Skywatchers

Newsletter of the China Lake Astronomical Society

M A Y 0 6 , 2 0 2 4 C L A S M E E T I N G 7 : 3 0

INSIDE THIS ISSUE:

Monday, May 6, 2024 7:00 PM

May Meeting & Program

Refreshments: 7:00 PM

Announcements : 7:30

Program: 7:45

Program

Solar Eclipse Images and Stories

CLAS members will share their experiences and images from the April total solar eclipse. Several members traveled to Texas where some had great views, others were blocked by clouds. Some members viewed the eclipse from Ridgecrest, where it reached 50%.

Come and see and hear what we witnessed!

Location

Maturango Museum

Meetings and programs are open to the public, and are held at Maturango Museum on the first Monday of every month (or the following Monday for holidays).

Long Trips to Space Linked to Possible Brain Damage

Five space travelers had elevated levels of proteins in the blood often seen in people with head trauma and neurodegenerative diseases.

(Inside Science) -- Over the past several years, scientists have published research suggesting that people's brains change after spending longer than a few months in space . These studies started because astronauts experienced issues like vision problems and swollen optic nerves upon returning to Earth after long missions. Researchers are now wondering whether these extended trips to space damage the brain.

In a new study of five male cosmonauts (Russian astronauts), researchers looked at levels of different proteins in the blood that are often also seen in people with some sort of head trauma or brain disease. They found that on average, the cosmonauts had higher levels of some of the proteins in the three weeks following the mission than before. Dr. Donna Roberts, a neuroradiologist at the Medical University of South Carolina in Charleston who did not contribute to the new paper, said that more studies need to be done to determine if these changes are clinically significant, but that the new paper is "an example of the type of tests we need to start doing more of" to better understand the effects of the brain's changes during long-duration spaceflight.

The effects of long-term space travel on humans

For over twenty years, humans have been visiting the International Space Station, which orbits Earth more than 200 miles above the planet. A typical trip lasts about six months. The space station is in free fall around Earth, so people on the space station experience a state of near weightlessness. Such "microgravity" is thought to be the main cause of a number of changes the human body can experience while in spaceflight, including the loss of muscles and bone density.

In the last couple of years, brain imaging has also revealed a loss in volume of grey matter, which contains the cell bodies of neurons, and an increased volume of cerebrospinal fluid. Roberts, who uses imaging to study the effect of spaceflight on the brain, has published research showing that in some people who have had long missions on the ISS, their brain has moved up in their head towards the top of their skull, and cerebrospinal fluid occupies more space below and in the center of the brain. But researchers don't know what these brain changes might mean for people's health and cognition. Dr. Peter zu Eulenburg, a co-first author of the new study, published online Oct. 11 in *JAMA Neurology*, said the previous studies raised questions: "Is there any damage to the brain? Is this really harmful for the cosmonauts?"

Looking at blood for signs of brain damage

To look for evidence of brain injuries, zu Eulenburg and his colleagues measured the levels of five different proteins in the blood of five male cosmonauts both before and after approximately six-month trips to the space station. These proteins are biomarkers that "can tell us about the status of the brain without opening up the brain," said Keisuke Kawata, a neuroscientist at Indiana University Bloomington .

Kawata, who studies repetitive head impacts and did not contribute to the study, said that the best fluid for studying biomarkers is cerebrospinal fluid in the brain and spinal cord, but accessing it requires an invasive spinal tap. Drawing blood is much easier, and blood "is the second-best biological fluid to test the brain health," he said. The biomarkers in the study can be used "to indirectly evaluate the extent of damage" due to neurodegeneration or a traumatic injury, said zu Eulenburg, who is a neurologist and professor of neuroimaging at the German Center for Vertigo and Balance Disorders. Neurofilament light chain, for example, is a structural protein that maintains neurons' axons, which transmit signals to other neurons. In a healthy person, "you shouldn't be detecting much of those structural proteins in the blood," Kawata said. But if someone has a neurodegenerative condition, the proteins dislodge from the neurons and can get into the bloodstream.

"very surprising," and the results "verified brain injury as a consequence to long-duration exposure to microgravity." "This is obviously a pilot study, but the data quality and the analytics are so robust that I have no doubt in the overall effect," he said. "This is obviously a pilot study, but the data quality and the analytics are so robust that I have no doubt in the overall effect," he said. Both Roberts and Kawata would like future studies to measure the biomarkers for longer than three weeks after astronauts return, as well as while they are on the space station, which would help determine if the elevated levels are due to time spent in microgravity, rather than the change in gravity upon return, or the intense force experienced during landing. Roberts said understanding the cause of the elevated biomarkers would help space agencies figure out which sorts of measures would best counteract the effects. zu Eulenburg thinks time spent in microgravity is the most likely cause, since imaging studies have shown that changes in the brain don't occur for people on shorter trips, so the elevated levels might start while astronauts are still in space.

Interpreting the results

The researchers measured five proteins 20 days before launch and calculated the average level for each protein across the five cosmonauts. They then compared this to the average level one day, one week, and 20 to 25 days after the cosmonauts returned to Earth. Two of the proteins had elevated levels both one day and one week after the missions. These levels dropped over the next two weeks, but remained above the cosmonauts' baseline level from before the missions. A third protein wasn't significantly elevated in the first week after returning and had dropped below the baseline after three weeks, so it wasn't indicative of potential brain damage. For the final two proteins, the researchers typically look at the ratio of one to the other. The ratio dropped after the cosmonauts returned, a trend that is sometimes seen in people with a neurodegenerative condition. zu Eulenburg said that the fact that some levels remained elevated for the entire three weeks was

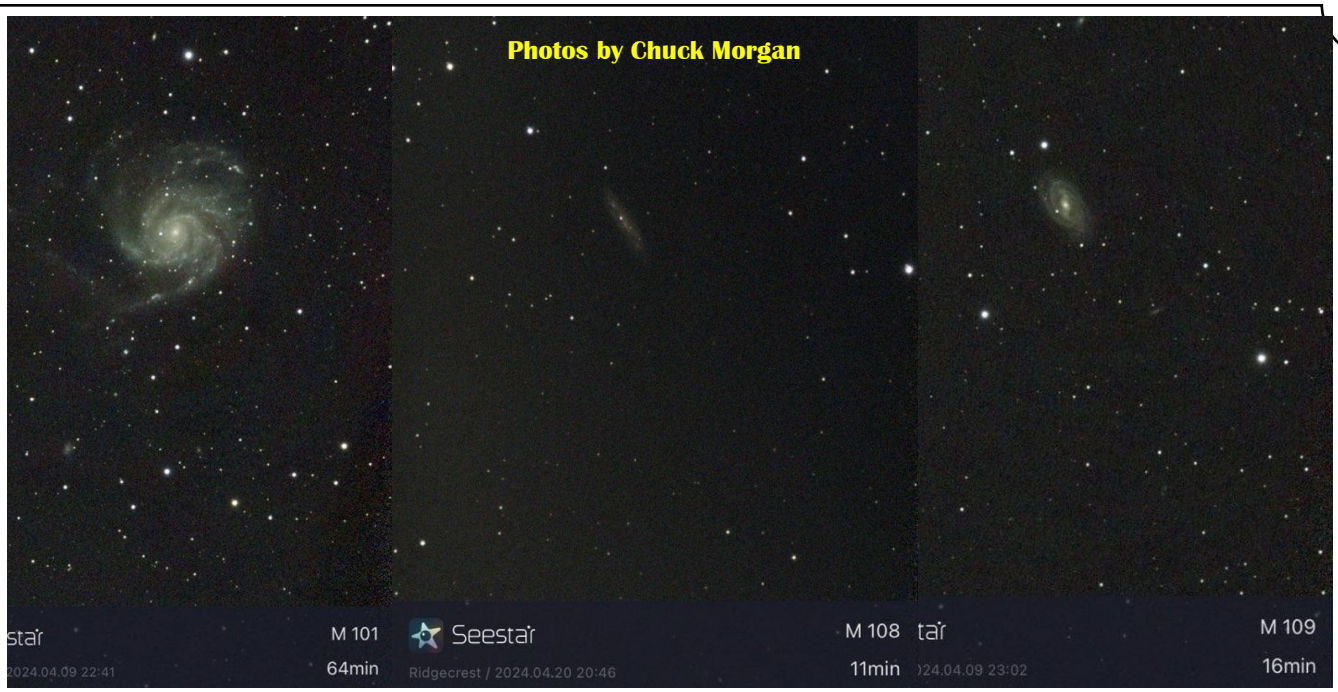
Kawata said it shouldn't be a big problem if biomarkers are only elevated for a couple of weeks in total. But zu Eulenburg said via email that three weeks of elevated levels are a sign of a "substantial" reparatory process. And other studies have shown that changes in the brain and cognitive effects last for at least several months after spending months in space, suggesting that elevated biomarkers could last longer than a couple of weeks. "I would feel very cautious about doing a one-year mission aboard the [space station] without sufficient countermeasures in place," said zu Eulenburg. Roberts said she feels confident that science will be able to find ways to protect astronauts from adverse effects. "Ultimately our goal is to become a multiplanetary species… but we have to be smart about it along the way."

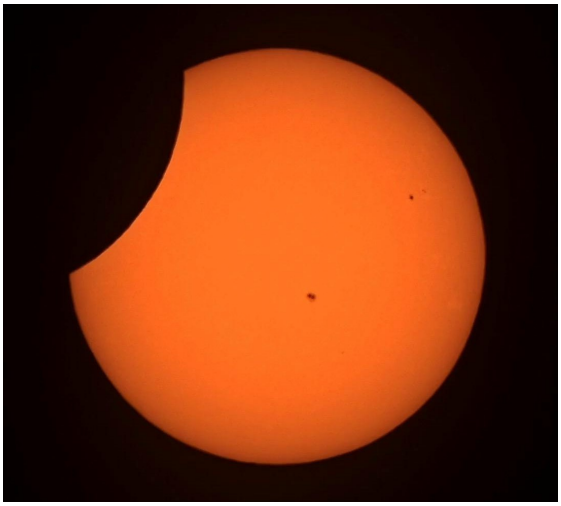
Source: Long Trips to Space Linked to Possible Brain Damage | Inside Science


Photos by Ralph Paonessa
Goldthwaite, Texas


Photo by Keith Weisz
Ouachita National Forest in Arkansas

Photos by Chuck Morgan





Photos by Debbie Pio
Maturano Museum

Photos by Chuck Morgan
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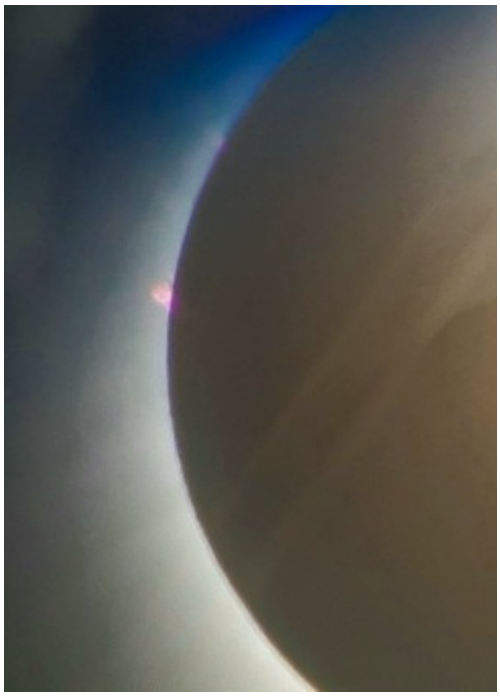


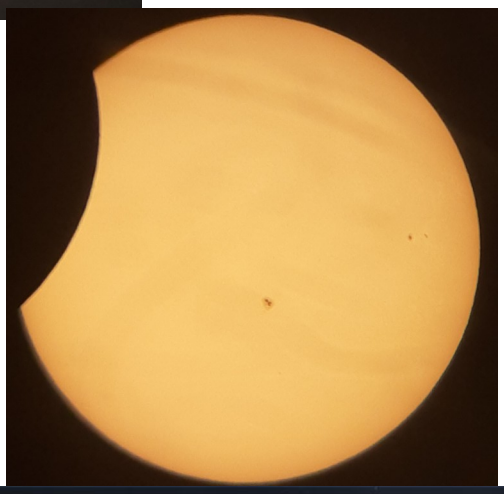
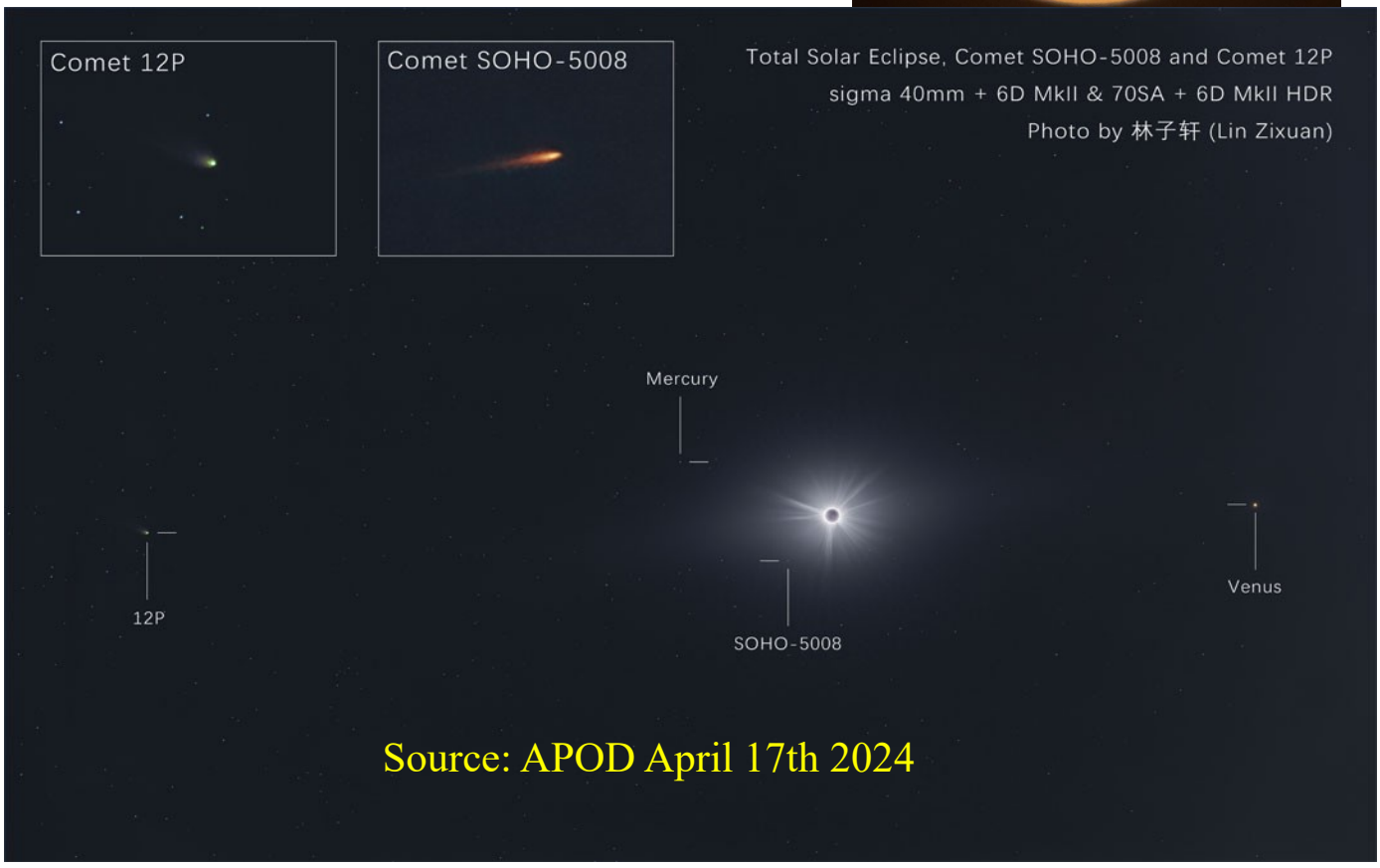


Photo by Ted Hodgkinson
Texarkana Texas/Arkansas

Had substantial difficulties with clouds and wind but was able to get a few interesting pics.



Source: APOD April 17th 2024

May DAILY CELESTIAL CALENDAR

1	Last Quarter Moon occurs at 4:27 A.M. PST
3	The Moon passes 0.8 deg south of Saturn, 4 P.M. PST
3	Pluto is stationary, 8 P.M. PST
4	The Moon passes 0.3 deg south of Neptune, 12:00 P.M. PST
4	The Moon passes 0.2 deg north of Mars, 7 P.M. PST.
5	Eta Aquarid meteor shower peaks
5	The Moon is at perigee (225,659 miles from Earth), 3:04 P.M. PST
6	The Moon passes 4 deg north of Mercury, 1 A.M PST
7	New Moon occurs at 8:22 P.M. PST
8	Mars is at Perihelion (128.4 million miles from the Sun), 4 A.M. PST
9	Mercury is at greatest western elongation (26 deg), 3 P.M. PST
13	Uranus is in conjunction with the Sun, 2 A.M. PST
15	First Quarter Moon occurs at 4:48 A.M. PST
16	The Moon passes 1.1 deg north of Asteroid Juno 6 A.M. PST
16	Dwarf planet Ceres is stationary, 4 P.M. PST
17	The Moon is at apogee (251,432 miles from Earth), 11:59 A.M. PST
18	Jupiter is in conjunction with the Sun, 12:00 P.M. PST
19	Asteroid Pallas is at opposition, 8 A.M. PST
23	Full Moon occurs at 6:53 A.M. PST
23	The Moon passes 0.4 deg north of Antares 8 P.M. PST
26	The Moon passes 0.9 deg south of dwarf planet Ceres, 10 P.M. PST
30	Last Quarter Moon occurs at 10:13 A.M. PST
31	The Moon passes 0.4 deg south of Saturn, 1:00 A.M. PST
31	The Moon passes 0.02 deg south of Neptune 8 P.M. PST

China Lake Astronomical Society

Membership or Renewal 2024

Name:_____

Address:_____

City, State, Zip:_____

Phone:_____Email:_____

Yearly Membership $ 25 (*due in January*) Family $ 40 Youth 18 & under $ 10.
Checks or Money Orders accepted _____

Contact Roger Brower 760-446-0454 (email brower@iwvisp.com)

Make Checks or Money Orders Payable to China Lake Astronomical Society.(CLAS)

Roger Brower, Treasurer
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INFORMATION:

Please visit us at our website ChinaLakeAstro.org.

For more information, contact the China Lake Astronomical Society at 760-446-0454 or 760-384-8666.

Roger Brower

Have you heard about ***Comet C/2023 A3 (Tsuchinshan-ATLAS) yet?*** Comet observers are all hoping for big things from comet C/2023 A3 (Tsuchinshan–ATLAS) in autumn 2024. When it was discovered, it was hailed as a potential 'comet of the century' and calculations suggested it might become as bright as mag. -4! It's now thought that at best A3 will reach mag. 0.4, a lot fainter but still much brighter than the last really bright comet, C/2020 F3 (NEOWISE), which delighted sky-watchers in summer 2020.

The Evening Sky Map

FREE* EACH MONTH FOR YOU TO EXPLORE, LEARN & ENJOY THE NIGHT SKY

NORTHERN HEMISPHERE
MAY 2024

Sky Calendar – May 2024

1 **Last Quarter Moon** at 11:27 UT.

4 **Moon near Saturn** at 0h UT (morning sky). Mag. 1.2.

4 **Moon, Mars and Neptune** within circle 4.1° diameter at 19h UT (44° from Sun, morning sky). Mags. 1.1 and 7.9.

5 **Eta Aquarid meteor shower peaks.** Most active for 7 days around this date. Associated with Comet Halley. Very fast, bright meteors, up to 40 per hour. Best seen from the tropics and southern hemisphere a few hours before dawn.

5 **Moon near Mars** at 3h UT (morning sky). Mag. 1.1. Occultation visible from Madagascar.

5 **Moon at perigee** (closest to Earth) at 22:08 UT (distance 363,163km; angular size 32.9').

6 **Moon near Mercury** at 6h UT (26° from Sun, morning sky). Mag. 0.7.

8 **New Moon** at 3:23 UT. Start of lunation 1254.

9 **Moon near the Pleiades** at 1h UT (evening sky).

9 **Mercury at greatest elongation** west at 21h UT (26° from Sun, morning sky). Mag. 0.5.

14 **Moon near Beehive cluster** M44 at 2h UT (evening sky).

15 **First Quarter Moon** at 11:48 UT.

15 **Moon near Regulus** at 23h UT (evening sky).

17 **Moon at apogee** (farthest from Earth) at 19h UT (distance 404,640km; angular size 29.5').

18 **Jupiter at conjunction** with the Sun at 19h UT. The largest planet passes into the morning sky.

18 **Asteroid 2 Pallas** at opposition at 23h UT. Mag. 9.0.

20 **Moon near Spica** at 12h UT (evening sky).

23 **Full Moon** at 13:55 UT.

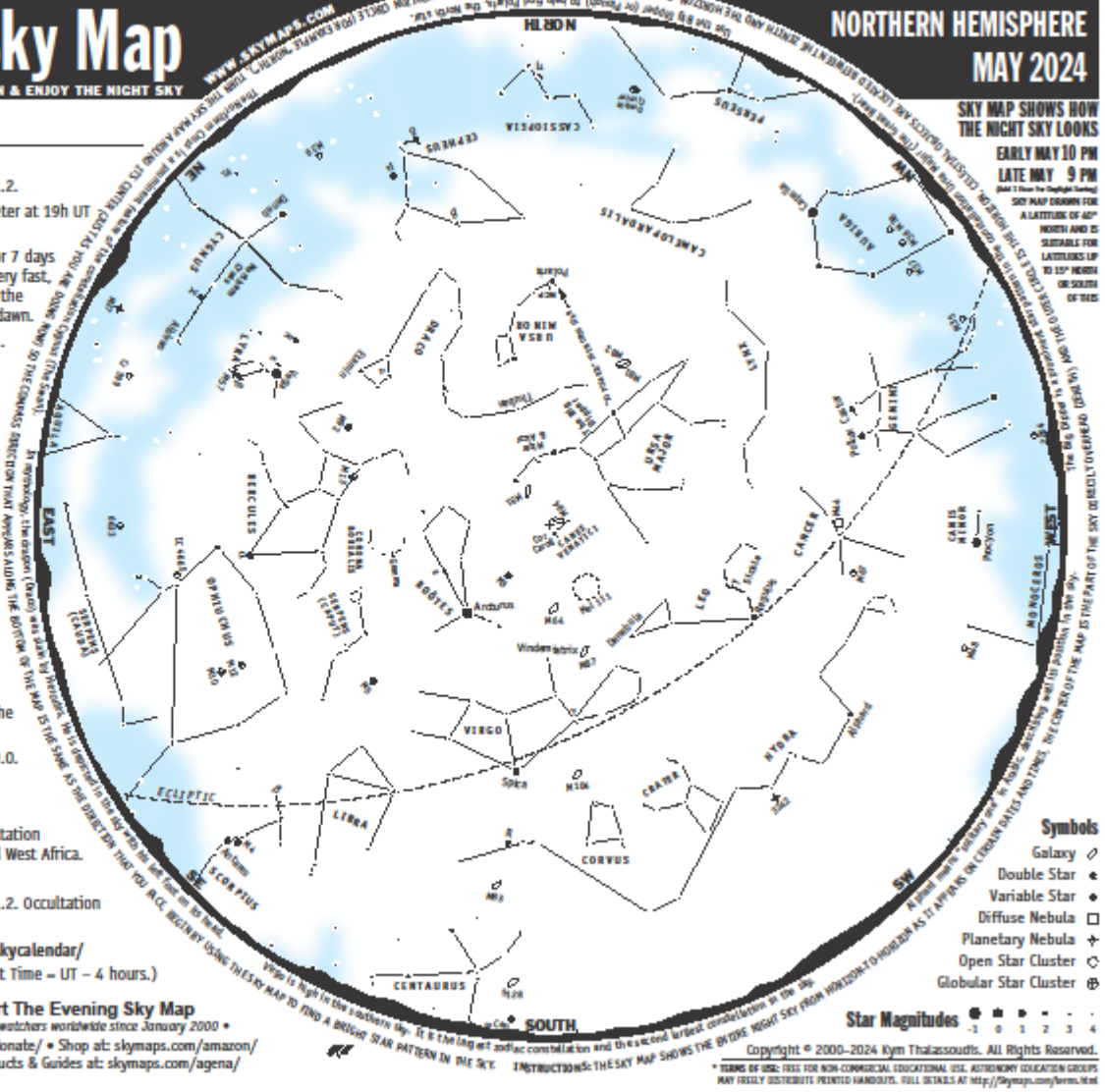
24 **Moon near Antares** at 4h UT (morning sky). Occultation visible from SE USA, Caribbean, Central America, and West Africa.

30 **Last Quarter Moon** at 17:12 UT.

31 **Moon near Saturn** at 9h UT (morning sky). Mag. 1.2. Occultation visible from southern South America.

More sky events and links at http://Skymaps.com/skycalendar/

All times in Universal Time (UT). (USA Eastern Daylight Time = UT – 4 hours.)



Symbols

Galaxy
Double Star
Variable Star
Diffuse Nebula
Planetary Nebula
Open Star Cluster
Globular Star Cluster

Star Magnitudes -1 0 1 2 3 4

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS
EARLY MAY 10 PM
LATE MAY 9 PM

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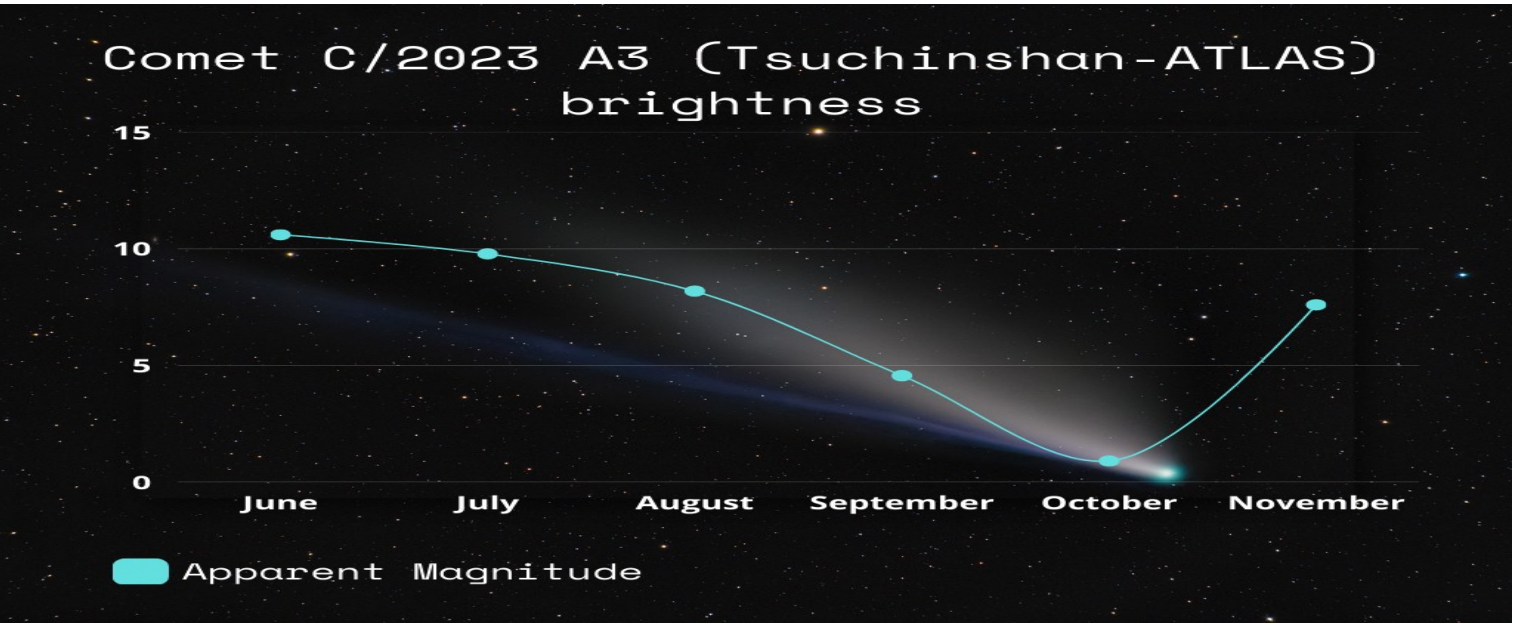


About the Celestial Objects

Listed on this page are several of the brighter, more interesting celestial objects visible in the evening sky this month (refer to the monthly sky map). The objects are grouped into three categories. Those that can be easily seen with the naked eye (that is, without optical aid), those easily seen with binoculars, and those requiring a telescope to be appreciated. **Note, all of the objects (except single stars) will appear more impressive when viewed through a telescope or very large binoculars.** They are grouped in this way to highlight objects that can be seen using the optical equipment that may be available to the star gazer.

Tips for Observing the Night Sky

When observing the night sky, and in particular deep-sky objects such as star clusters, nebulae, and galaxies, it's always best to observe from a dark location. Avoid direct light from street lights and other sources. If possible observe from a dark location away from the light pollution that surrounds many of today's large cities.

You will see more stars after your eyes adapt to the darkness—usually about 10 to 20 minutes after you go outside. Also, if you need to use a torch to view the sky map, cover the light bulb with red cellophane. This will preserve your dark vision.

Finally, even though the Moon is one of the most stunning objects to view through a telescope, its light is so bright that it brightens the sky and makes many of the fainter objects very difficult to see. So try to observe the evening sky on moonless nights around either New Moon or Last Quarter.

Astronomical Glossary

Conjunction – An alignment of two celestial bodies such that they present the least angular separation as viewed from Earth.

Constellation – A defined area of the sky containing a star pattern.

Diffuse Nebula – A cloud of gas illuminated by nearby stars.

Double Star – Two stars that appear close to each other in the sky; either linked by gravity so that they orbit each other (binary star) or lying at different distances from Earth (optical double). Apparent separation of stars is given in seconds of arc (").

Ecliptic – The path of the Sun's center on the celestial sphere as seen from Earth.

Elongation – The angular separation of two celestial bodies. For Mercury and Venus the greatest elongation occurs when they are at their most angular distance from the Sun as viewed from Earth.

Galaxy – A mass of up to several billion stars held together by gravity.

Globular Star Cluster – A ball-shaped group of several thousand old stars.

Light Year (ly) – The distance a beam of light travels at 300,000 km/sec in one year.

Magnitude – The brightness of a celestial object as it appears in the sky.

Open Star Cluster – A group of tens or hundreds of relatively young stars.

Opposition – When a celestial body is opposite the Sun in the sky.

Planetary Nebula – The remnants of a shell of gas blown off by a star.

Universal Time (UT) – A time system used by astronomers. Also known as Greenwich Mean Time. USA Eastern Standard Time (for example, New York) is 5 hours behind UT.

Variable Star – A star that changes brightness over a period of time.

CELESTIAL OBJECTS

NORTHERN HEMISPHERE MAY 2024

Sky maps

Easily Seen with the Naked Eye

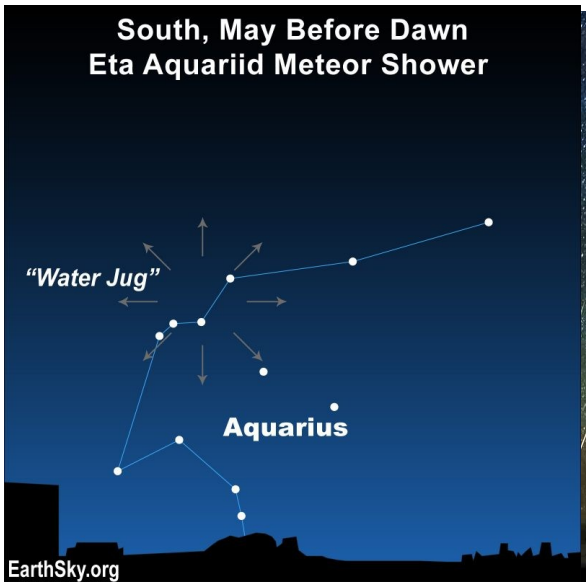
Capella	Aur	✦	The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
Arcturus	Boo	✦	Orange, giant K star. Name means "bear watcher". Dist=36.7 ly.
Procyon	CMi	✦	Greek name meaning "before the dog" - rises before Sirius (northern latitudes). Dist=11.4 ly.
δ Cephei	Cep	✦	Cepheid prototype. Mag varies between 3.5 & 4.4 over 5.366 days. Mag 6 companion.
Deneb	Cyg	✦	Brightest star in Cygnus. One of the greatest known supergiants. Dist=1,400±200 ly.
Castor	Gem	✦	Multiple star system with 6 components. 3 stars visible in telescope. Dist=52 ly.
Pollux	Gem	✦	With Castor, the twin sons of Leda in classical mythology. Dist=34 ly.
α Herculis	Her	✦	Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion.
Regulus	Leo	✦	Brightest star in Leo. A blue-white star with at least 1 companion. Dist=77 ly.
Vega	Lyr	✦	The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
Antares	Sco	✦	Red, supergiant star. Name means "rival of Mars". Dist=135.9 ly.
Polaris	UMi	✦	The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.
Spica	Vir	✦	Latin name means "ear of wheat" and shown held in Virgo's left hand. Dist=250 ly.

Easily Seen with Binoculars

M44	Cnc	○	Praesepe or Beehive Cluster. Visible to the naked eye. Dist=590±20 ly.
M3	CVn	●	Easy to find in binoculars. Might be glimpsed with the naked eye.
μ Cephei	Cep	✦	Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
Mel 111	Com	○	Coma Berenices. 80 mag 5-6 stars in 5 deg. Dist=283 ly. Age=400 million years.
χ Cygni	Cyg	✦	Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
M39	Cyg	○	May be visible to the naked eye under good conditions. Dist=900 ly.
ν Draconis	Dra	✱	Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
M13	Her	●	Best globular in northern skies. Discovered by Halley in 1714. Dist=23,000 ly.
M92	Her	●	Fainter and smaller than M13. Use a telescope to resolve its stars.
R Hydrae	Hya	✦	Long period variable. Mag varies between 3.0 & 11.0 over 390 days. Brilliant red.
ε Lyrae	Lyr	✱	Famous Double Double. Binoculars show a double star. High power reveals each a double.
R Lyrae	Lyr	✦	Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
M12	Oph	●	Close to the brighter M10. Dist=18,000 ly.
M10	Oph	●	3 degrees from the fainter M12. Both may be glimpsed in binoculars. Dist=14,000 ly.
IC 4665	Oph	○	Large, scattered open cluster. Visible with binoculars.
6633	Oph	○	Scattered open cluster. Visible with binoculars.
M4	Sco	●	A close globular. May just be visible without optical aid. Dist=7,000 ly.
M5	Ser	●	Fine globular star cluster. Telescope will reveal individual stars. Dist=25,000 ly.
Mizar & Alcor	UMa	✱	Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.
Cr 399	Vul	○	Coathanger asterism or "Brocchi's Cluster". Not a true star cluster. Dist=218 to 1,140 ly.

Telescopic Objects

α Boötis	Boo	✱	Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8". Difficult to split.
M67	Cnc	○	Contains 500+ stars mag 10 & fainter. One of the oldest clusters. Dist=2,350 ly.
M94	CVn	◎	Compact nearly face-on spiral galaxy. Dist=15 million ly.
η Cassiopeiae	Cas	✱	Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12".
5128	Cen	◎	Bisected by a wide obscuring lane. Strong radio source. Dist=14 million ly.
M51	CVn	◎	Whirlpool Galaxy. First recognised to have spiral structure. Dist=25 million ly.
M64	Com	◎	Black-Eye Galaxy. Discovered by J.E. Bode in 1775 - "a small, nebulous star".
Albireo	Cyg	✱	Beautiful double star. Contrasting colours of orange and blue-green. Sep=34.4".
61 Cygni	Cyg	✱	Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
3242	Hya	✈	Ghost of Jupiter. Bright blue disk. Mag 11 central star. Dist=2,600 ly.
M83	Hya	◎	Classic face-on spiral. Discovered in 1752 by Lacaille. In attractive star field.
γ Leonis	Leo	✱	Superb pair of golden-yellow giant stars. Mags 2.2 & 3.5. Orbit=600 years. Sep=4.4".
β Lyrae	Lyr	✱	Eclipsing binary. Mag varies between 3.3 & 4.3 over 12.940 days. Fainter mag 7.2 blue star.
M57	Lyr	✈	Ring Nebula. Magnificent object. Smoke-ring shape. Dist=4,100 ly.
M81	UMa	◎	Beautiful spiral galaxy visible with binoculars. Easy to see in a telescope.
M82	UMa	◎	Close to M81 but much fainter and smaller.
M87	Vir	◎	Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly.
M104	Vir	◎	Sombrero Galaxy. Almost edge-on spiral galaxy. Protruding central core.
γ Virginis	Vir	✱	Superb pair of mag 3.5 yellow-white stars. Orbit=169 years. At their closest in 2005.
M27	Vul	✈	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.



2024/2025 New Moons

- May 7, 2024
- June 6, 2024
- July 5, 2024
- August 4, 2024
- September 2, 2024
- October 2, 2024
- November 1, 2024
- Dec 01, 2024
- Dec 30, 2024
- Jan 29, 2025
- Feb 27, 2025
- March 29, 2025
- April 27, 2025
- May 26, 2025
- June 25, 2025
- July 24, 2025

August 22, 2025
Sept 21, 2025
Oct 21, 2025
Nov 19, 2025
Dec 19, 2025

Red Rock Spring Star Parties

2024

- May 4th Saturday
- June 1st Saturday

Directions to Brown Road Star Parties

Directions: Brown road star parties are held in the desert. Take south China lake Boulevard to 395. Cross 395 and go 2.3 miles on Brown road until you come to signs in cones pointing to the left. Take this dirt road .5 miles to the star party site.

http://chinalakeastro.org/

CLUB INFORMATION

Monthly Skywatchers Newsletter.

Our newsletter is sent by email once a month to those who have subscribed. You do not have to be a member. Subscribe at a meeting or online at ChinaLakeAstro.org/subscribe

Annual Membership Dues

- Individual $25.00 per year.
- Family $ 40
- Youth 18 & under $10

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VICE-PRESIDENT – Keith Weisz

SECRETARY – Debbie Pio

TREASURER – Roger Brower

NEWSLETTER EDITOR – Ted Hodgkinson ghodkinson@sbcglobal.net

Club Information

Meetings of the China Lake Astronomical Society are held at the Maturango Museum 7:00 P.M. on the first Monday evening of each month, except when the first Monday is a holiday.

WESTERN AMATEUR ASTRONOMERS WEB SITE http://www.waa.av.org/