

What's Up – January 2021

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Sun and Moon

The Last Quarter phase of the Moon falls on the 6th of January, at 11h37. The New Moon occurs on the 13th of January, at 07h00. The First Quarter falls on the 20th of January at 23h01 and the Full Moon occurs on the 28th of January at 21h17. On the 9th of January at 17h36, the Moon will be at perigee (closest approach to Earth) at a distance of 367 387 km. The Moon will be at apogee (furthest from Earth) at a distance of 404 360 km on the 21st of January.

Planetary and Other Events – Morning and Evening

Venus is still dazzling the morning sky as the bright morning star. In the beginning of this month, the hottest planet in our solar system is located near the stars of the constellations Ophiuchus and later Sagittarius by month end. Venus will be near the crescent moon on the 11th of January.

This month presents an opportunity to observe the smallest planet in our solar system after sunset. In the beginning of the month, Mercury is too close to the Sun to be seen, but after the 7th of January it can be seen near stars of the constellation Capricornus, close to Jupiter and Saturn. Mercury, Jupiter and Saturn will be joined by the crescent moon, do not miss it. Mars, the red planet, can still be seen in the evening sky, and it is located near the stars of the constellation Pisces. Jupiter and Saturn are located near the stars of Capricornus. At the beginning of the month Jupiter and Saturn are still close to each other, but as the month progresses, their apparent separation increases. Saturn reaches solar conjunction on the 24th of January. With the aid of a telescope, Uranus and Neptune can be seen in the evening sky.

Several meteor showers are active in January. The Puppis-Velids are active from December 5th 2020 to January 7th 2021, peaking on the 29th of December 2020. The alpha Crucids, in the constellation of the Southern Cross (Crux), are active from the 6th January – 28th January, peaking on the 19th. They are best viewed between 00:00 AM and 03:30 AM looking towards the constellation of Crux. The alpha Centaurids, in the constellation of Centaurus, are active from the 28th January to the 21st February, peaking on the 7th of February. Hourly rates are expected to be around 5 meteors per hour at the maximum.

The Evening Sky Stars

Low in the north in the evening are the stars variously known as the Seven Sisters, the Pleiades, or Isilimela. There are six stars in this cluster which are fairly easily visible to the naked eye, and hundreds that can be seen through a telescope. Located about 420 light years away, this is a group of stars which formed from a cloud of interstellar dust and gas about 120 million years ago. The Pleiades stars easily visible to the naked eye are all more than a 100 times brighter than our Sun – our own Sun only looks brighter because it is 27 million times closer to us! Above and to the right of the Pleiades is another cluster of stars called the Hyades, making up the muzzle of Taurus the Bull. The Hyades are about 150 light years away, and about 600 million years old. Bright orange Aldebaran looks as though it ought to be part of this loose group, but is only located in the same direction and, at only 64 light years away, is less than half as distant. It is, however, the most luminous star within a 100 light years of us.

Low on the northern horizon glitters Capella, brightest star in Auriga the Charioteer. As with other bright stars, the effects of atmospheric refraction can cause it to twinkle vigorously when

near the horizon, appearing to flash in multiple colours. In July 1951, a pilot in northern Michigan chased Capella for half an hour under the impression that it was a UFO. Given that Capella is 42 light years away, it is not surprising he did not catch it.

High in the NNE are the brilliant stars of Orion, with the twins (Castor and Pollux), lower in the NE. Below Orion in the ENE (below Orion and to the right of the twins) is Procyon, brightest star in Orion's smaller hunting dog. At only 11 light years away, Procyon is one of our nearest neighbours. Sirius is even nearer, high in the East in January evenings, at only 9 light years distant, and both have dim companions called "white dwarfs", which are no larger than planets. The diameter of Procyon's companion is only about 30% larger than the diameter of our Earth, while Procyon's diameter is millions of kilometres! A white dwarf is a star that has used up its nuclear fuel, and is slowly cooling down until it crystallises, which typically takes billions of years. It still glows, but only with stored energy. Procyon's companion, for example, is only 0.06% as bright as the Sun.

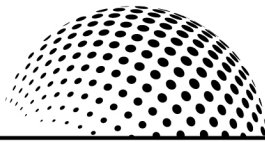
Canopus, the second brightest star in the Earth's skies, is a bit SE of the zenith (the point overhead). South of the zenith is Achernar at the Southern end of the Celestial River, while Fomalhaut is the brightest star in the SW. In the southern half of the sky in January there is a curious blend of birds and water creatures (including the Southern Fish, the Crane, The Toucan, The Phoenix, The Peacock, the Bird of Paradise, the Flying Fish, the Swordfish and the Water Snake), mixed with mechanical and scientific constellations such as the Octant, the Pendulum Clock, the Chemical Furnace, the Microscope, the Engraving Tool and the Eyepiece Reticle. The Southern Cross and Pointers are very low in the SW even from the Cape and invisible from northern South Africa.

The Morning Sky Stars

Bright stars in the northern half of the sky include Regulus and Procyon in the northwest, orange Arcturus in the northeast. Blue-white Spica is much higher in the northeast. Spica is the brightest of the stars in Virgo, which represents a goddess of ancient mythology. Which goddess is a bit more mysterious, as some claim she was a goddess of the harvest, others a goddess of justice.

The Cross and the Pointers (the two brightest stars in Centaurus) are high in the south in the predawn January sky, with the three stars of the imaginatively named Southern Triangle directly below the Pointers. The Keel, the Sails, the Poop Deck (constellations seen to the right of the Southern Cross while facing south) were once part of the single giant constellation of Argo Navis, the Argonaut's Ship that sailed to find the Golden Fleece. Just above the Southern Cross and the Housefly are the stars of the great ship Argo as it sails along the Milky Way, accompanied by the dim stars of the Flying Fish. The Milky Way stretches across the morning sky from east to west, a bit south of the zenith, with the bright stars of the Scorpion now rising in the east before dawn. Look out for the brightest star in Scorpio, Antares ('rival of Mars').

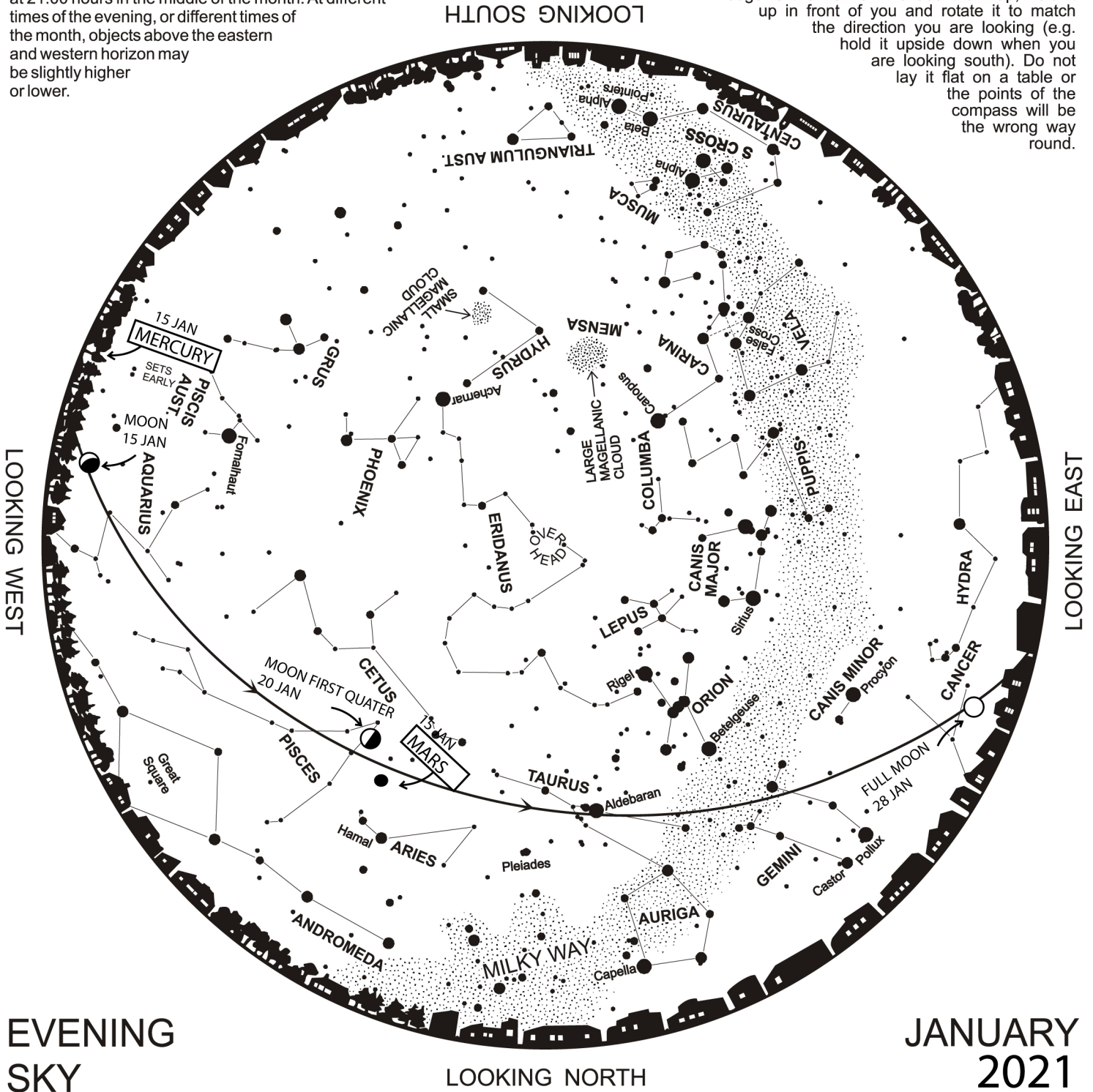
Still very high in the January predawn sky is Hydra the Water Monster, with the Cup mounted on its back and the Crow flying nearby. The brightest star in Hydra is Alphard, high in the NW in the January predawn sky. At a distance of 175 light years away, Alphard is a giant star 40 times the diameter of our Sun, and would stretch halfway to the orbit of Mercury if placed where the Sun is. Since Alphard is also 400 times brighter than the sun, we'd be crispy in a jiffy!



IZIKO PLANETARIUM AND DIGITAL DOME

The map shows the night sky visible above the Cape at 21:00 hours in the middle of the month. At different times of the evening, or different times of the month, objects above the eastern and western horizon may be slightly higher or lower.

The centre of the map is the overhead point, the edge is the horizon. To use the map, hold it up in front of you and rotate it to match the direction you are looking (e.g. hold it upside down when you are looking south). Do not lay it flat on a table or the points of the compass will be the wrong way round.



EVENING SKY

JANUARY 2021

The Gemini stars Castor and Pollux welcome us to the new year as they reappear in the east. From Auriga (Charioteer) in the north to the Southern Cross low in the south, the Milky Way unfurls itself across our eastern skies. Try to identify all the stars of Eridanus (river) as it lies directly overhead, starting close to blue supergiant Rigel in Orion (hunter) and ending with bright star Achener. Two clear open star clusters, the Pleiades and Hyades, lie towards the north. The latter v-shaped stellar cluster, with bright star Aldebaran forms part of Taurus (bull). Further east, look out for three distinctive belt stars and red supergiant star Betelgeuse in Orion. In African star lore, Aldebaran's hungry

wives (Pleiades) sent him to hunt down three zebras (Orion's belt). Using his bow and single arrow, he foolishly missed but was unable to retrieve it due to a nearby fearsome lion (Betelgeuse). Aldebaran now sits in Taurus, caught between the lion and his angry wives back home. After last month's impressive Great Conjunction, Jupiter and Saturn take a bow as they set in the early evening. A stunning red Mars continues to grace our evening skies and Venus is a bright morning object (also currently known as the 'morning star'). The moon will be in the evening sky until 4 January and then from 15 January, with full moon on 28 January.