## The Evening Sky Map

2 Last Quarter Moon at 3：15 UT
6 Moon near Mars at 6h UT（morning sky）．Mag．1．2．
6 Moon，Mars and Saturn within circle $3.0^{\circ}$ diameter at 9h UT （morning sky）．Mags． 1.2 and 1．1．
6 Moon near Saturn at 11 h UT （morning sky）．
7 Moon near Venus at 17h UT（ $15^{\circ}$ from Sun，morning sky）． Mag．－3．9．
7 Moon at perigee（closest to Earth）at 17：46 UT （distance 358，850km；angular size 33．3＇）．
8 Total Solar Eclipse from 16：39 to 19：55 UT，greatest eclipse at 18：17 UT（duration 4 m 28 s ）．Totality visible along narrow path crossing Mexico，easter USA and south－eastern Canada．Partial eclipse visible across all of North America（except Alaska）， Hawaii and parts of Central America．
8 New Moon at 18：22 UT．Start of lunation 1253.
10 Moon near Jupiter at 20h UT（evening sky）．Mag．－2．0．
10 Mars $0.44^{\circ}$ NNW of Saturn at 21 h UT（ $37^{\circ}$ from Sun，morning sky）．Mags． 1.2 and 1．1．
11 Moon near the Pleiades at 14h UT（evening sky）．
11 Mercury at inferior conjunction with the Sun at 23 h UT ．The innermost planet passes into the morning sky．
15 First Quarter Moon at 19：13 UT．
18 Moon near Regulus at 16h UT（evening sky）．
20 Moon at apogee（farthest from Earth）at 2h UT （distance $405,623 \mathrm{~km}$ ；angular size 29．5＇）．

22 Lyrid meteor shower peaks at 7h UT（timing and activity is variable）．Active April 14－30．Radiant is between Hercules and Lyra．Expect 10 to 20 bright，fast meteors per hour at peak．
23 Moon near Spica at 5h UT（evening sky）．
23 Full Moon at 23：50 UT．
26 Moon near Antares at 22h UT（morning sky）．Occultation visible from the Middle East，southern India and Indonesia．
29 Mars $0.04^{\circ}$ SE of Neptune at 5h UT（morning sky）．Mags．1．1 and 7．9． More sky events and links at http：／／Skymaps．com／skycalendar／
All times in Universal Time（UT）．（Australian Eastern Standard Time＝UT＋ 10 hours．）
$)^{3}$ Maps

## Help Support The Evening Sky Map

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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 $300,000 \mathrm{~km} / \mathrm{sec}$ 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. Australian Eastern Standard Time (Sydney, Australia) is UT plus 10 hours. Variable Star - A star that changes brightness over a period of time.


## Easily Seen with the Naked Eye

Sirius
CMa - The brightest star in the sky. Also known as the "Dog Star". Dist=8.6 ly
Procyon $\quad \mathrm{CMi}$ - Greek name meaning "before the dog" - rises before Sirius (northern latitudes). Dist=11.4 ly.
Canopus Car - Second brightest star in the sky. 14,000 times more luminous than the Sun. Dist=309 ly.
$\beta$ Centauri Cen - With Alpha Centauri, forms the so-called "Pointers-to-the-Cross". Dist=525 ly. $\alpha$ Centauri Coalsack Castor Castor Pollux Regulus Rigel Betelgeuse Spica

- Nearest bright star to Sun at 4.4 ly . Brilliant double star in a telescope. 80 year period.

Cru - Most famous naked-eye dark nebula. Requires dark sky. Dist=600 ly.
Gem - Multiple star system with 6 components. 3 stars visible in telescope. Dist=52 ly
Gem - With Castor, the twin sons of Leda in classical mythology. Dist=34 ly
Leo - Brightest star in Leo. A blue-white star with at least 1 companion. Dist=77 ly

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= $590 \pm 20$ ly. |
| :--- | :--- | :--- | :--- |
| M41 | CMa | First recorded observation by Aristotle in 325 BC as "cloudy spot". Dist=2,300 ly |
| 2516 | Car | Spectacular open star cluster of 100 stars spaning $1 / 2$ deg. Dist=1,300 ly. |

2516 Car Spectacular open star cluster of 100 stars spaning $1 / 2$ deg. Dist=1,300 ly.
2808
R Carinae
3114
3293
IC 2602
3372
3372
3532
$\omega$ Centauri
4755
LMC
M48
R Hydrae
$\gamma$ Leporis
$\gamma$ Leporis
2232
M50
M42
L2
M47
M46
2451
47 Tucanae
SMC
SMC
2547

## IC 2391

T

## Tel M67

- long por

Stunning variable. Magnitude varies between 3.9 \& 10.5 over 309 days. Rich, tightly packed. Surrounded by large, faint nebulosity. Dist=8,500 ly. The "Five of Diamonds". Bright cluster twice diameter of full Moon. Dist=491 ly

- Eta Carinae Nebula. Enormous glowing cloud in rich star field. Dist=8,000 ly.

Herschel - "most brilliant cluster". 60+ stars in 7x binoculars. Dist=1,300 ly.
$\oplus$ Largest and brightest globular star cluster in sky. 1 million stars. Dist=17,000 ly. Jewel Box. Outstanding star cluster. Many contrasting colours. Dist=7,600 ly.
0 Large Magellanic Cloud. A neighbouring galaxy of the Milky Way. Dist=180,000 ly. $12+$ stars in $7 x$ binoculars. Triangular asterism near centre. Dist=1,990 ly.

- Long period variable. Mag varies between 3.0 \& 11.0 over 390 days. Brilliant red.
- Visible with binoculars. Gold \& white stars. Mags 3.6 \& 6.2. Dist=30 ly. Sep=96.3". A large scattered star cluster of 20 stars. Dist $=1,300 \mathrm{ly}$.
Visible with binoculars. Telescope reveals individual stars. Dist=3,000 ly
- The Great Orion Nebula. Spectacular bright nebula. Best with telescope. Dist=1,300 light years.
- Semi-regular variable. Magnitude varies between $2.6 \& 6.2$ over 140.42 days. Bright star cluster. $15+$ stars in $7 \times$ binoculars. Dist $=1,500 \mathrm{ly}$. Dist=5,400 ly. Contains planetary NGC 2438 (Mag 11, $\mathrm{d}=655^{\prime \prime}$ ) - not associated. $30+$ stars in binoculars. The brightest star, $\chi$ Puppis, is red. Dist=850 ly. Very rich but distant star cluster ( $4,200 \mathrm{ly}$ ). Resembles globular through binoculars
$\oplus$ Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=15,000 ly.
- Small Magellanic Cloud. Companion galaxy to Milky Way. Requires dark sky. Dist=210,000 ly. Fine open cluster visible through binoculars. Dist=1,300 ly. Omicron Velorum Cluster. Superb object for binoculars. Dist=450 ly


## lescopic Objects

M67
3918
5128
2070
3242
M83
$\gamma$ Leonis
$\beta$ Monocerotis
k Puppis
3132
M87
M104
$\gamma$ Virginis
. Contains 500+ stars mag 10 \& fainter. One of the oldest clusters. Dist=2,350 ly.

- The Blue Planetary. Visible in a small telescope as a round blue disk.
- Bisected by a wide obscuring lane. Strong radio source. Dist=11 million ly.
- Tarantula Nebula. A bright nebula located in LMC. A star-forming region.
- Ghost of Jupiter. Bright blue disk. Mag 11 central star. Dist=2,600 ly.

0 Classic face-on spiral. Discovered in 1752 by Lacaille. In attractive star field.

- Superb pair of golden-yellow giant stars. Mags 2.2 \& 3.5. Orbit=600 years. Sep=4.4".
- Triple star. Mags 4.6, 5.0 \& 5.4. Requires telescope to view arc-shape. Sep=7.3"
- Telescope easily shows two blue-white stars of almost equal brightness. Sep=9.9"
- One of the brightest planetaries. Magnitude 10 central star. Dist=2,600 ly.

Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly
0 Supergiant galaxy with supermassive black hole at its core. Dist=53.5 million ly
O Sombrero Galaxy. Almost edge-on spiral galaxy. Protruding central core.

- Superb pair of mag 3.5 yellow-white stars. Orbit=169 years. At their closest in 2005.

