

Skywatchers

Newsletter of the China Lake Astronomical Society

J A N U A R Y 0 6 T H , 2 0 2 5 C L A S M E E T I N G 7 : 3 0

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Monday, January 6, 2025 7:00 PM

January 2025 Meeting & Program

Refreshments: 7:00 PM Announcements : 7:30 Program: 7:45

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Please upload your photos by following instructions on page 2,3,4 of this newsletter or open the attached pdf file.

In addition check out page 6 for information on possible Northern Lights on New Years Eve.

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).

CLAS Annual Members Photo Show – January 6

Please submit your astronomy and sky photos for the members Photo Show at our first meeting of 2025!! **Please follow the instructions below and submit your photos via our website.** We look forward to seeing what you've done.

Upload your photos to ChinaLakeAstro.org

So that we can assemble the show in advance, please upload your photos to the CLAS website, ChinaLakeAstro.org. If you receive our newsletter, you already have a website account.

**You can sign in with your newsletter email address.
You will need to request/reset your password.**

HOW TO GET YOUR PASSWORD AND SIGN IN

Go to ChinaLakeAstro.org in your browser. Click on **Sign in** at the *top right* of the page (*Figure 1*).

From the Sign In page **Returning users**, click on **I want to reset my password**. (*Figure 2*.) Use your email (where you receive the newsletter) in **Reset your password** and click **Submit**. An email with your temporary password should arrive in a few minutes.

Use your email and temporary password to **Sign in** (*Figure 1*) in **Returning users**.

This will take you to a page where you must create your preferred password.

You are now winged in and should see *your name or email* at upper right (*Figure 3*).

You can click on **your name/email address** to go to the **Your account** page (*Figure 4*). From here, please update your name and preferences.

UPLOADING YOUR PHOTOS

Click on **your name/email address** to go to the **Your account** page (*Figure 4*).

Click on **Upload images** and follow the instructions (*Figure 5*).

Select images from your computer. *10 MB limit. 2,000–3,000 px on a side is good; up to 4,600 px gives better quality when zoomed in.*

Upload them.

Add descriptive info to each of your images (title, caption, location, camera details, etc. (You can always go back to this page and add or update this info.)

Viewing your photos on the website

Besides adding your photos to our photo show, this also posts them on the website at ChinaLakeAstro.org/photos. You can check here to see how your photos display on the site.

Submitting videos

Your videos are welcome but can't yet be uploaded. Please use the [Contact Page](#) to request instructions.

Figures

Figure 1. Sign-in link.

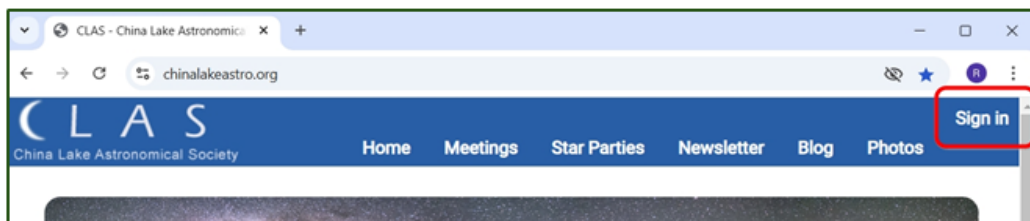


Figure 2. Sign-in page and password reset.

Returning users

Email: *required

Password: *required

Keep me signed in on this computer.
(Uncheck for public computers.)

[Sign in](#)

[I want to reset my password.](#)

Create your account

Email:

We never share your email with anyone or send unsolicited email.

Password:

Confirm password:

First name: (optional)

Figure 3. Your name after password reset and sign-in. Click for your account.

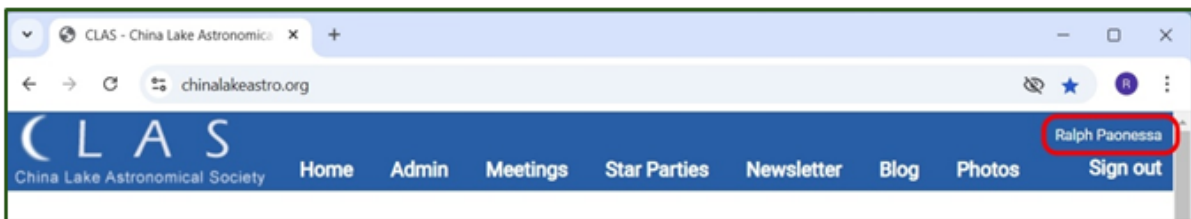


Figure 4. Your account page. Your name will appear.

Home / Your account

Your account - Ralph Paonessa

Name, email, and mailing preferences

[Upload images](#)

[Your addresses](#)

[Change password](#)

[Join CLAS](#)

Figure 5. Upload images and add info. Follow the 3 steps shown.

The screenshot shows a web browser window with the URL `chinalakeastro.org/Admin/PhotoGalleries/Photos/UploadPhotos.aspx`. The page header includes the logo for the China Lake Astronomical Society (CLAS) and navigation links for Home, Admin, Meetings, and Star Part. The main content area is titled "1. Upload images:" and contains two boxes: "Instructions" and "Image size guidelines".

Instructions:

1. Select one or more JPEG images from your computer using **Select Images**, then click **Upload**.
2. Image file size limit: 10 MB. Filename limit: 100 characters.
3. Any filename already in use by someone else will have the suffix (2) added.
4. After successful upload, your images will appear below, where you should add descriptive info.

Image size guidelines:

1. For most images **2000-3000 px** on a side is sufficient.
2. To show more detail when zoomed in, submit **as large as 4600 px**. Larger images will be downsized. Smaller images will not be enlarged and might not display well.
3. Image file size limit: 10 MB. Filename limit: 100 characters.
4. Any filename already in use by someone else will have the suffix (2) added.

Below the instructions are two buttons: "Select Images" and "Upload". Red arrows point to these buttons with the following text:

- 1. Select images on your
- 2. Upload them to the website.

Underneath the buttons is a section labeled "Uploaded files:" followed by a large, empty light-blue rectangular box.

Below the box is the heading "Add descriptive info" and the text "The photos you've added." in red. There is a checkbox labeled "Hide photos where I've already added descriptive info." with a red arrow pointing to it.

At the bottom is a table with the following data:

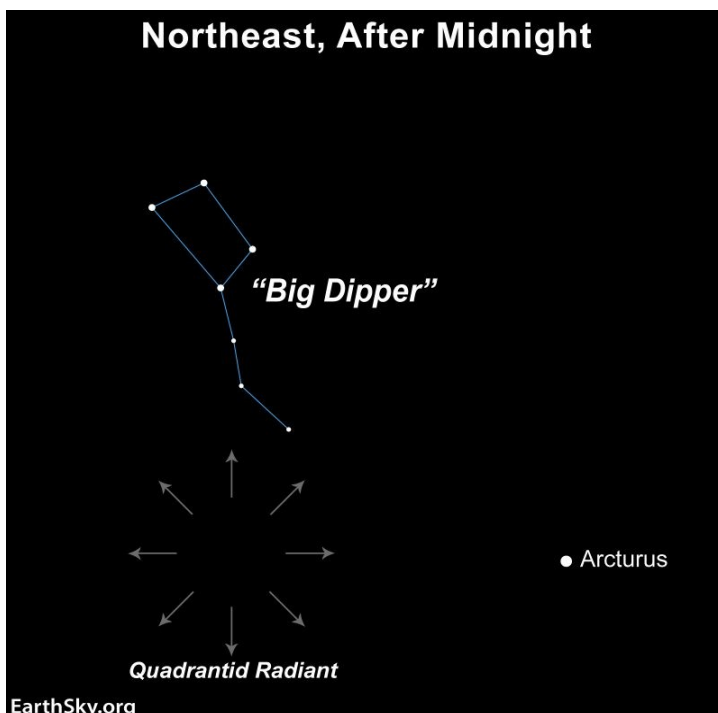
	Filename	Added	Status
Edit info	20180911-21-PanoCopy_5	12/29/2023	Added

A red arrow points from the "Edit info" link to the text: "3. Click Edit info for each photo to add image details."

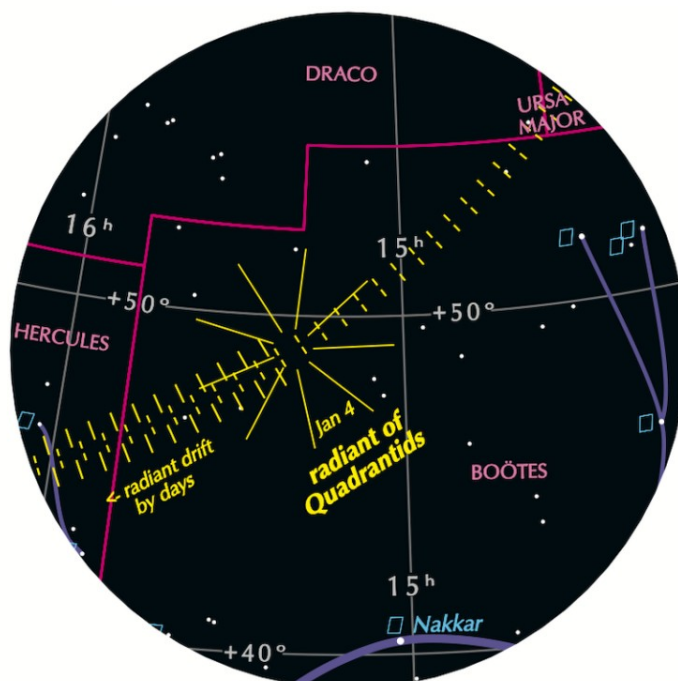
2025 Quadrantid meteor shower to peak January 3

Posted by: Editors of Earth Sky

Author Don Macholz



The [radiant point](#) for the Quadrantid meteor shower is far to the north in Earth's sky, so the shower is best seen from Earth's Northern Hemisphere. From mid-northern latitudes, the radiant point for the Quadrantid meteor shower climbs over the horizon after midnight and is highest in the sky



The 2025 Quadrantid meteor shower, seen in sky mode (from the the earth's surface, looking up). Image via [Guy Ottewell](#)

When to watch: The best time to watch for the 2025 Quadrantids is the hours before dawn on January 3. ([The predicted peak**](#) is [19 UTC](#) on January 3).

Nearest moon phase: A [first quarter](#) moon will come at 23:56 UTC on January 6, 2025 (5:56 p.m. CST) so the moon will be a waxing crescent and set a few hours after sunset on January 2 and not interfere with the Quadrantid meteors.

Radiant: Rises in the north-northeast after midnight and is highest up before dawn. The [radiant point](#) for the Quadrantids is in a now-obsolete constellation, Quadrans Muralis the [Mural Quadrant](#). Nowadays, we see the radiant near the famous Big Dipper [asterism](#). Because the Quadrantid radiant is far to the north on the sky's dome, this is mostly a far-northern shower, not as good for the Southern Hemisphere.

Expected meteors at peak, under ideal conditions: Under a [dark sky](#) with no moon, when the radiant is high in the sky, the Quadrantids can (briefly) produce over 100 meteors per hour.

Duration of shower: The Quadrantid meteor shower runs from mid-November through mid-January each year, according to this [2017 article in the journal Icarus](#). You might see a Quadrantid streak by any time during that interval. But most activity is centered on the peak. This time period is when we're passing through the [meteor stream](#) in space!

Note: The Quadrantid shower is one of four major meteor showers each year with a sharp peak (the other three are the [Lyrids](#), [Leonids](#), and [Ursids](#)).

For many years, the parent comet for the Quadrantids remained unknown. That's because astronomers were looking for an object whose orbit matched the orbit of the Quadrantids' [meteor stream](#). Other meteor showers do have parent objects whose orbits match their meteor streams. But the Quadrantids' parent object – or objects – are different. There are currently at least two related objects associated with Quadrantid meteors. Neither presently comes anywhere near Earth's orbit. But both seem to be responsible for these early January meteors. The chief object that spawns the Quadrantids is an asteroid named [2003 EH1](#). It's believed to be a [dormant or extinct](#) comet. The Lowell Observatory Near-Earth-Object Search ([LONEOS](#)) based near Flagstaff, Arizona, found asteroid 2003 EH1 on March 6, 2003. The asteroid takes 5.5 years to orbit the sun. Its closest point to the sun ([perihelion](#)) is 1.2 astronomical units ([AU](#)). One AU is the distance between the Earth and the sun. In past centuries, 2003 EH1 must have passed much closer to the Earth's orbit. Now, though, this asteroid stays well outside Earth's orbit. Yet particles ejected from this asteroid do intersect Earth's orbit, to produce the Quadrantids' narrow peak.

And astronomers now say there is also a second, related object that also contributes to this meteor shower. The second object – [Comet 96P/Machholz](#) – produces a less intense and shallower peak.

Northern lights could be visible soon as Earth hit by massive eruption from the Sun



The Earth has been hit by a massive eruption from the Sun – which could cause problems for infrastructure but also lead to stunning [northern lights](#) on New Year’s Eve. A large blast of energy from the solar surface, known as a coronal mass ejection or CME, left the Sun on Sunday. It arrived on Tuesday, potentially in time to lead to the northern lights being visible at relatively southerly latitudes. The first “shock” from the CME arrived on Tuesday afternoon, according to the Space Weather Prediction Center at the US National Oceanic and Atmospheric Administration or NOAA.

It said that there was the potential for both effects on infrastructure but also that the activity could lead to visible northern lights. In the UK, there could be “visible aurora across Scotland, Northern Ireland and parts of northern England dependant on cloud cover”, the country’s Met Office said, while the spectacle could be seen as far south

as Maine and the upper Midwest in the US, according to its officials.

Any sectors that could be affected by the space weather – which includes agriculture, where farmers can see strange behaviour from tractors that rely on critical communications systems, for instance – have been notified “to take any necessary actions to mitigate possible impacts”, NOAA said. The New Year’s Eve events are actually the result of a flurry of activity on the weekend of 28-29 December that saw various parts of the Sun become active and unstable. A number of flares were released during that period, and a number of CMEs were associated with it, though only two of them were expected to actually arrive at Earth.

Source: [Northern lights could be visible soon as Earth hit by massive eruption from the Sun | The Independent](#)

The Evening Sky Map

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

Sky Calendar – January 2025

Follow on Bluesky skymaps.com/bluesky/

- 3 Moon near Venus at 17h UT (evening sky). Mag. -4.4.
- 3 Quadrantid Meteor Shower peaks at 17:45h UT. Active between December 26 and January 16. Expect up to 25 meteors per hour under dark skies. Radiant is in northern Boötes. Northern hemisphere only.
- 4 Earth at Perihelion (closest to Sun) at 13h UT. The Sun-Earth distance is 0.983327 a.u. (147.1 million kilometers).
- 4 Moon near Saturn at 18h UT (evening sky). Mag. 1.2.
- 6 First Quarter Moon at 23:56 UT.
- 8 Moon at perigee (closest to Earth) at 00:24 UT (distance 370,171km; angular size 32.3').
- 10 Moon near the Pleiades at 2h UT (evening sky).
- 10 Venus at greatest elongation east at 5h UT (47° from Sun, evening sky). Mag. -4.4.
- 10 Moon near Jupiter at 23h UT (evening sky). Mag. -2.7.
- 12 Venus at dichotomy (D-shape) at 2h UT (evening sky). Mag. -4.4.
- 12 Moon near M35 star cluster at 9h UT (evening sky).
- 12 Mars nearest to Earth at 14h UT, 0.642 a.u.
- 13 Moon near Castor at 17h UT (evening sky).
- 13 Moon near Pollux at 22h UT (evening sky).
- 13 Full Moon at 22:27 UT.
- 14 Moon near Mars at 5h UT (midnight sky). Mag. -1.4.
- 15 Moon near Beehive cluster M44 at 0h UT (morning sky).
- 16 Mars at Opposition at 3h UT. Mag. -1.4.
- 16 Moon near Regulus at 18h UT (morning sky).
- 18 Venus 2.2° NNW of Saturn at 18h UT (evening sky). Mags. -4.5 and 1.2.
- 21 Moon at apogee (farthest from Earth) at 5h UT (distance 404,298km; angular size 29.6').
- 21 Moon near Spica at 5h UT (morning sky).
- 21 Last Quarter Moon at 20:31 UT.
- 25 Moon near Antares at 1h UT (55° from Sun, morning sky).
- 29 New Moon at 12:36 UT. Start of lunation 1263.

More sky events and links at <http://Skymaps.com/skycalendar/>
 All times in Universal Time (UT). (USA Eastern Standard Time – UT – 5 hours.)

Help Support The Evening Sky Map
 Freely shared with sky watchers worldwide since January 2000
 Shop: skymaps.com/amazon/ • Donate: skymaps.com/donate/
 Recommended Telescopes & Products at: skymaps.com/astro/

NORTHERN HEMISPHERE

JANUARY 2025

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS
 EARLY JAN 8 PM
 LATE JAN 7 PM

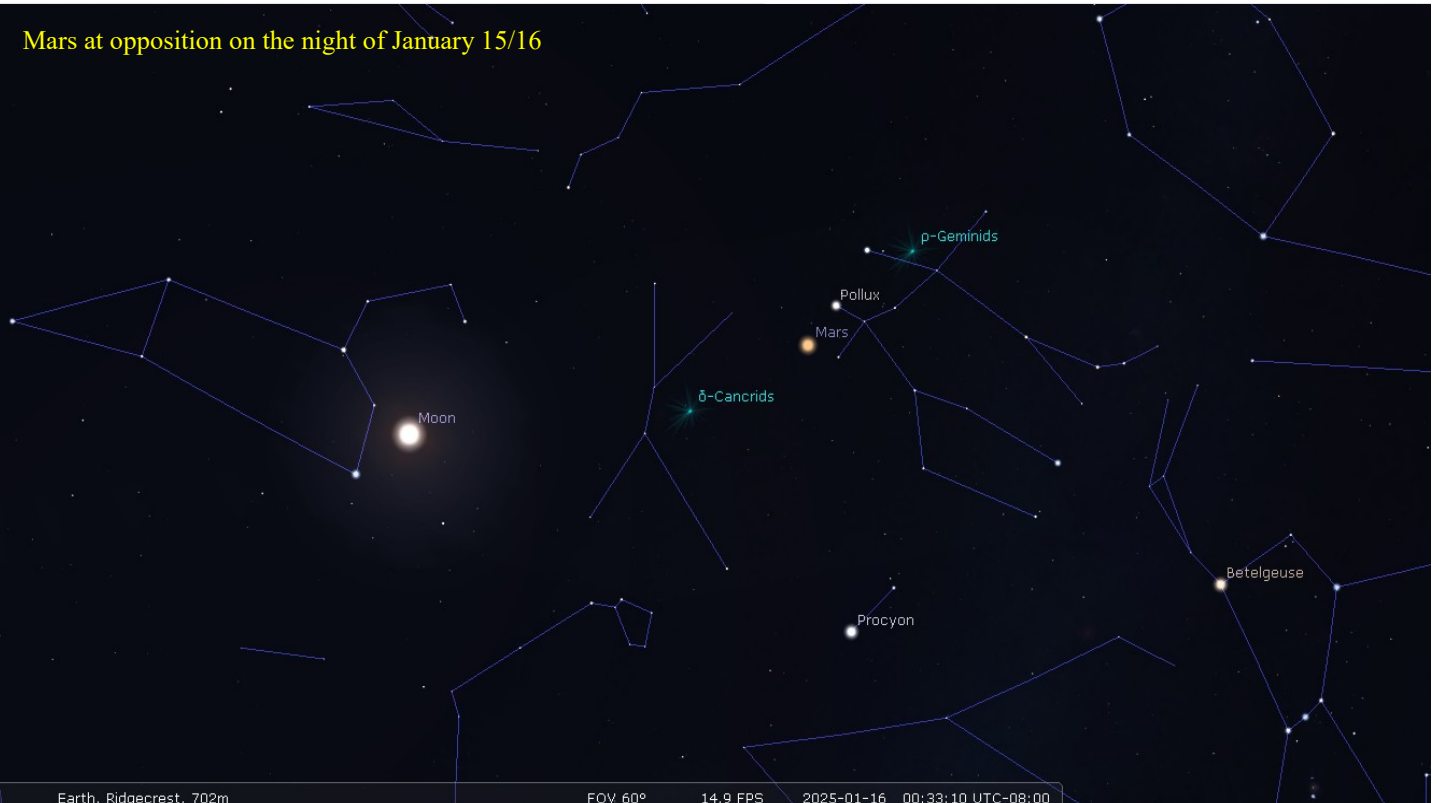
SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 25° NORTH OR SOUTH OF THIS

Symbols
 Galaxy ☁
 Double Star ★
 Variable Star ●
 Diffuse Nebula ☁
 Planetary Nebula ⊕
 Open Star Cluster ☉
 Globular Star Cluster ⊕

Star Magnitudes ● ● ● ● ●
 -1 0 1 2 3 4

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Mars at opposition on the night of January 15/16



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.

NORTHERN HEMISPHERE
JANUARY 2025

CELESTIAL OBJECTS



Easily Seen with the Naked Eye

- Capella Aur • The 6th brightest star. Appears yellowish in color. Spectroscopic binary. Dist=42 ly.
- Sirius CMa • The brightest star in the sky. Also known as the "Dog Star". Dist=8.6 ly.
- Procyon CMi • Greek name meaning "before the dog" - rises before Sirius (northern latitudes). Dist=11.4 ly.
- & 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.
- Vega Lyr • The 5th brightest star in the sky. A blue-white star. Dist=25.0 ly.
- Rigel Ori • The brightest star in Orion. Blue supergiant star with mag 7 companion. Dist=770 ly.
- Betelgeuse Ori • One of the largest red supergiant stars known. Diameter=300 times that of Sun. Dist=430 ly.
- Algol Per • Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.
- Pleiades Tau • The Seven Sisters. Spectacular cluster. Many more stars visible in binoculars. Dist=399 ly.
- Hyades Tau • Large V-shaped star cluster. Binoculars reveal many more stars. Dist=152 ly.
- Aldebaran Tau • Brightest star in Taurus. It is not associated with the Hyades star cluster. Dist=66.7 ly.
- Polaris UMi • The North Pole Star. A telescope reveals an unrelated mag 8 companion star. Dist=433 ly.

Easily Seen with Binoculars

- M31 And • The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
- M2 Aqr • Resembles a fuzzy star in binoculars.
- M38 Aur • Stars appear arranged in "pi" or cross shape. Dist=4,300 ly.
- M36 Aur • About half size of M38. Located in rich Milky Way star field. Dist=4,100 ly.
- M37 Aur • Very fine star cluster. Discovered by Messier in 1764. Dist=4,400 ly.
- M44 Cnc • Praesepe or Beehive Cluster. Visible to the naked eye. Dist=500 ±20 ly.
- M41 CMa • First recorded observation by Aristotle in 325 BC as "cloudy spot". Dist=2,300 ly.
- μ Cephei Cep • Herschel's Garnet Star. One of the reddest stars. Mag 3.4 to 5.1 over 730 days.
- Mira Cet • Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.
- χ Cygni Cyg • Long period pulsating red giant. Magnitude varies between 3.3 & 14.2 over 407 days.
- Mira Cyg • May be visible to the naked eye under good conditions. Dist=900 ly.
- v Draconis Dra • Wide pair of white stars. One of the finest binocular pairs in the sky. Dist=100 ly.
- M35 Gem • Fine open cluster located near foot of the twin Castor. Dist=2,800 ly.
- γ Leporis Lep • Visible with binoculars. Gold & white stars. Mags 3.6 & 6.2. Dist=30 ly. Sep=96.3".
- R Lyrae Lyr • Semi-regular variable. Magnitude varies between 3.9 & 5.0 over 46.0 days.
- 2232 Mon • A large scattered star cluster of 20 stars. Dist=1,300 ly.
- 2244 Mon • Surrounded by the rather faint Rosette Nebula. Dist=5,540 ly.
- M50 Mon • Visible with binoculars. Telescope reveals individual stars. Dist=3,000 ly.
- Cr 69 Ori • Lambda Orionis Cluster. Dist=1,630 ly.
- M42 Ori • The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years.
- M15 Peg • Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly.
- Double Cluster Per • Double Cluster in Perseus. NGC 860 & 884. Excellent in binoculars. Dist=7,300 ly.
- 253 Scl • Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.
- Mizar & Alcor UMa • Good eyesight or binoculars reveals 2 stars. Not a binary. Mizar has a mag 4 companion.

Telescopic Objects

- γ Andromedae And • Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8".
- γ Arietis Ari • Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8".
- M67 Cnc • Contains 500+ stars mag 10 & fainter. One of the oldest clusters. Dist=2,350 ly.
- η Cassiopeiae Cas • Yellow star mag 3.4 & orange star mag 7.5. Dist=19 ly. Orbit=480 years. Sep=12".
- 61 Cygni Cyg • Attractive double star. Mags 5.2 & 6.1 orange dwarfs. Dist=11.4 ly. Sep=28.4".
- γ Delphini Del • Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.
- ε Eridani Eri • Striking blue-white double star. Mags 3.2 & 4.3. Visible in a small telescope. Sep=8.2".
- β Monocerotis Mon • Triple star. Mags 4.6, 5.0 & 5.4. Requires telescope to view arc-shape. Sep=7.3".
- 2264 Mon • Christmas Tree Cluster. Associated with the Cone Nebula. Dist=2,450 ly.
- ο Orionis Ori • Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field.
- M1 Tau • Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.
- M33 Tri • Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million 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.

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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
China Lake Astronomical Society
P.O. Box 1783
Ridgecrest, CA 93556.

January DAILY CELESTIAL CALENDAR

- 1 New Moon passes 1.1 deg south of Pluto, 4A.M. PST
- 2 Asteroid Irene is at opposition, 11 P.M. PST PST
- 3 Asteroid Pallas is in conjunction with the Sun 12 A.M. PST
- 3 Quadrantid meteor shower peaks
- 3 The Moon passes 1.4 deg south of Venus, 7 A.M. PST
- 4 Earth is at perihelion (91.4 million miles from the Sun) , 5 A.M. PST
- 4 The Moon passes 0.7 deg north of Saturn, 9 A.M. PST
- 5 The Moon passes 1.1 deg north of Neptune, 7 A.M. PST
- 6 First Quarter Moon occurs at 3:56 P.M. PST
- 7 The Moon is at Perigee (230,013 miles from Earth) 4:01 P.M. PST
- 8 Venus is at greatest elongation (47 deg) 9 P.M. PST
- 10 The Moon passes 5 deg north of Jupiter 3 P.M. PST
- 12 Mars comes closest to Earth (59.7 million miles away) 6 A.M. PST
- 13 Full Moon occurs at 2:27 P.M. PST
- 13 The Moon passes 0.2 deg north of Mars, 8 P.M. PST
- 15 Mars is at opposition 7 P.M. PST
- 18 Venus passes 3 deg north of Saturn, 9 P.M. PST
- 20 The Moon is at apogee (251,219 miles from Earth) 8:54 P.M. PST
- 21 Pluto is in conjunction with the Sun 4 A.M. PST
- 21 Mars passes 2 deg south of of Pollux 9 A.M. PST
- 21 Last quarter Moon occurs at 0:31 P.M. PST
- 24 The Moon passes 0.3 deg south of Antares, 4 P.M. PST
- 29 New Moon occurs at 4:36 A.M. PST
- 30 The Moon passes 1.1 deg north of Saturn 9:00 P.M. PST

2024 & 2025 New Moons

- Jan 29, 2025
- Feb 27, 2025
- March 29, 2025
- April 27, 2025
- May 26, 2025
- June 25, 2025
- July 24, 2025
- August 22nd 2025
- September 21st 2025
- Oct 21st, 2025
- November 19th, 2025
- December 19th, 2025

Star Parties for Red Rock Ricardo Station

Brown Road Star Parties

Maturango Museum

March 08, 2025 7 PM

C L U B I N F O R M A T I O N

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

Officers

PRESIDENT – Ralph Paonessa

VICE-PRESIDENT – Keith Weisz

SECRETARY – Vacant

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.waastro.org/>