SOUTH AFRICAN ASTRONOMICAL OBSERVATORY

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What's Up – February 2023

Sun and Moon

The Full Moon occurs on the 5th of February at 20h28 and the Last Quarter Moon falls on the 13th of February at 18h00. The New Moon occurs on the 20th of February at 09h05 and the First Quarter Moon falls on the 27th at 10h05.

On the 4th of February at 10h54 the Moon will be at apogee (furthest from Earth) at a distance of 406 476 km. The Moon will be at perigee (closest approach to Earth) at a distance of 358 267 km on the 19th of February at 11h05.

Planetary and Other Events – Morning and Evening

Venus, Mars, Jupiter and Saturn can still be observed just after sunset. Venus shines as the bright evening star and can be located near the stars of the constellation Aquarius. Venus will be near Jupiter on the 27th of February, and it will be near the Moon on the 22nd of February. Mars, the red planet, can be located near the stars of the constellation Taurus. It will be near the Moon on the 27th and 28th of February. Jupiter can be observed near the stars of the constellation Pisces. It will be near the Moon on the 23rd of February. Saturn is not well placed for observation and can be located near the stars of the constellation Pisces. The beautifully ringed planet will be placed at solar conjunction on the 16th of February and will not be visible. It will later move into the morning sky.

Check out the **Comet C/2022 E3** (also referred to as Comet ZTF). The comet with the green head will be near Mars on the 11th of February and can be observed near the constellation Taurus in the evening sky. It last came near us about 50 000 years ago, when Neanderthals were still roaming the Earth. You might need a telescope or binoculars to observe it.

Two meteor showers are active in February. The gamma-Normids are active from February 25 to March 28, peaking on the 14th of March. To see the shower, look towards the constellation of Norma between 00h00 and 04h30 AM. Observing prospects for the gamma-Normids are poor. Around 5 meteors per hour are expected at the peak.

The alpha-Centaurids, in the constellation of Centaurus, are active from the 31st of January to the 20th of February, peaking on the 8th of February as the Earth passes through the centre of the meteor stream. Observing prospects for the alpha Centaurids are unfavorable due to the full moon on the 4th. They are best viewed between 22h00 and 03h30, looking towards the constellation of Centaurus in the South East. Hourly rates are expected to be around 5 meteors per hour at the maximum.

The Evening Sky Stars

The stars of Orion are high in the north on February evenings, with blue-white Rigel above and to the left of the three belt stars, and orange-red Betelgeuse below and to the right of them. Below and to the left of Orion is Aldebaran, brightest star in the Bull, with the Pleiades nearby in the NW at the Bull's shoulder. The Pleiades, according to the Namaqua, were the daughters of the sky god. When their husband (Aldebaran) shot his arrow (Orion's sword) at three zebras (Orion's belt), it missed. He dared not return home because he had killed no game, and he dared not retrieve his arrow because of the fierce lion (Betelgeuse) which sat watching the zebras. There he sits still, shivering in the cold night and suffering thirst and hunger.

To the right of Orion is Procyon, brightest star in the smaller of Orion's two hunting dogs. Directly below (N) of Procyon are the stars of the Twins, with the dim stars of Cancer the Crab just to the right. Among the stars of Cancer is what looks to the eye like a fuzzy glow, but which binoculars show to be a cluster of stars, the 'Beehive'. Directly below Orion is brilliant Capella near the northern horizon, brightest star in the Charioteer. Capella is actually a system of four stars, consisting of a pair of luminous yellow stars and a pair of faint red dwarf stars. Above Orion's feet (he's upside down, as you'd expect for a constellation invented in the northern hemisphere) is the Hare, with Orion's Big Dog above Orion itself and to the right if you're facing north. The Big Dog boasts the brightest star in the night sky, Sirius.

With Sirius nearly overhead, we have Canopus (second brightest star in the night sky) high in the south near the Milky Way. Bright Achernar (Senakane, the 'Little Horn') is below Canopus and to the right for an observer facing south. The Water Snake and the Small Magellanic Cloud are below Achernar and to the left. Among galaxies separate from our own, the Small Magellanic Cloud is the second nearest, 'only' 200 000 light years away. We see it as a dim glow like a detached piece of the Milky Way — and we see it as it was 200 000 years ago. This small satellite galaxy of the Milky Way is gradually being torn apart by the tidal forces it encounters each time it passes near our Milky Way's largest satellite galaxy, the Large Magellanic Cloud.

This time of the year is a great time for snakes in the sky. The Small Magellanic Cloud lies partly in the southern Water Snake, while the giant monster Water Serpent is visible in the north. Directly to the right of Achernar are the stars of the Phoenix, with the Toucan directly below. The Toucan includes a particularly beautiful cluster of hundreds of thousands of stars, just visible to the naked eye as a dim fuzzy spot if there is no moon and there are no city lights interfering. This cluster, 47 Tucanae, is nearly 120 light years across, and is roughly 20 000 light years away from us. Of the roughly 100 'globular clusters' that orbit the centre of our Milky Way galaxy, 47 Tuc is the second brightest.

The Milky Way runs almost due north and south in our skies in early evening this month, from the N into the SSW. The southern portion is very much the brighter, running through the constellations of the Poop Deck, the Compass, the Sails and the Keel (all parts of the ancient constellation of the great ship Argo), with Crux and the Centaur near the horizon.

Rising into eastern evening sky this month are Alphard, the orange star at the heart of Hydra the Water Serpent (lowest in the east at dusk), and Regulus in Leo (low in the northeast).

The Morning Sky Stars

The brilliant Milky Way in the morning sky runs from E to WSW, running from Scutum (the Shield), the Archer and the Scorpion through the Carpenter's Square, the Altar, the Wolf and the Drawing Compass, before reaching the Centaur, the Cross and the Housefly, and finally the Great Ship Argo in the west. To the south of the Milky Way are the mostly dim stars of the Peacock, the Bird of Paradise, the Octant, the Chameleon and the Flying Fish.

High in the north, almost overhead, are the stars of Virgo, with blue-white Spica the brightest among them. Spica is actually a double star but unfortunately it is not resolvable with binoculars or a telescope. The two components are less than 32 million kilometres apart (the Sun-Earth distance is 150 million kilometres). The two stars orbit each other every 4 days.

Keeping dangerous bears out of our southern sky is bright orange Arcturus, low in the north and brightest star in the constellation of Boötes, the bear-herd. Arcturus is the brightest star in the northern hemisphere's night sky and the fourth brightest overall in the night sky. Arcturus is cooler and much larger than our sun, radiating more than 200 times as much energy. At 26 times our sun's diameter, Arcturus would extend a quarter of the way out to the planet Mercury if put in the Sun's place. Unlike the Sun, it does not derive its energy output from fusing hydrogen to helium in its core, but has reached a stage in its life cycle where it converts helium into carbon.

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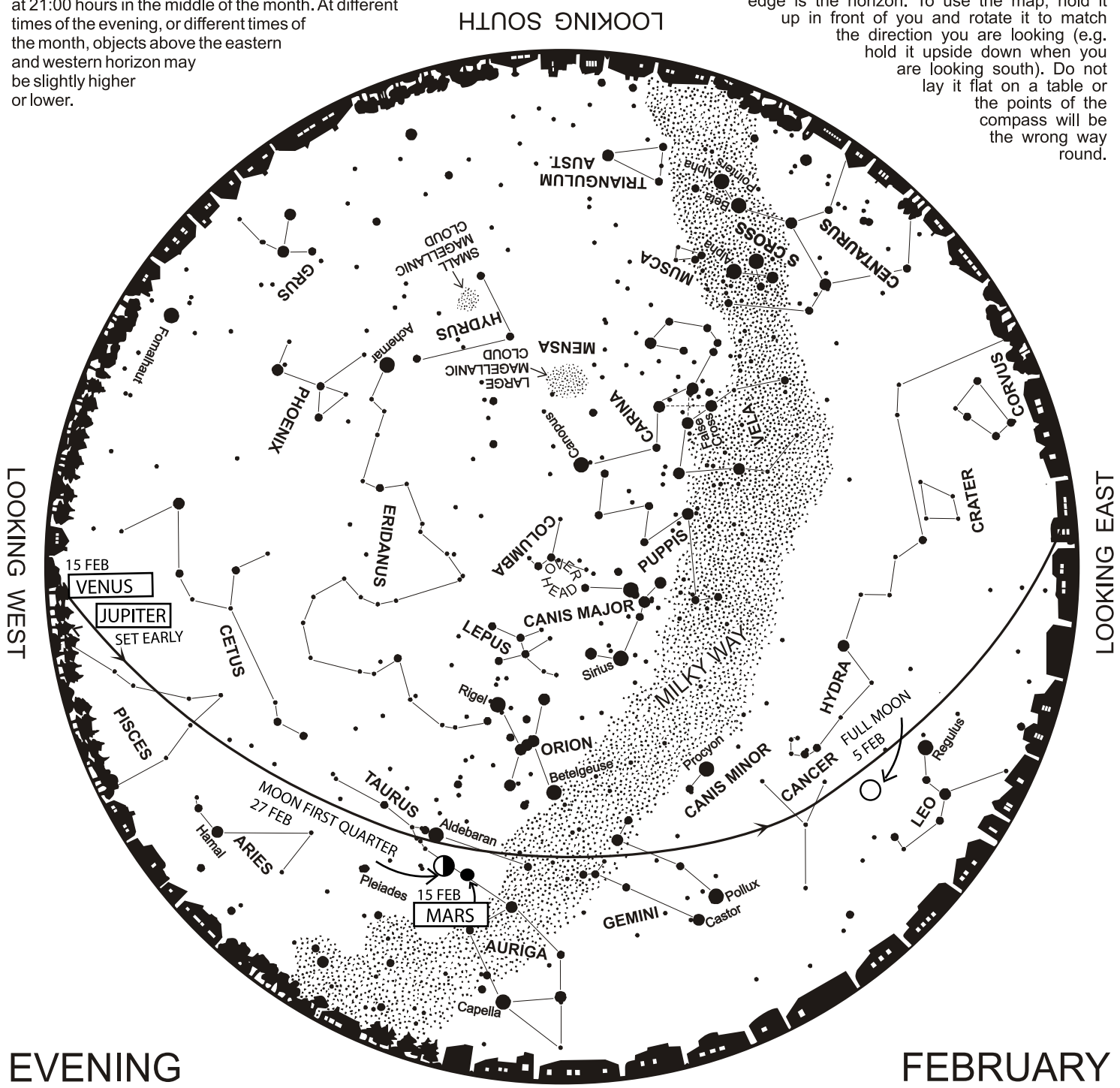
IZIKO PLANETARIUM AND DIGITAL DOME

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

FEBRUARY 2023

High in the southeast, the great ship Argo Navis from Greek mythology sails across our night skies, along the sea of stars that make up the bulk of our Milky Way Galaxy. Try to identify the bright stars in the three Argo constellations: Carina (keel), Vela (sails) and Puppis (stern). Vela, or the 'False Cross', has been known to fool casual observers with its similar appearance to Crux in the Southern Cross, which lies further south. Overhead towards the north, Canis Major (big dog) and Canis Minor (little dog) sit close to Orion (hunter) on either side of the Milky Way. Together the bright stars Betelgeuse (in Orion), Procyon (in Canis Minor) and Sirius (in Canis Major) form the easily recognisable 'Summer Triangle' (or 'Winter Triangle' in the Northern Hemisphere). Towards the west, look out for Taurus (bull) with its red giant star Aldebaran.

The moon will be in the evening sky until 12 February, with Full Moon on 5 February ('Dassie Moon', see cfah.org.za/fullmoon/ for more details). The crescent moon reappears just after sunset on 21 February and will appear to pass closely between Venus and Jupiter a day later, forming an intriguing grouping to watch out for. The moon will also pass near Mars on the 27 February.

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