Sky Calendar – November 2022

1. **First Quarter Moon** at 6:38 UT.
2. Moon near Saturn at 6h UT (evening sky). Mag. 0.7.
4. **Total Lunar Eclipse** begins at 10:17 UT and ends at 11:41 UT. Greatest eclipse at 10:59 UT. Partial phases begin at 9:09 UT and end at 12:49 UT. During totality the Moon will appear red-orange in color once it passes into the Earth's shadow; the color of all the sunsets and sunrises in Earth's atmosphere. The total lunar eclipse will be visible from Asia, Australia, the Pacific and the Americas.
5. **Full Moon** at 11:02 UT.
6. Moon near Uranus at 13h UT (midnight sky). Mag. 5.6. Occultation visible from east Asia, Japan & Alaska.
7. **Mercury at superior conjunction** with the Sun at 8h UT (evening sky). Mag. 0.8.
8. **Uranus at opposition** at 8h UT. Mag. 5.6.
9. Moon near the Pleiades at 15h UT (morning sky).
10. Moon near Aldebaran at 9h UT (morning sky).
11. Moon near Mars at 14h UT (morning sky). Mag. -1.5.
12. **Moon at northernmost declination** (27.5°) at 14h UT.
13. **Moon at apogee** (farthest from Earth) at 7h UT (distance 404,921km; angular size 29.5').
14. Moon near Beehive cluster M44 at 5h UT (morning sky).
15. **Last Quarter Moon** at 13:28 UT.
16. Moon near Regulus at 2h UT (morning sky).
17. **Leonid meteor shower peaks** at 6h UT. Arises from debris ejected by comet 55P/Tempel-Tuttle. Produces very fast meteors (70 km/sec). Expect 10–15 meteors per hour under dark skies. Moonlight will interfere with observations.
18. Moon near Spica at 8h UT (morning sky).
19. **New Moon** at 22:56 UT. Start of lunation 1236.
20. Moon near perigee (closest to Earth) at 1:37 UT (distance 362,826km; angular size 32.9').
22. **First Quarter Moon** at 14:37 UT.

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

All times in Universal Time (UT). (Australian Eastern Summer Time = UT + 11 hours.)

The spectacular star clusters known as the Pleiades and the Hyades lie in the constellation of Taurus, The Bull. The Large Magellanic Cloud (LMC) and the Small Magellanic Cloud (SMC) are nearby galaxies. ECLPTIC
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. 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

Altair Aql • Brightest star in Aquila. Name means “the flying eagle”. Dist=16.7 ly.

Sirius Cae • The brightest star in the sky. Also known as the “Dog Star”. Dist=8.6 ly.

Canopus Car • Second brightest star in the sky. 14,000 times more luminous than the Sun. Dist=309 ly.

β Centauri Cen • With Alpha Centauri, forms the so-called “Pointers-to-the-Cross”. Dist=525 ly.

ν Centauri Cen • Near brightest star in Cen. 44 ly. Brillant double star in a telescope. 80 year period.

Achernar Eri • Brightest star in Eridanus, The River. Arabic name meaning “end of river”. Dist=140 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 the Sun. Dist=430 ly.

Algol Per • Famous eclipsing binary star. Magnitude varies between 2.1 & 3.4 over 2.867 days.

Fomalhaut PsA • Brightest star in Piscis Austrinus. In Arabic the “fish’s mouth”. Dist=25 ly.

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.

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.

η Aquilae Aql • Bright Cepheid variable. Mag varies between 3.6 & 4.5 over 7.166 days. Dist=1,200 ly.

M37 Ara • Thought to be the nearest globular. Dist=7,000 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 spanning 1/2 deg. Dist=1,300 ly.

2808 Car • Located 4 deg W of Nu Carinae. Visible to the naked eye on clear nights.

R Carinae Car • Long period variable. Magnitude varies between 3.9 & 10.5 over 309 days.

Mira Cet • Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.

LMC Dor • Large Magellanic Cloud. A neigbouring galaxy of the Milky Way. Dist=180,000 ly.

γ Leporis Leo • Visible with binoculars. Gold & white stars. Mags 3.6 & 6.2. Dist=30 ly. Sep=96.3”.

2322 Mon • A large scattered star cluster of 20 stars. Dist=1,300 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.

Pavonis Pav • Cepheid-type. Magnitude varies between 3.9 & 4.8 over 9,088 days.

M15 Pup • One of the better globular star clusters in the sky. Dist=14,000 ly.

LMC • Contains a planetary nebula (Mag 14, d=1”). Dist=30,000 ly.

7293 Aqr • ω Monocerotis Mon • 2070 Dor • 6397 Ara • M42 Ori • The Andromeda Galaxy. Most distant object visible to naked eye. Dist=2.5 million ly.

2724 Aqr • • The Hyades star cluster. Dist=66.7 ly.

Eclipsing Binary Star and Double (mag 8). Varies between 3.9 & 4.4 over 1.667 days.

L2 • Semiregular variable. Magnitude varies between 2.6 & 6.2 over 140.42 days.

2451 Pup • 30+ stars in binoculars. The brightest star, χ Puppis, is red. Dist=850 ly.

2477 Pup • Very rich but distant star cluster. Dist=4,200 ly.

2531 Scf • Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.

6025 Tri • A small open cluster in Triangulum. Dist=2,700 ly.

47 Tucanae Tuc • Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=30,000 ly.

β Tucanae Tuc • Complex multiple star. Binoculars show one pair. Telescope required to split primary star.

2547 Vel • Fine, open cluster visible through binoculars. Dist=1,300 ly.

IC 2391 Vel • Omicron Velorum Cluster. Superb object for binoculars. Dist=450 ly.

Telescopic Objects

γ Andromedae And • Attractive double star. Bright orange star with mag 5 blue companion. Sep=9.8”.

7009 Aqr • Saturn Nebula. Requires 8-inch telescope to see Saturn-like appendages.


γ Arietis Ari • Impressive looking double blue-white star. Visible in a small telescope. Sep=7.8”.

3918 Cen • The Blue Planetary. Visible in a small telescope as a round blue disk.

γ Delphini Del • Appear yellow & white. Mags 4.3 & 5.2. Dist=100 ly. Struve 2725 double in same field.

2070 Dor • Tarantula Nebula. A bright nebula located in LMC. A star-forming region.

η 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”.

δ Orionis Ori • Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field.

M33 Tri • Fine face-on spiral galaxy. Requires a large aperture telescope. Dist=2.3 million ly.

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