

## What's Up – May 2022

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#### Sun and Moon

The First Quarter Moon occurs on the 9<sup>th</sup> of May at 02h21. The Full Moon falls on the 16<sup>th</sup> of May at 06h14 and the Last Quarter Moon occurs on the 22<sup>nd</sup> of May at 20h43. The New Moon falls on the 30<sup>th</sup> of May at 13h30.

On the 17<sup>th</sup> of May at 17h27, the Moon will be at perigee (closest approach to Earth) at a distance of about 360 298 km. The Moon will be at apogee (furthest from the Earth) at a distance of about 405 285 km on the 5<sup>th</sup> of May at 14h46.

There will be a Total Lunar Eclipse on the 16<sup>th</sup> of May, and the total eclipse will last from 5h29 to 6h53. In South Africa, weather permitting, at least some of the total eclipse will be visible everywhere. If you are in the west of the country, you may enjoy it in its entirety before Moon sets. See <https://www.timeanddate.com/eclipse/map/2022-may-16> for more details.

#### Planetary and Other Events – Morning and Evening

Four of the bright planets, namely Mars, Saturn, Venus and Jupiter are still visible in the morning sky. Venus and Jupiter are close and are located near the stars of the constellation Pisces. They begin to move away from each other as the month progresses. Mars is located near the stars of the constellation Aquarius at the beginning of the month and near Pisces by midmonth. The Moon will be near Mars and Jupiter on the 25<sup>th</sup> of May. Don't miss out on the conjunction of Mars and Jupiter on the 29<sup>th</sup> of May. Saturn is located near the stars of the constellation Capricornus. On the 6<sup>th</sup> of May, the beautifully ringed gas giant will be located between the asteroid Vesta and the star Deneb. Saturn will be near the Moon on the 22<sup>nd</sup> of May.

Three meteor showers are active in May. The alpha Scorpiids are active between the 11<sup>th</sup> of April and the 12<sup>th</sup> of May, peaking on the 3<sup>rd</sup> of May. The eta Aquariids are active from the 21<sup>st</sup> of April to the 12<sup>th</sup> of May, peaking on the 5<sup>th</sup> of May. The chi Scorpiids are active from the 27<sup>th</sup> of May until the 20<sup>th</sup> of June, peaking on the 5<sup>th</sup> of June.

The Scorpiids are minor showers with only around 5 meteors per hour expected at their peaks. The eta Aquariids meteor shower originates from dust grains ejected by Halley's Comet. The grains are distributed along the comet's orbit. Every time the Earth passes through the dust stream we experience the eta Aquariids meteor shower. To view the eta Aquariids, look towards the constellation Aquarius between 03:30 a.m. and 05:30 a.m. At the peak, around 60 meteors per hour are expected.

#### The Evening Sky Stars

Orion can still be seen low in the WNW in the early evening, with bright Sirius ('The Dog Star') faithfully following at his heels (or possibly chasing Lepus the Hare into the western twilight). Leo's upside down question mark should be easy to spot in the north, above the few stars in the Great Bear that creep above our horizon. A bit higher in the north is lonely Alpheratz, the brightest star in the Water Snake, while another and much brighter orange star, Arcturus, rises in the northeast. Arcturus' atypical motion and chemical composition mark it as a likely 'immigrant', a star from a smaller galaxy which long ago was "eaten" by our own Milky Way giant spiral. A bit higher in the sky is blue-white Spica, rising in the ENE in early evening. Spica appears to the naked eye as a single fairly bright star, but it is actually a system of 5 stars 260 light years away. The two brightest stars in the Spica system rotate around each other once every 4 days, and are respectively 13 400 and 1 700 times as bright as our own Sun. Paradoxically, most of the stars you can see without a telescope are brighter than our Sun, even though most stars in our neighbourhood are much dimmer than the Sun. This is because we can see bright stars even when they are far away, while most stars would be too dim to spot even at the distance of our closest stellar neighbours.

Gliese 581, host star to two very interesting planets, is a typical example. This first of these two planets is about 5-6 times the Earth's mass and is located in the "habitable zone", where it is possible for liquid water oceans to exist on the planet's surface. The second of these is even smaller with a mass about twice that of Earth, but it is closer to its parent star than the first. At only 20 light years away, Gliese 581 is one of our near neighbours; but it is 66 times too faint to see with the unaided eye.

Rising in the southeast are the stars of the Scorpion and the Wolf, with the stars of the Cross and the Pointers high in the SE. Look out for Antares, the bright red star in Scorpius. Well up in the SSW is Canopus, second brightest star in the night sky and brightest in the great ship Argo, serenely sailing along the Milky Way, which runs from Scorpio in the SE to the Twins and the Unicorn in the NW. Accompanying the Argo are the Flying Fish and the Swordfish, with the Fly and the Bird of Paradise flying on ahead.

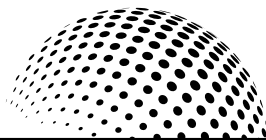
#### The Morning Sky Stars

Achernar, the "Little Horn", shines brightly high in the SE before dawn, with the celestial river Eridanus flowing down toward the east. Assortments of birds occupy much of the southern sky, including (from west to east) the Bird of Paradise, the Peacock, the Crane, the Toucan and the Phoenix. The stars of the Pointers and the Cross are now low in the SW, with the Scorpion, the Wolf and the Altair in the WSW and Sagittarius the Archer still halfway up in the west. The centre of our galaxy, with the most brilliant parts of the Milky Way, is well into the west before dawn, but the Great Rift (a dark band running through the northern Milky Way) is still easy to see. The brightest stars in the NW are Altair in the Eagle, Vega, very low in the NW in the Lyre, and Deneb, the tail of the Swan. The Swan, at the far northern end of our Milky Way on May mornings before dawn, is also known as the Northern Cross. The dim star at the southern end of the Northern Cross is Albireo, a beautiful gold-and-blue double star when seen through a telescope. Albireo's two stars are far brighter than ours, but they would still be dim compared to Deneb. We don't know the exact distance to Deneb, and can't be sure just how bright it is, but the minimum estimate is 60 000 times the brightness of the Sun!

Just east of the point overhead is Fomalhaut, brightest star in the Southern Fish, with the dimmer stars of the Sea Goat and the Water Carrier just to the north. Low in the northeast are the stars of the Great Square of Pegasus, with the two fishes to the south and east, tied together by their tails. Rising in the E before dawn are the stars of the Whale.

But the most carefully watched star on May mornings in at least some parts of Southern Africa was Canopus, known to some as 'Naka' (the Horn). Sotho men would camp in the mountains, where they made fires and watched the early morning skies in the South. It was believed that the first person to see the star would be very prosperous that year, with a rich harvest and good luck to the end of his life. In olden times the chief would give the lucky man a heifer. The day after Naka was sighted was the time for the men with divining bones to examine their bones in still water, to predict the tribe's luck for the coming year. Among the Venda, the first person to see Nanga (Canopus) in the morning sky announced his discovery by climbing a hill and blowing a sable antelope horn (phalaphala). Among the Mapeli, the first person to see the star would begin ululating loudly enough to be heard in the next village, which would then join the noise-making to warn other villages, each in turn until all knew Canopus had been seen. For the Xhosa speaking people, the sighting of Canopus, called uCanzibe, signalled the beginning of the season for the celebration of the last days of boyhood by boys intending to go to the initiation school to become men.

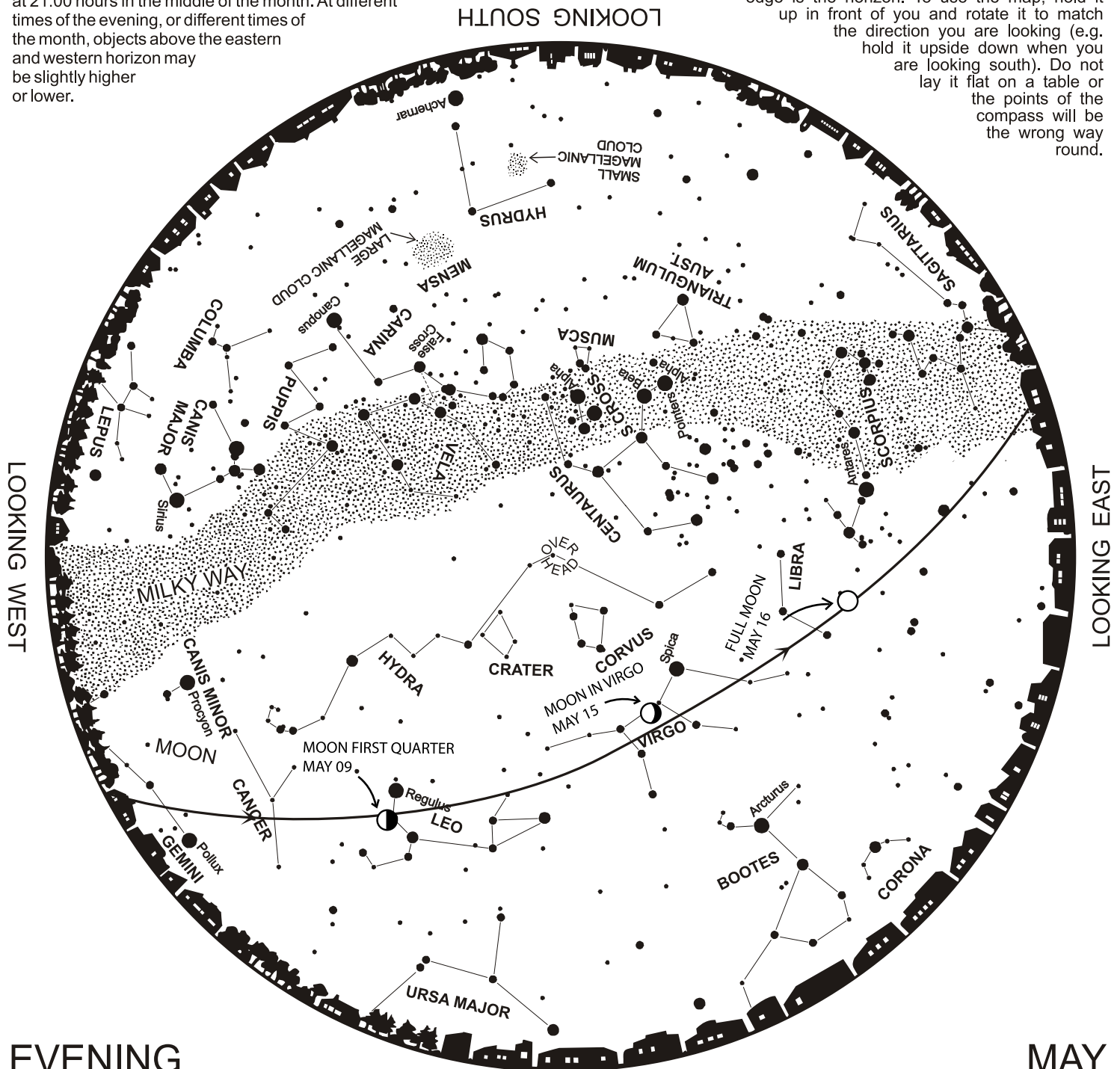
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## IZIKO PLANETARIUM AND DIGITAL DOME

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

This month we say farewell to Orion (hunter) as it sets in the early evening and welcomes back the prominent winter constellations Scorpius (scorpion) and Sagittarius (archer) situated low on the eastern horizon. Try to observe where the path of the Milky Way appears to widen around these two constellations (requires dark conditions) – this region encompasses the Galactic centre. Hydra (water snake) passes overhead, surrounded by Corvus (crow), Centaurus (centaur) and Vela (sail).

Just south-west of Vela lies Carina (keel), and the bright star Canopus, also known as 'Nanga' or 'Naka' (the Horn Star) across Southern Africa.

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According to Tswana tradition, the reappearance of Naka just before sunrise (at month end), heralds the coming of Winter and the need to start breeding sheep. In Sotho and Venda traditions, the person who first sighted Naka/Nanga in the morning was awarded a cow by their chief. This month South Africans will get the exciting opportunity to witness a total lunar eclipse, occurring on the morning of 16 May (05:29 – 06:54 SAST). The moon will appear in the evening sky from 3 to 21 May, with Full Moon on 16 May ('Frost Moon', see <https://cfah.org.za/fullmoon/> to find out more). Saturn, Mars, Jupiter and Venus are bright morning objects, appearing aligned in the eastern sky just before sunrise.