

# The Evening Sky Map

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

## Sky Calendar – August 2017

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- 2 Moon near Antares (evening sky) at 9h UT.
- 2 Venus 2.4° S of M35 cluster (morning sky) at 15h UT. Mag. -4.0.
- 2 Moon at apogee (farthest from Earth) at 18h UT (distance 405,025 km; angular size 29.5').
- 3 Moon near Saturn (evening sky) at 8h UT. Mag. 0.3.
- 7 Partial Eclipse of the Moon from 17:23 to 19:18 UT, mid-eclipse at 18:20 UT. Visible from the Eastern Hemisphere including Australia, Indonesia and India.
- 7 Full Moon at 18:12 UT.
- 12 Perseid meteor shower peak lasts about 10 hours from 14h UT. Active from July 17 to August 24. Produces swift, bright meteors (50 to 100 per hour) many with persistent trains. Best viewing conditions occur after midnight. Moonlight interferes.
- 15 Last Quarter Moon at 1:16 UT.
- 15 Moon near the Pleiades (morning sky) at 15h UT.
- 16 Moon near Aldebaran (74° from Sun, morning sky) at 7h UT. Occultation visible from the Caribbean.
- 18 Moon at perigee (closest to Earth) at 13:16 UT (366,121 km; angular size 32.6').
- 19 Moon near Venus (morning sky) at 4h UT. Mag. -4.0.
- 20 Moon near Beehive cluster (morning sky) at 7h UT.
- 21 Total Solar Eclipse from 16:49 to 20:03 UT, greatest eclipse at 18:25 UT (duration 2m 40s). Totality visible along narrow, coast-to-coast path across USA. Partial eclipse in North America and northern South America. NASA Eclipse website: <http://eclipse2017.nasa.gov>
- 21 New Moon at 18:30 UT. Start of lunation 1171.
- 25 Moon near Jupiter (evening sky) at 15h UT. Mag. -1.8.
- 25 Moon near Spica (evening sky) at 21h UT.
- 29 First Quarter Moon at 8:13 UT.
- 30 Moon at apogee (farthest from Earth) at 11h UT (distance 404,308 km; angular size 29.6').
- 30 Moon near Saturn (evening sky) at 15h UT. Mag. 0.4.

More sky events and links at <http://Skymaps.com/skycalendar/>  
 All times in Universal Time (UT). (USA Eastern Summer Time = UT - 4 hours.)



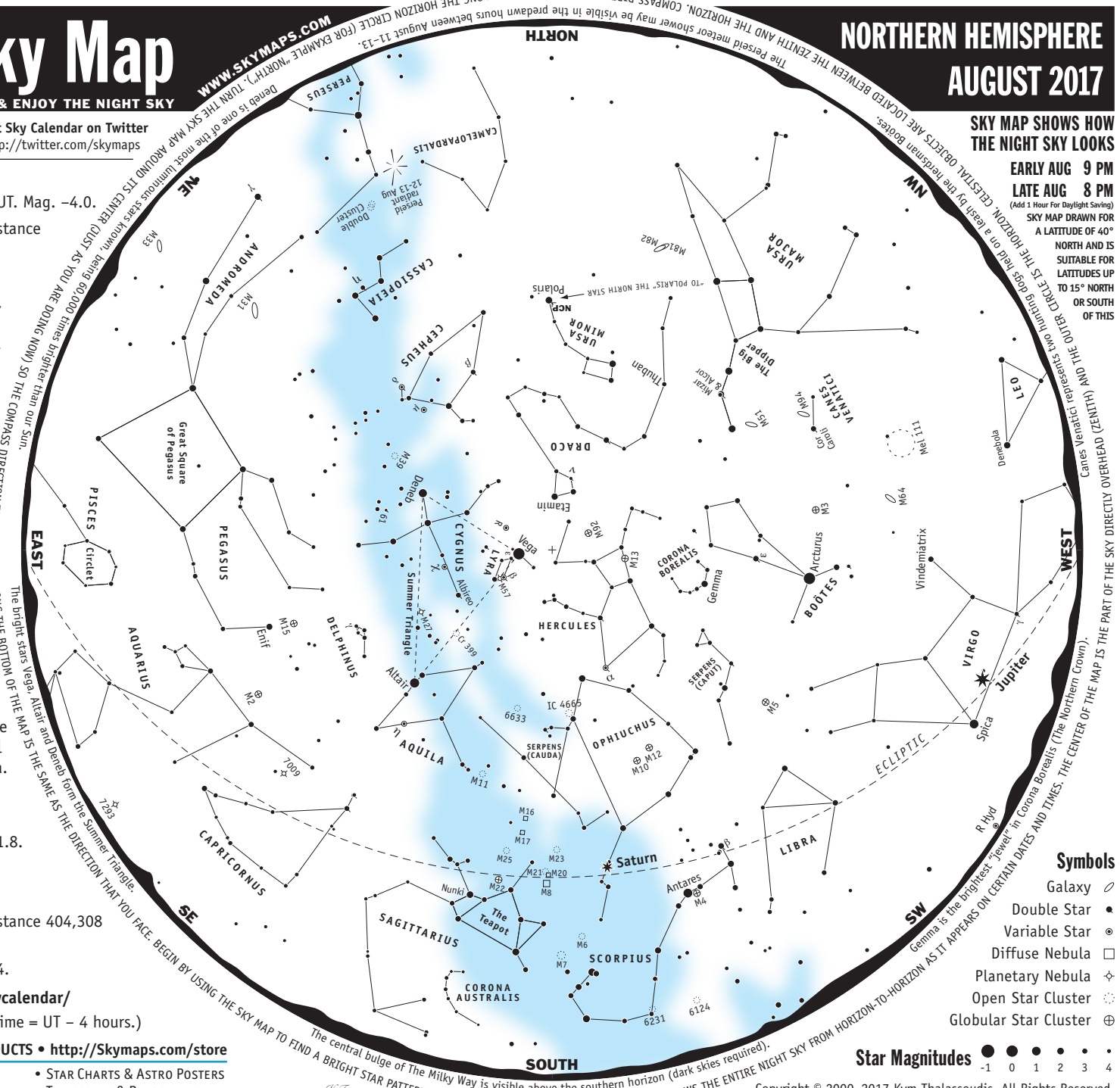
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## NORTHERN HEMISPHERE AUGUST 2017

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY AUG 9 PM  
 LATE AUG 8 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 REPRESENTS TWO HOURS OFF ON A SLEAZY BY THE HEMISPHERE LOCATED BETWEEN THE ZENITH AND THE HORIZON. COMPASS DIRECTIONS ARE LOCATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE, NORTH). TURN THE SKY MAP TO FIND A BRIGHT STAR PATTERN IN THE SKY.

KJ

## 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 AUGUST 2017 CELESTIAL OBJECTS Sky maps.com

## 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

M31	And	☾	The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.
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.
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 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

7009	Aqr	✦	Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.
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.
M27	Vul	✦	Dumbbell Nebula. Large, twin-lobed shape. Most spectacular planetary. Dist=975 ly.

## Calendario estelar - Agosto 2017

- 2 Luna cerca de Antares (cielo nocturno) a las 9h UT.  
Venus  $2.4^{\circ}$  S del grupo M35 (cielo matutino) a las 15h UT. Mag. -4,0.  
Luna en el apogeo (más alejado de la Tierra) a las 18h UT (distancia 405.025 km, tamaño angular  $29.5'$ ).
- 3 Luna cerca de Saturno (cielo nocturno) a las 8h UT. Mag. 0,3.
- 7 Eclipse parcial de la Luna de 17:23 a 19:18 TU, mitad del eclipse a las 18:20 TU. Visible desde el hemisferio oriental incluyendo Australia, Indonesia e India. (No visible en España)  
Luna Llena a las 18:12 TU.
- 12 Lluvia de meteoros de las Perseidas, su pico máximo tendrá lugar alrededor de 20:45 horas. Activa del 17 de julio al 24 de agosto. Produce meteoros rápidos y brillantes (50 a 100 por hora) muchos con trenes persistentes. Las mejores condiciones de visualización ocurren después de la medianoche. La luz de la luna interfiere.
- 15 Luna en cuarto menguante a la 1:16 TU.  
Luna cerca de las Pléyades (cielo matutino) a las 15h TU.
- 16 Luna cerca de Aldebarán ( $74^{\circ}$  desde el Sol, cielo matutino) a las 7h TU. Ocultación visible desde el Caribe.
- 18 Luna en el perigeo (más cercano a la Tierra) a las 13:16 TU (366.121 km; tamaño angular  $32.6'$ ).
- 19 Luna cerca de Venus (cielo matutino) a las 4h TU. Mag. -4,0.
- 20 Luna cerca del cluster Beehive (cielo matutino) en 7h TU.
- 21 Eclipse total de Sol de 16:49 a 20:03 TU, el mayor eclipse a las 18:25 TU (duración 2m 40s). Totalidad visible a lo largo de la trayectoria estrecha, costa a costa a través de los EEUU. Eclipse parcial en América del Norte y el norte de América del Sur. (No visible en España)
- 21 Luna Nueva a las 18:30 TU. Inicio de la lunación 1171.
- 25 Luna cerca de Júpiter (cielo nocturno) a las 15h TU. Mag. -1,8.  
Luna cerca de Spica (cielo nocturno) a las 21h TU.
- 29 Luna en cuarto creciente a las 8:13 TU.
- 30 Luna en el apogeo (más alejado de la Tierra) a las 11h TU (distancia 404,308 km, tamaño angular  $29,6'$ ).  
Luna cerca de Saturno (cielo nocturno) a las 15h TU. Mag. 0,4.

Todas las horas Tiempo Universal (TU). ¡Cielo despejado hasta el próximo mes!