Moon. Venus is 6 degrees below the Pleiades.

On the 26<sup>th</sup> at 4:00am the Pleiades star cluster is 5 degrees above the crescent Moon. Venus is 2¼ degrees below the Moon and ½ a degree to the left.

At 4:15am on the 27<sup>th</sup> Mercury is 3¼ degrees below a thin crescent Moon low in the ENE.

On the 28<sup>th</sup> at 4:30am a very thin crescent Moon may be seen low in the north east. It will be 3 degrees above the horizon at 51.5 degrees azimuth.

The Moon is at apogee (406,580km) on the 29<sup>th</sup> at 7:09am.

At 10:15pm on the 30<sup>th</sup> a very thin crescent Moon will be seen low in the WNW. The Moon will be 5 degrees above the horizon at 303.5 degrees azimuth. The star Pollux (1.1 mag) is 5½ degrees to the right of the Moon and ½ a degree above.

\*= Dates and times are subject to change.

**News:** NASA's Perseverance rover has reached a big moment in its mission on Mars. On the 17<sup>th</sup> May the six-wheeled robot will begin the climb up an ancient delta feature in the crater where it landed. It will roll uphill, stopping every so often to examine rocks that look to have a best chance of retaining evidence of past life on the planet. On its way back down, Perseverance will collect some of these rocks, placing the samples at the base of the delta to be retrieved by later missions. The goal is to bring this material back to Earth in the 2030's for detailed inspection.

Launched on September 8<sup>th</sup> 2016, atop an Atlas-V rocket from Cape Canaveral, OSIRIS-REX reached Bennu in December 2018, and collected samples from the asteroid in October 2020. Now headed back to Earth aboard Osiris, the sample capsule will re-enter Earth's atmosphere on September 24<sup>th</sup> 2023, over the Air force's Utah Test and Training Range. Once this primary mission of NASA's OSIRIS-REX is complete, the spacecraft will head toward a new destination: near-Earth asteroid Apophis.

OSIRIS-REX isn't the only mission heading to a second target. The Japanese Hayabusa 2 mission will head to the asteroids 2001 AV43 in 2029 and 1998 KY26 in 2031, respectively, and Chang'e 5 orbiter headed to a new orbit after grabbing samples from the Moon. It will perform solar observations and possibly search for asteroids at the Sun-Earth Lagrange points.

**NASA's Simulated Mission:**

**Robert Carlino**, from Naples, is an aerospace and robotics engineer at NASA's Ames Research Center in Silicon Valley, California. He works for the Astrobeefreeflying project and for the Advanced Composite Solar Sail System Cubesat project.

**Alejandro R Diaz**, is a peruvian-American aerospace engineer from Chino Hills, California. His work focuses on supporting human space programs with an emphasis on crew systems, EVA and spacesuits, as well as landing and recovery systems.

**Brad Hensley**, from Longmont, Colorado, is a systems engineer working in the aerospace industry. He specializes in designing and maintaining deployable spacecraft structures like antennas and solar arrays, made from flexible lightweight materials.

**Jennifer Milczarski**, a native of Detroit, Michigan, works as a certified registered nurse anesthetist (CRNA), and owns two businesses. Her first company provides anesthesia services and her second is a ketamine infusion and wellness clinic.

**Facts:** There are three types of twilight: Civil twilight, Nautical twilight and Astronomical twilight. When the Sun is at sunrise or sunset, down to 6 degrees below the horizon its Civil twilight. From 6 degrees below down to 12 degrees below its Nautical twilight. From 12 degrees below down to 18 degrees below its Astronomical twilight. When the Sun is below 18 degrees as it is through the months of Winter you won't see our satellites crossing the heavens, unlike the Summer nights when you go out to view, and within a few minutes you could see 3 or 4 and if you get the time right as I did the other night – the ISS was directly overhead.

**Extra...** An interesting video (only 49 seconds long) of a "Martian eclipse: Phobos crosses the Sun" on Youtube is very much worth seeing. Note the sunspot activity.

I hope some of you managed to see the Lunar eclipse during the early morning of May 16<sup>th</sup>.