

What's Up – September 2024

What's Up – September

Sun and Moon

The New Moon occurs on the 3rd of September at 03h55, and the First Quarter falls on the 11th of September at 08h05. The Full Moon occurs on the 18th of September at 04h34, and the Last Quarter Moon falls on the 24th of September at 20h49.

The Moon's orbit around the Earth is slightly elliptical, with the distance between the two bodies varying somewhat over the course of a month. On the 5th of September at about 16h53 the Moon will be at apogee (furthest from Earth) at a distance of about 406 211 km. On the 18th of September at about 15h23, the Moon will be at perigee (closest to Earth) at a distance of about 357 286 km.

Since the Full Moon happens when the Moon is at perigee, we will experience a Super Moon on the 18th of September. There is also a partial lunar eclipse of the Moon on that day. The Moon will enter the penumbra at 02h41 and enter the umbra at 04h12. The greatest eclipse will be at 04h44, and the Moon will leave the umbra and penumbra again at 05h15 and 06h47, respectively.

The (southern hemisphere) spring will occur on the 22nd of September at 14h44. At this time the Sun will be located directly above the earth's equator, as it appears to move southwards. This is the second instance of this occurring during the year, the other instance being of course the autumn equinox, which occurs about 6 months earlier when the Sun is on its northbound journey. The spring equinox marks the promise of warmer days ahead for those in the southern hemisphere, while for those in the northern hemisphere colder days lie in wait. These seasonal changes are the result of the tilt of Earth's rotation axis relative to its orbit around the Sun.

Planetary and Other Events – Morning and Evening

Venus dazzles the night sky just after sunset as the bright evening star. Venus can be observed near the stars of the constellation Virgo. Saturn, the beautifully ringed planet, can also be seen in the evening on the opposite of Venus and is visible throughout the night. It is located near the stars of the constellation Aquarius. Mars, Jupiter and Mercury can be observed in the morning sky before sunrise. Mars is located near the stars of the constellation Gemini. Mars will be near the Moon on the 25th of September. Jupiter is located near the stars of the constellation Taurus. Jupiter has a close approach to the Moon on the 23rd of September. Mercury will be near the stars of the constellation Leo. It will reach its greatest elongation (furthest angular distance from the Sun) in the west on the 5th of September and will be bright and good to observe.

The Evening Sky Stars

The winter Milky Way still sweeps majestically across the sky from NNE to SSW in early September evenings, and the centre of our Milky Way galaxy is almost overhead. Just to the west of the zenith is the Scorpion, with the reddish star Antares at its heart. Antares (or 'rival of Mars') is a huge star 600 light years away, shining in visible light with 12000 times the power output of our own sun. But Antares is also so much cooler than the sun (hence the red colour) that most of its energy output is in the infrared, and its total power output is 40000 times that of the sun. If Antares were suddenly placed at the centre of our solar system, Mercury, Venus, the Earth, Mars and the asteroid belt would be inside this monster star, whose vaguely defined surface would lie 4/5 of the way from the star's centre to the orbit of Jupiter. Gravity at the surface of Antares is so weak that it is losing mass fast enough to create a visible nebula or gas cloud around it, lit by Antares hot companion star. In the

next few million years or so, Antares may explode as a supernova — so keep your eyes on the Scorpion if you're the patient sort. Just NE of Scorpio in the Milky Way are the stars of Sagittarius the Archer, making a pattern a bit like a teapot. It's in this constellation that the centre of our galaxy is located, but you can't actually see the centre directly because of the thick dust clouds between it and ourselves. Only one in a billion photons of visible light from the Galactic Centre can get through, and infrared cameras are needed to show what's there. Infrared observations of stars orbiting the centre suggest that right at the centre is a black hole about 3 million times as massive as our Sun, and this black hole was confirmed by observations with the Event Horizon Telescope, a worldwide network of radio telescopes.

High in the NE, toward the edge of the Milky Way, is the bright star Altair in Aquila the Eagle. Altair is easy to recognize because of the dimmer stars more or less equally spaced on each side. Another bird constellation, low in the NE and thoroughly tangled in the Milky Way, is Cygnus the Swan, also known as the Northern Cross. At the NE end (top) of the Cross is Deneb, the tail of the Swan. Deneb is much more distant than most of the stars we see with the unaided eye, and its true brightness has been estimated at 160 000 suns. To the right (W) of Deneb is another bright northern star, Vega, only about 1/100 as far away at only 25 light years. Vega is really much dimmer than Deneb, but appears brighter because it is so much closer. If Deneb were as close as Vega, it would be by far the brightest star in the sky, as bright as a thickish crescent moon!

Low in the NW in early evening is the bright star Arcturus, with Spica glowing low in the west amidst the 'dance of the three planets' described above. Higher in the west (and just north of the Scorpion) is the curious constellation of Ophiuchus the Serpent Holder. One half of the Serpent stretches from the hands of Ophiuchus toward Arcturus and the Northern Crown in the NW, while the other extends along the Milky Way toward the Eagle. South of the Scorpion are the Altar, the Level and the Wolf, while further south we find the Centaur (including the Pointers) and the Southern Cross. Fomalhaut is now high in the east, with bright Achernar low in the southeast, ninth brightest star in the night sky.

The Morning Sky Stars

By the time the Earth's rotation allows us to see the predawn September sky, Achernar (the 'mouth' of the celestial river Eridanus) is much higher in the south, with Fomalhaut (in the Southern Fish) low in the SW. Achernar is spinning so fast that its equatorial diameter is about 11.8 times that of the sun, while its polar diameter is only 7.6 times solar. Partly due to its very fast spin, Achernar is losing mass thousands of times as fast as our own sun, and is thousands of times as bright. High in the southeastern sky is Canopus, second brightest star in our night skies and the brightest star in the ancient constellation of Argo, the great ship. High in the east is Sirius, brightest star in the night sky as seen from Earth. If Canopus were at the same distance as Sirius, however, it would shine about 400 times brighter. Sirius is the brightest star in Orion's Large Dog, and the stars of Orion, including bright Rigel and Betelgeuse, are high in the NE before dawn this month. Charging Orion is Taurus the Bull, with Aldebaran serving as an inflamed orange eye. No wonder Orion has his hide shield raised in front of him. Behind Orion, his Small Dog (with the bright star Procyon) is prudently staying on the safer side of the contest, while totally indifferent to all this drama, Auriga the Charioteer (with the bright star Capella) drives by low in the north.

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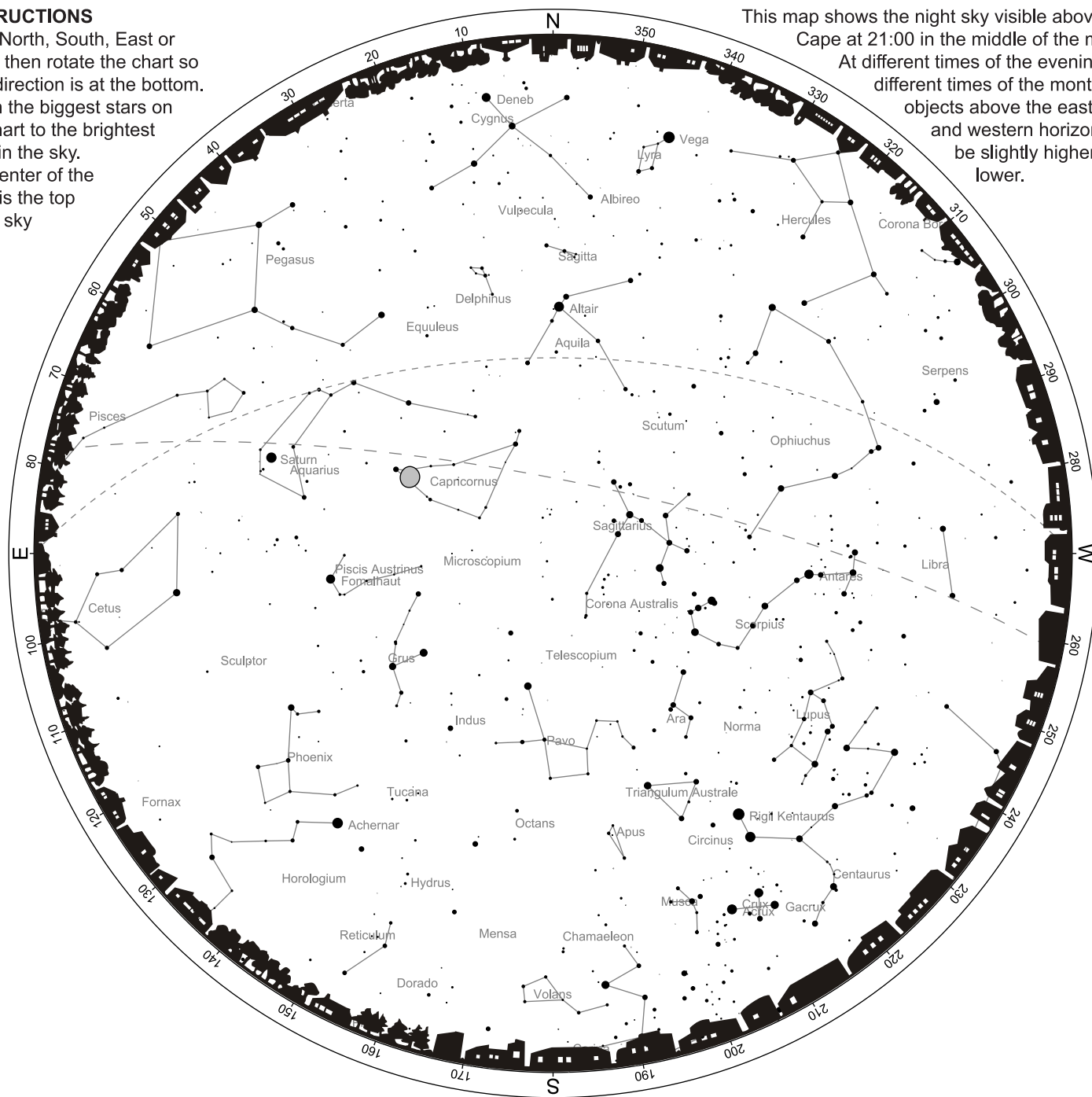
Skymap

September 2024

INSTRUCTIONS

Face North, South, East or West, then rotate the chart so your direction is at the bottom. Match the biggest stars on the chart to the brightest stars in the sky. The center of the chart is the top of the sky

This map shows the night sky visible above the Cape at 21:00 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.



Location: Cape Town, 33.9284°S, 18.4144°E | Time: 15 September 2024 21:00 (UTC +02:00)

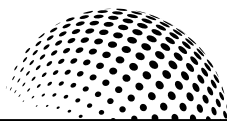
In September 2024, the night sky over Cape Town offers a spectacular view with key constellations, bright planets, and a stunning Milky Way. The Southern Cross (Crux) is easily visible in the southern sky, while Scorpius and its bright red star Antares dominate the west. Nearby, Sagittarius and its "Teapot" asterism point toward the dense star fields of the Milky Way, which stretches from southeast to northwest.

In the east, Jupiter and Saturn shine brightly, with Jupiter being the most luminous.

Mars is faintly visible low on the western horizon after sunset, while Venus is not visible this month.

Fomalhaut, the "Lonely Star of Autumn," can be spotted low in the southeast.

The Milky Way is particularly breathtaking, especially near Sagittarius, offering rich views of star clusters and nebulae. Minor meteor showers, including the Piscis Austrinids, Southern Delta Aquariids, and Alpha Capricornids, can be observed after midnight. The best stargazing opportunities occur around the New Moon on September 7th, while the Full Moon on September 21st will brighten the night sky, limiting visibility of fainter objects. Overall, this month provides excellent conditions for both planetary and deep-sky observation.



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