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What's Up – July 2018

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Sun and Moon

The Last Quarter falls on the 6th of July at 09h51. New Moon occurs on the 13th of July at 04h48. The First Quarter falls on the 19th of July at 21h52. The Full Moon is 27th of July at 22h20. The Moon will be at perigee (closest approach to Earth) at a distance of about 357 431 km on the 13th of July at 10h30. On the 27th of July at 07h45, the Moon will be at apogee (furthest from Earth) at a distance of about 406 222 km. A total eclipse of the Moon occurs on the evening of July 27. The Moon enters the umbra at 20h24. Totality starts at 21h29, maximum eclipse occurs at 22h21 and the total eclipse 23h13. Please there is a partial eclipse of Sun on the 13th of July but it is visible in Antarctica, Steward Island, Southernmost part of Australia and Tasmania only (Not visible to us)

Planetary and Other Events – Morning and Evening

Mercury, Venus, Mars, Jupiter and Saturn – the five naked eye planets are re-introduced to the evening skies, this has not been the case in the past few months. For planet hunters, this is the best time to view the 5 planets as they can be seen together in the sky for most of this month. Mercury can be observed just after sunset near the stars of Cancer at the beginning of the month and near the stars of Leo from mid-month till month-end. Mercury will reach its greatest elongation on the 12th of July. This makes this July the best time to view the planet Mercury. Venus shines brilliantly as the Evening Star and can be located near the stars of Leo. Mars, located near Ophiuchus and Capricornus, can be seen two hours after sunset. Mars is well placed for observing throughout the night, reaching opposition on the 27th of July and closest approach on the 31st of July. Jupiter, the king of planets within our solar system, is found meandering through Libra, this month. Jupiter can be seen during the evening and sets shortly after midnight. This is a great opportunity to view the Galilean Moons and the cloud bands across Jupiter's disk using a small telescopes or larger binoculars. Saturn, having reached opposition on the 27th of June, is now located near the stars of Sagittarius. Saturn can be observed throughout the night and sets in the early morning. Uranus and Neptune, located in the water constellations of Pisces and Aquarius, respectively, grace the morning skies and can be observed before sunrise. Vesta, the asteroid is visible and can be observed near the stars of Ophiuchus and can be located by using Antares, the red star of Scorpius and Saturn as markers.

Four meteor showers are active in July. Of these, observing prospects are good for the July Phoenicids. The July Phoenicids meteor shower is active from the 10th July to the 16th July, peaking on the 13th. To view the shower, find a dark spot and look near the constellation of Phoenix. The best time to view the July Phoenicids is from 23:00 PM low in the SE to 05:00 AM when they'll be in the nearly overhead towards the SE. The Southern delta Aquariids meteor shower is active from the 21st July to 29th August, peaking on the 29th July. To view the Southern delta Aquariids, find a dark spot and look near the constellation of Aquarius for the Southern delta Aquariids radiant. The best time to view the Southern delta Aquariids is from around 21:30 PM in the east until dawn when they'll be in the NW. Unfortunately, the shower's peak night coincides with the Moon just past its full phase, assuring that the bright moonlight will interfere with all but its brightest meteors. The alpha Capricornids meteor shower is active from the 15th July to the 25th August peaking on the 30th July. To view the shower, look near the constellation of Capricornus for the alpha Capricornids radiant. The best time to view the alpha Capricornids is from around 20:00 PM in the east until 04:00 AM when they'll be in the west.

The Piscis Australids are active from the 19th July to the 17th August peaking on the 28th July. They are best viewed between 21:30 PM (east) and 05:00 AM (west) looking towards the constellation of Piscis Austrinus (the Southern Fish, not to be confused with Pisces).

The Evening Sky Stars

The Milky Way is a dominant presence on July evenings, with the brilliant stars of Centaurus nearly overhead, and the Cross just to the south. Marking the southern edge of the Milky Way below the Centaur are the dimmer stars of the Housefly and the Southern Triangle. To the west of Centaurus along the Milky Way is the great ship Argo, with Canopus,

second brightest star in the sky, glowing low in the SW. Sirius appears brighter in our sky only because it's so much closer (9 light years to Canopus' distance of 313 light years), but Canopus is a supergiant star, 8-9 times as massive as our own Sun, 65 times the Sun's diameter and 15,000 times as bright. Although the surface temperature of Canopus is 'only' 7800 degrees, its atmosphere is heated to about 20 million degrees, meaning plenty of hard radiation for any alien astronaut unfortunate enough to be nearby.

To the east of the Centaur are the stars of the Wolf and the Scorpion, with the Altar just to the south at the edge of the Milky Way. But the thickest part of the Milky Way lies around Sagittarius, the Archer, and the stars of the Scorpion's sting. In this direction is the centre of our galaxy, and hidden by thick dust clouds is the black hole in the exact centre, 4 million times the mass of our Sun and a bit smaller than the size of Earth's orbit.

Just north of the Centaur is the tail of Hydra, the giant water snake, with its body extending far into the west almost parallel to the Milky Way. Low in the west is Alphard (Arabic for 'the solitary one'). Low in the NW are the stars of the Lion, while low in the northeast are the dim stars of the great hero, Hercules with the delicate semi-circle of the Northern Crown between it and a bright orange Arcturus (the 'Bear Guard') low in the north.

Arcturus is the brightest star in Boötes (the Herdsman), which some say is the most ancient constellation in the sky. It looks brighter than any other star in the northern hemisphere, and is an orange giant 37 light years away, 215 times as bright as our sun, and 26 times the Sun's diameter. Arcturus' orbit around the centre of the galaxy is quite different from the orbits followed by most stars in our neighbourhood, and it has only 20% as much iron. One possible explanation is that it may originally have been part of a small galaxy that merged with our Milky Way billions of years ago.

The Morning Sky Stars

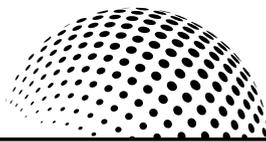
The Milky Way runs completely around the horizon on July mornings, appearing low in the sky in every direction. That means that when you look overhead you are looking straight from our Milky Way galaxy toward the South Galactic Pole.

Orion the Hunter, with orange Betelgeuse and blue-white Rigel, is rising in the east. From the northeast, the V-shape of the Bull's head (with bright Aldebaran as the Bull's glowing eye) charges Orion. And riding on the back of the Bull is the open cluster of stars called the Pleiades, which is about 400 light-years away. The Pleiades is also widely known as the Seven Sisters, and known to the Namaquas as "the daughters of the sky god".

On the low in the ESE we see brilliant Sirius, brightest star in the sky, among the other stars of Orion's Large Dog, while the Hare scampers between the Dog and the Hunter. The second brightest star in the sky is Canopus, seen in the southeast on July mornings, and marking the Keel of the upside-down Ship Argo. (As most of the constellations were invented in the northern hemisphere, we tend to see them bottom side up.) High in the south is bright Achernar, marking one end of the celestial river Eridanus. The other end is near Rigel about where Orion's knee would be. Below Achernar in the south are the southern Water Snake and the Toucan, with the Peacock a bit lower in the SW. Alpha Pavonis is actually a pair of hot, luminous blue-white stars about 183 light years away, revolving around each other every 11.75 days. It's about 450 times as luminous as the Sun.

High in the W are the Crane and the Southern Fish, with its bright star Fomalhaut, with the stars of the Sea Goat making a dim irregular triangle a bit lower in the W. High in the N and NE is the appropriately large constellation of the Whale, reminding us that in a couple of months it will be time for whale-watching again along the Cape coast.

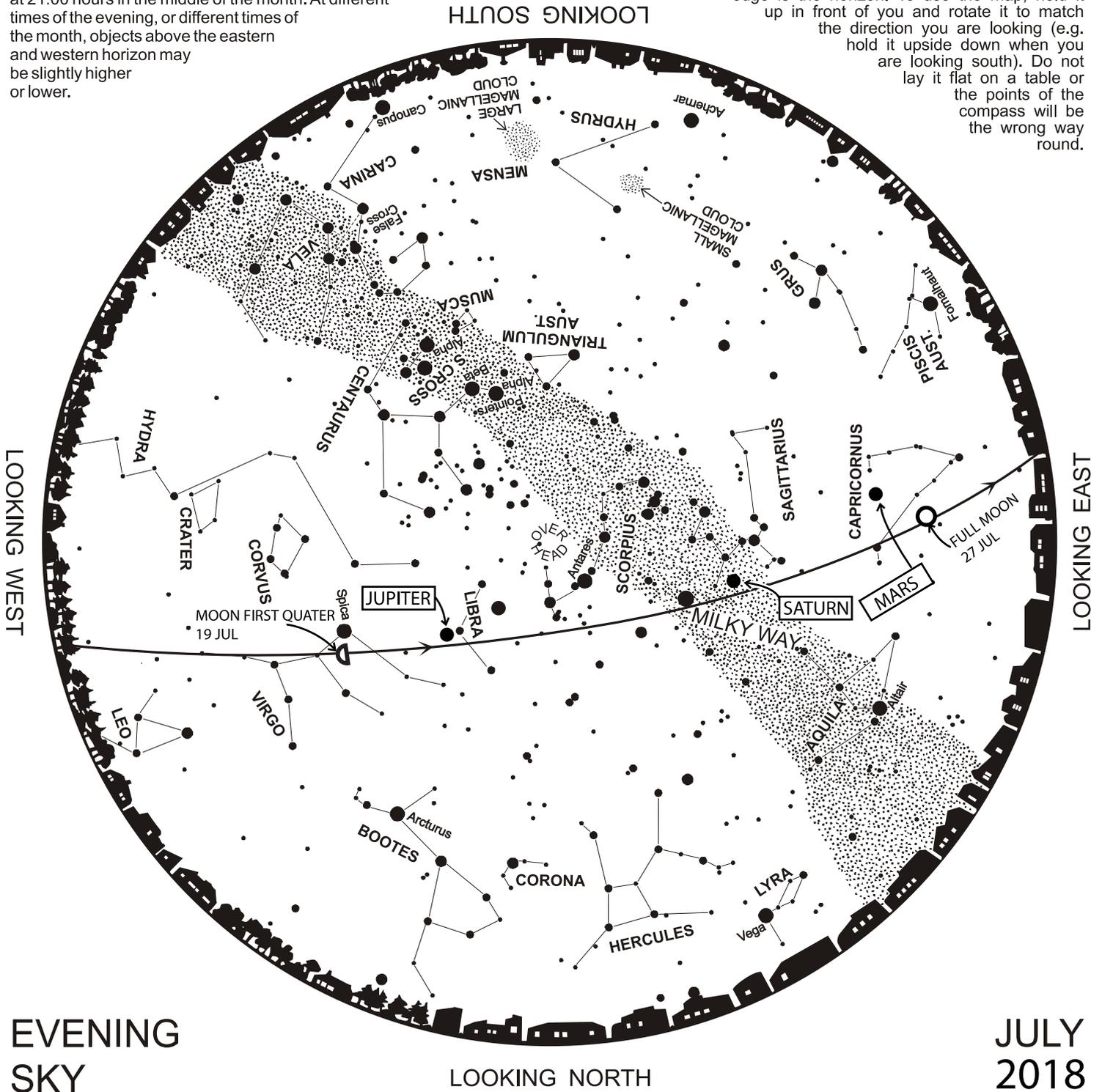
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IZIKO PLANETARIUM AND DIGITAL DOME

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.



Take advantage of the long beautiful winter nights to do some chilly stargazing this July, as the prominent winter constellations of Scorpius and Sagittarius take centre stage overhead. This region, containing several bright nebulae and star clusters, reveals a treasure trove of fascinating celestial objects to explore with your binoculars (see the 2018 Sky Guide South Africa available from local bookshops for reference). In July, all five naked eye planets can be observed each night throughout the month. Venus continues to dominate the early evening sky as our brilliant evening 'star', making its way through the constellation of Leo.

This month is also the best time of year to observe Mercury, close to the western horizon. As Mercury sets (2 hours after sunset), shift your gaze over to the eastern horizon as Mars begins to rise. Jupiter and Saturn can be observed in the evening sky in the constellations of Libra and Sagittarius respectively. July also offers South Africans the exciting opportunity to witness a total lunar eclipse, occurring on the 27 July (maximum occurring at 22:21). The moon will be in the evening sky until the 3 July, and then from the 14 July till month end, with full moon and eclipse on the 27 July.