

! NO MEETING IN JULY

We will resume our monthly meetings on Friday, August 2.



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kernastro.org



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UPCOMING CLUB EVENTS

Star Parties

July 6 and July 29 at the Frazier Mountain Trailhead

[Click for map](#)

PUBLIC OUTREACH

Solar Viewings

July 9 - Silver Creek Park, 7011 Harris Rd. - Time TBA

[Click for map](#)

July 11 - David Nelson Pocket Park, 1511 Niles St. - Time TBA

[Click for map](#)



UPCOMING SPEAKERS

August 2nd

Dr. Bonnie Buratti - Europa Clipper

September 6th

Seestar Telescopes demonstration,
KAS Elections

October 4th

Linda Spilker - Voyager

November 1st

Rod Guice - Milankovitch Cycles

December 6th

Potluck, no speaker



KAS Information

Since 1956, the Kern Astronomical Society has promoted community awareness of current events in astronomy and provides a forum for sharing of knowledge and experiences among amateur astronomers. Annual membership is \$25.00 which also provides membership in the Amateur Astronomical League, access to their newsletter (Reflector Magazine), and participation in observational programs.

Star Parties & Outreach

The Kern Astronomical Society typically has two Club Star Parties each month depending on the weather. Our Club Parties are held on Saturdays nearest the New Moon. We also host Public Star Parties at various locations around town during April - October. These parties are held on Saturdays nearest the first quarter Moon. In addition, we also host Lunar, Solar, and Planetary viewing for public schools. Requests may be directed to our Star Party Coordinator.

Club Equipment

The Kern Astronomical Society has telescopes and accessories (listed below) available for loan to Club Members in good standing. Members are encouraged to borrow the different types of telescopes in stock (especially if you are considering purchasing one). Trying out different sizes and types of telescopes can help you make an informed decision about purchases. If you have a Club telescope in your possession, you will be expected to participate in at least one public star party.

- **6" f/6, 8" f/6, 10" f/5.6, 13" f/4.5 Dobsonian Telescopes**
- **Parks Jovian 90**
- **3½" f/13 Maksukov-Cassegrain**
- **4" f/15 Unitron Refractor**
- **8" Solar Filter**
- **Assorted Eyepieces**

The Evening Sky Map

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

NORTHERN HEMISPHERE
JULY 2024

Sky Calendar – July 2024

- 1 **Moon near Mars** at 17h UT (54° from Sun, morning sky). Mag. 1.0.
- 2 **Moon near the Pleiades** at 17h UT (41° from Sun, morning sky).
- 3 **Moon near Jupiter** at 7h UT (morning sky). Mag. -2.0.
- 5 **Earth at Aphelion** (farthest from Sun) at 6h UT. The Sun- Earth distance is 1.016725 a.u. or about 152.1 million km.
- 5 **Dwarf planet 1 Ceres at opposition** at 15h UT. Mag. 7.3.
- 5 **New Moon** at 22:58 UT. Start of lunation 1256.
- 7 **Mercury 0.11° NNE of Beehive Cluster (M44)** at 5h UT (22° from Sun, evening sky). Mag. -0.2.
- 7 **Moon, Mercury and Beehive cluster (M44)** within circle 3.2° diameter at 19h UT (evening sky). Mag. -0.2.
- 9 **Moon near Regulus** at 15h UT (evening sky).
- 9 **Jupiter 4.8° N of Aldebaran** at 23h UT (38° from Sun, morning sky). Mags. -2.0 and 0.9.
- 12 **Moon at apogee** (farthest from Earth) at 8h UT (distance 404,362km; angular size 29.6').
- 13 **First Quarter Moon** at 22:49 UT.
- 14 **Moon near Spica** at 4h UT (evening sky). Occultation visible from North and Central America.
- 15 **Mars 0.53° SE of Uranus** at 15h UT (57° from Sun, morning sky). Mags. 0.9 and 5.8.
- 17 **Moon near Antares** at 21h UT (evening sky). Occultation visible from Sthn Africa and Madagascar.
- 21 **Full Moon** at 10:19 UT.
- 22 **Mercury at greatest elongation east** at 7h UT (27° from Sun, evening sky). Mag. 0.5.
- 24 **Moon at perigee** (closest to Earth) at 5:44 UT (distance 364,917km; angular size 32.7').
- 24 **Moon near Saturn** at 21h UT (morning sky). Mag. 0.9. Occultation visible from SE Asia, India and Madagascar.
- 28 **Last Quarter Moon** at 2:53 UT.
- 29 **Moon near the Pleiades** at 23h UT (67° from Sun, morning sky).
- 30 **Moon near Mars** at 9h UT (morning sky). Mag. 0.9.
- 30 **Moon near Jupiter** at 23h UT (morning sky). Mag. -2.1.

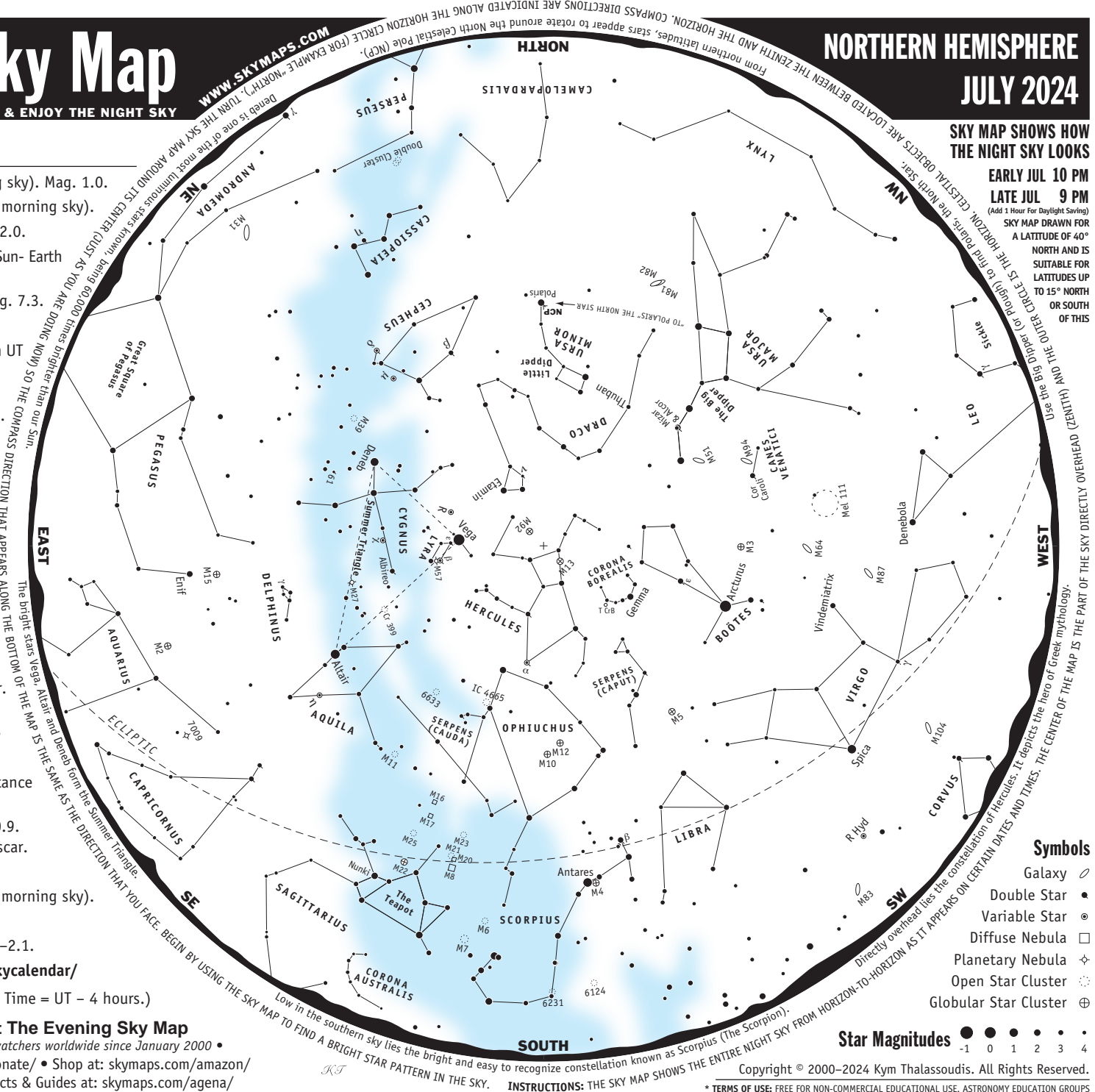
More sky events and links at <http://Skymaps.com/skycalendar/>

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



Help Support The Evening Sky Map

• freely shared with sky watchers worldwide since January 2000 •
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SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY JUL 10 PM
LATE JUL 9 PM
(Add 1 Hour For Daylight Saving)
SKY MAP DRAWN FOR A LATITUDE OF 40° NORTH AND IS SUITABLE FOR LATITUDES UP TO 15° NORTH OR SOUTH OF THIS

- Symbols**
- Galaxy ☾
 - Double Star ●●
 - Variable Star ⊙
 - Diffuse Nebula □
 - Planetary Nebula ☆
 - Open Star Cluster ○
 - Global Star Cluster ⊕

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

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INSTRUCTIONS: THE SKY MAP SHOWS THE ENTIRE NIGHT SKY FROM HORIZON-TO-HORIZON AS IT APPEARS ON CERTAIN DATES AND TIMES. THE CENTER OF THE MAP IS THE PART OF THE SKY DIRECTLY OVERHEAD (ZENITH) AND THE OUTER CIRCLE IS THE HORIZON. CELESTIAL OBJECTS ARE LOCATED BETWEEN THE ZENITH AND THE HORIZON. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE "NORTH").

Low in the southern sky lies the bright and easy to recognize constellation known as Scorpius (The Scorpion).

The bright stars Vega, Altair and Deneb form the Summer Triangle. The bright stars Vega, Altair and Deneb form the Summer Triangle. THE BRIGHT STARS VEGA, ALTAIR AND DENEB FORM THE SUMMER TRIANGLE. SO THE COMPASS DIRECTION THAT APPEARS ALONG THE BOTTOM OF THE MAP IS THE SAME AS THE DIRECTION THAT YOU FACE. BEGIN BY USING THE SKY MAP TO FIND A BRIGHT STAR PATTERN IN THE SKY.

Use the BIG CIRCLE (or Pencil) TO FIND PLANETS, THE NORTH STAR, THE POLARS, THE NORTH STAR, TO POLARS, THE NORTH STAR. Use the SMALL CIRCLE (or Pencil) TO FIND PLANETS, THE NORTH STAR, THE POLARS, THE NORTH STAR.

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 JULY 2024 CELESTIAL OBJECTS



Easily Seen with the Naked Eye

| | | |
|------------|-----|--|
| Altair | Aql | • Brightest star in Aquila. Name means "the flying eagle". Dist=16.7 ly. |
| Arcturus | Boo | • Orange, giant K star. Name means "bear watcher". Dist=36.7 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. |
| α Herculis | Her | • Semi-regular variable. Magnitude varies between 3.1 & 3.9 over 90 days. Mag 5.4 companion. |
| 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

| | | |
|---------------|-----|--|
| η Aquilae | Aql | • Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7,166 days. Dist=1,200 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. |
| ε Lyrae | Lyr | • Famous 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. |
| M15 | Peg | • Only globular known to contain a planetary nebula (Mag 14, d=1"). Dist=30,000 ly. |
| M8 | Sgr | □ Lagoon Nebula. Bright nebula bisected by a dark lane. Dist=5,200 ly. |
| M25 | Sgr | • Bright cluster located about 6 deg N of "teapot's" lid. Dist=1,900 ly. |
| M22 | Sgr | • A spectacular globular star cluster. Telescope will show stars. Dist=10,000 ly. |
| M4 | Sco | • A close globular. May just be visible without optical aid. Dist=7,000 ly. |
| M6 | Sco | • Butterfly Cluster. 30+ stars in 7x binoculars. Dist=1,960 ly. |
| M7 | Sco | • Superb open cluster. Visible to the naked eye. Age=260 million years. Dist=780 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

| | | |
|------------|-----|---|
| ε Boötis | Boo | • Red giant star (mag 2.5) with a blue-green mag 4.9 companion. Sep=2.8". Difficult to split. |
| M94 | CVn | • Compact nearly face-on spiral galaxy. Dist=15 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". |
| γ Delphini | Del | • Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field. |
| 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. |
| M23 | Sgr | • Elongated star cluster. Telescope required to show stars. Dist=2,100 ly. |
| M20 | Sgr | □ Trifid Nebula. A telescope shows 3 dust lanes trisecting nebula. Dist=5,200 ly. |
| M21 | Sgr | • A fine and impressive cluster. Dist=4,200 ly. |
| M17 | Sgr | □ Omega Nebula. Contains the star cluster NGC 6618. Dist=4,900 ly. |
| M11 | Sct | • Wild Duck Cluster. Resembles a globular through binoculars. V-shaped. Dist=5,600 ly. |
| M16 | Ser | □ Eagle Nebula. Requires a telescope of large aperture. Dist=8,150 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. |
| M27 | Vul | • Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly. |