

# The Evening Sky Map

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

## Sky Calendar – January 2022

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- Moon at perigee** (closest to Earth) at 22:53 UT (distance 358,033 km; angular size 33.4'). 20 hours before New Moon.
- New Moon** at 18:35 UT. Start of lunation 1225.
- Quadrantid Meteor Shower** peaks at 21h UT. Active between December 28 and January 12. Produces up to 120 meteors per hour. Radiant is in northern Boötes.
- Moon near Mercury** at 3h UT (19° from Sun, evening sky). Mag. -0.7.
- Earth at Perihelion** (closest to Sun) at 7h UT. The Sun-Earth distance is 0.983337 a.u. or 147.1 million kilometers.
- Moon near Saturn** at 19h UT (evening sky). Mag. 0.7.
- Moon near Jupiter** at 4h UT (evening sky). Mag. -2.1.
- Moon shows maximum libration** for the year (9.9°) at 5h UT.
- Mercury at greatest elongation** east at 11h UT (19° from Sun, evening sky). Mag. -0.6
- Venus at inferior conjunction** with the Sun at 1h UT. The brightest planet passes into the morning sky.
- First Quarter Moon** at 18:12 UT.
- Moon near the Pleiades** at 5h UT (evening sky).
- Moon near Aldebaran** at 23h UT (evening sky).
- Moon at apogee** (farthest from Earth) at 9h UT (distance 405,805 km; angular size 29.4').
- Full Moon** at 23:50 UT.
- Moon near Beehive cluster M44** at 20h UT (morning sky).
- Moon near Regulus** at 15h UT (morning sky).
- Mercury at inferior conjunction** with the Sun at 10h UT. Mercury passes into the morning sky.
- Moon near Spica** at 19h UT (morning sky).
- Last Quarter Moon** at 13:42 UT.
- Moon near Antares** at 2h UT (morning sky).
- Moon near Mars** at 16h UT (36° from Sun, morning sky). Mag. 1.4.
- Moon at perigee** (closest to Earth) at 7:09 UT (distance 362,252km; angular size 33.0').
- Moon near Mercury** at 3h UT (16° from Sun, morning sky). Mag. 1.5.

More sky events and links at <http://Skymaps.com/skycalendar/>  
 All times in Universal Time (UT). (Australian Eastern Daylight Time = UT + 11 hours.)



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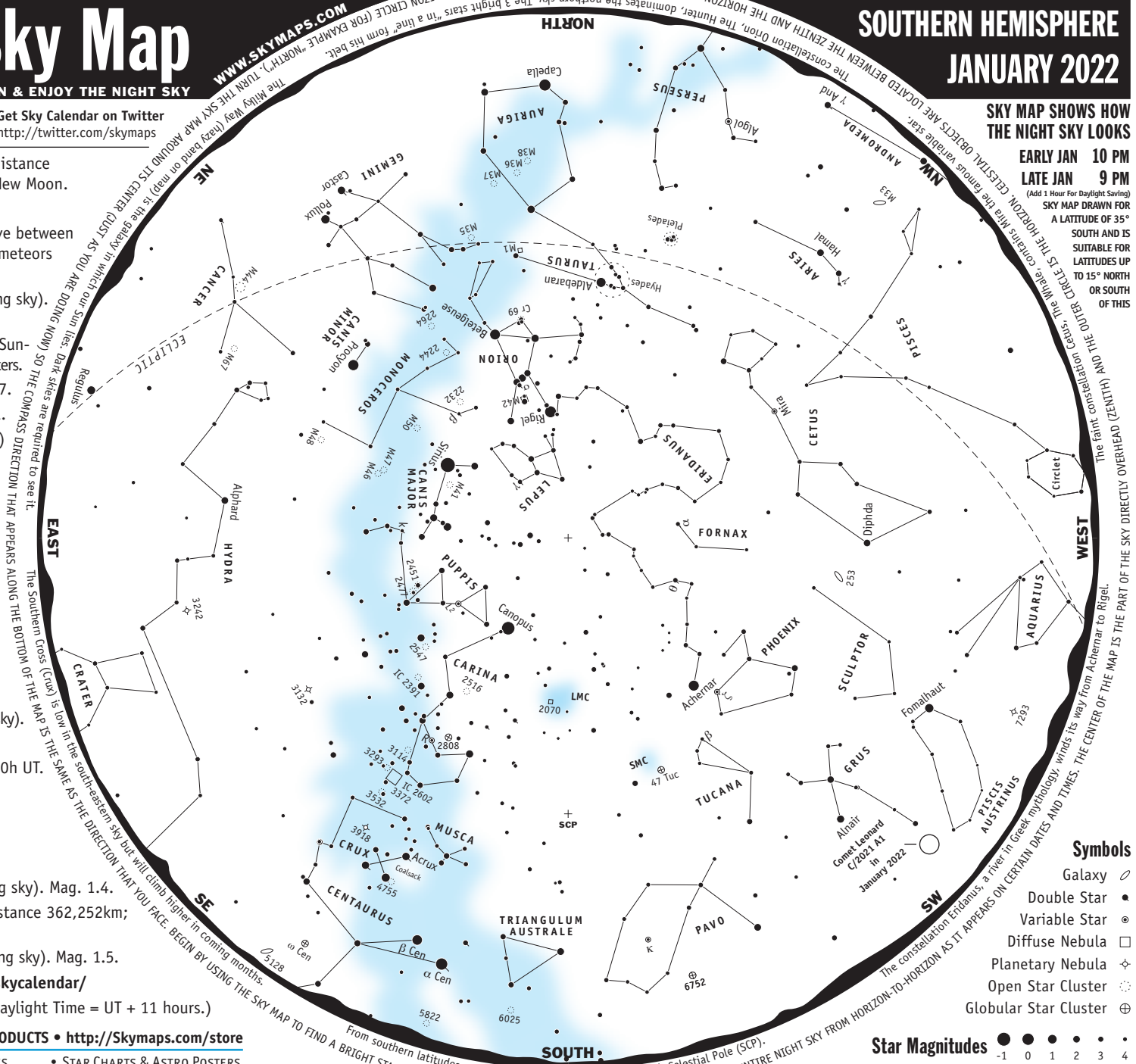
- STAR ATLASES & PLANISPHERES
  - STAR CHARTS & ASTRO POSTERS
  - BOOKS FOR SKY WATCHERS
  - TELESCOPES & BINOCULARS
- Help support the production and free distribution of The Evening Sky Map

## SOUTHERN HEMISPHERE JANUARY 2022

SKY MAP SHOWS HOW THE NIGHT SKY LOOKS

EARLY JAN 10 PM  
 LATE JAN 9 PM

(Add 1 Hour for Daylight Saving)  
 SKY MAP DRAWN FOR A LATITUDE OF 35° SOUTH 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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From southern latitudes, stars appear to rotate around the South Celestial Pole (SCP). 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 (THE HORIZON) AND THE DISTANCE BETWEEN THE CENTER AND THE HORIZON. COMPASS DIRECTIONS ARE INDICATED ALONG THE HORIZON CIRCLE (FOR EXAMPLE, "NORTH"). TO USE THE SKY MAP (TRAY) BAND ON MAP, ITS CENTER (JUST AS YOU ARE DOING NOW) 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.

## 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.

# SOUTHERN HEMISPHERE JANUARY 2022 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. |
| 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.                |
| α Centauri | Cen | • | Nearest bright star to Sun at 4.4 ly. Brilliant double star in a telescope. 80 year period.   |
| Achernar   | Eri | • | Brightest star in Eridanus, The River. Arabic name meaning "end of river". Dist=144 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.                        |
| 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.   |
| 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. Not associated with the Hyades star cluster. Dist=66.7 ly.          |

## Easily Seen with 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.                         |
| 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.                      |
| 3114           | Car | • | Stunning open cluster. 30+ stars visible through 7x binoculars. Dist=2,900 ly.                |
| 3293           | Car | • | Rich, tightly packed. Surrounded by large, faint nebulosity. Dist=8,500 ly.                   |
| IC 2602        | Car | • | The "Five of Diamonds". Bright cluster twice diameter of full Moon. Dist=491 ly.              |
| 3372           | Car | □ | Eta Carinae Nebula. Enormous glowing cloud in rich star field. Dist=8,000 ly.                 |
| 3532           | Car | • | Herschel - "most brilliant cluster". 60+ stars in 7x binoculars. Dist=1,300 ly.               |
| Mira           | Cet | • | Famous long period variable star. Mag varies between 3.0 & 10.1 over 332 days.                |
| LMC            | Dor | • | Large Magellanic Cloud. A neighbouring galaxy of the Milky Way. Dist=180,000 ly.              |
| M35            | Gem | • | Fine open cluster located near foot of the twin Castor. Dist=2,800 ly.                        |
| M48            | Hya | • | 12+ stars in 7x binoculars. Triangular asterism near centre. Dist=1,990 ly.                   |
| γ Leporis      | Lep | • | Visible with binoculars. Gold & white stars. Mags 3.6 & 6.2. Dist=30 ly. Sep=96.3".           |
| 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.                   |
| M42            | Ori | □ | The Great Orion Nebula. Spectacular bright nebula. Best in telescope. Dist=1,300 light years. |
| ζ Phoenicis    | Phe | • | Eclipsing binary star and double (mag 8). Varies between 3.9 & 4.4 over 1.667 days.           |
| L <sup>2</sup> | Pup | • | Semi-regular variable. Magnitude varies between 2.6 & 6.2 over 140.42 days.                   |
| M47            | Pup | • | Bright star cluster. 15+ stars in 7x binoculars. Dist=1,500 ly.                               |
| M46            | Pup | • | Dist=5,400 ly. Contains planetary NGC 2438 (Mag 11, d=65") - not associated.                  |
| 2451           | Pup | • | 30+ stars in binoculars. The brightest star, χ Puppis, is red. Dist=850 ly.                   |
| 253            | Scl | • | Fine, large, cigar-shaped galaxy. Requires dark sky. Member of Sculptor Group.                |
| 47 Tucanae     | Tuc | • | Spectacular object. Telescope will reveal stars. Near edge of SMC. Dist=15,000 ly.            |
| β Tucanae      | Tuc | • | Complex multiple star. Binoculars show one pair. Telescope required to split primary star.    |
| SMC            | Tuc | • | Small Magellanic Cloud. Companion galaxy to Milky Way. Requires dark sky. Dist=210,000 ly.    |
| 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

|               |     |   |  |
|---------------|-----|---|--|
| 2070          | Dor | □ | Tarantula Nebula. A bright nebula located in LMC. A star-forming region.                       |
| θ 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.                        |
| α Orionis     | Ori | • | Superb multiple star. 2 mag 7 stars one side, mag 9 star on other. Struve 761 triple in field. |
| k Puppis      | Pup | • | Telescope easily shows two blue-white stars of almost equal brightness. Sep=9.9".              |
| M1            | Tau | □ | Crab Nebula. Remnant from supernova which was visible in 1054. Dist=6,500 ly.                  |
| 3132          | Vel | • | One of the brightest planetaries. Magnitude 10 central star. Dist=2,600 ly.                    |