

# SOUTH AFRICAN ASTRONOMICAL OBSERVATORY



P O BOX 9  
OBSERVATORY  
SOUTH AFRICA  
7935

TEL: (021) 447-0025  
FAX: (021) 447-3639  
INT. CODE: +27 21

INTERNET:  
<http://www.saa.ac.za>  
email: [cdl@saa.ac.za](mailto:cdl@saa.ac.za)

## What's Up – August

### Sun and Moon

August begins with a new moon on the 1<sup>st</sup>, but the young crescent will not be visible except in parts of the Pacific Ocean. Given clear skies, observers in Africa and the Middle East should be able to see the crescent moon on the evening of the 2<sup>nd</sup>. First quarter (half moon in the evening sky) is on the 8<sup>th</sup>, with full moon on the 16<sup>th</sup> and last quarter (half moon in the morning sky) on the 24<sup>th</sup>. There is another new moon a little over 2 hours before midnight on the 30<sup>th</sup>, and only observers in South America, southern North America and southern Africa have any real chance to see the crescent on the evening of the 31<sup>st</sup>. Moonwatchers elsewhere will have to wait until the 1<sup>st</sup> of September.

As always, the moon's distance from the Earth will vary considerably during August. Greatest distance from Earth this month is on the 10<sup>th</sup> (apogee – 404556 km), while the moon will make its closest approach on the 26<sup>th</sup> (perigee – 368692 km).

Sunrise will get steadily earlier, and sunset steadily later in August, but nights will remain longer than days until late September.

### Planets

All the planets visible to the naked eye will be in the evening sky for at least part of August. The outstanding planet in the evening sky after twilight is Jupiter, shining brightly in the east below the stars of the 'Teapot' (Sagittarius the Archer). Even binoculars can show the four bright moons. When Galileo discovered them using a crude telescope, he was fascinated by these objects which clearly orbited Jupiter rather than the Earth or the sun. All four are quite a bit larger than Pluto, which until recently was considered the 9<sup>th</sup> planet.

Three planets can be seen low in the west in the evening twilight at the beginning of the month. Brightest and lowest is Venus – easily the brightest of all the planets as seen from Earth. Above it is Saturn, with Mars above it (looking rather dim as it's rather distant from Earth this month). The star between Venus and Saturn on the 1<sup>st</sup> of August is Regulus in Leo the Lion.

But the patterns in the west will change considerably as August progresses. Venus and Saturn will get closer together until on the 13<sup>th</sup> they are separated by less than half the apparent diameter of the moon. By month's end, Saturn will have left the evening sky. A replacement is waiting in the wings, however. Mercury will pass within two moon diameters of Venus on the 20<sup>th</sup>, and after that can be seen just above Venus for the rest of August. By the end of August Venus, Mercury and Mars are beginning to come together, making a remarkable grouping that will persist through the first half of September. A chance to see a close 'massing' of planets like this is fairly uncommon, and it's well worthwhile watching the constantly changing 'planet dance' this spring.

### The Evening Sky: Stars

In the north, orange Arcturus shines brightly in the evening sky, with the half circle of the Northern Crown to the right, and bright white Vega rising low in the northeast. Higher in the ENE, tangled in the northern Milky Way, is Aquila the Eagle with its bright star Altair. Vega and Altair are relatively nearby stars, but like most of the stars visible to the naked eye would appear much brighter than the sun if they and the sun were at the same distance.

To the south of Arcturus, high in the NW, shines blue-white Spica, the brightest star in Virgo. Spica actually consists of two stars 260 light years away from us, orbiting each other once every 4 days. Both are much hotter and brighter than the sun. The brighter of the pair is 11 times as massive as our sun and 13000 times as bright, the other 7 times as massive as our sun and 'only' 1700 times as bright.

Red Antares and the stars of the Scorpion are almost overhead in early evening, and you should easily be able to see the shape of the Scorpion – this is one of the few constellations which really resembles the creature it's named after. Antares is about 600 light years away, and radiates about 10 000 times as much energy as the sun at wavelengths perceived by the eye. But Antares has a surface temperature of only 3300 degrees (compared to 5500 for the sun), and radiates most of its energy as infrared. The total energy output of Antares is about 65 000 times as much as the sun, and this 'red supergiant' is so large that if it were placed at the centre of our own solar system, the orbit of Mars would be

less than halfway from the centre of Antares to its swollen surface.

High in the south are the Giraffes of Vanda starlore (the Pointers - Alpha and Beta Centauri - and the stars of the Southern Cross). For observers away from city lights, the winter Milky Way is spectacular on August evenings when the moon doesn't interfere. The centre of our Galaxy is nearly overhead, and it is easy to see the 'pancake' shape of our wheel of hundreds of billions of suns, complete with the bulge near the middle. For the Indian tribes of South America, the dark patches in the Milky Way were also constellations. We know today that such dark areas as the Coalsack (near the Southern Cross) and the Great Rift are dense dust clouds where new stars are forming.

Infrared telescopes, like the IRSF at Sutherland, can penetrate these dense dust clouds to show newborn clusters of young stars, and the study of starforming regions and the heart of the Milky Way has been an important part of the research done with this 1.4-m telescope.

### Morning Sky: Stars

Orion is once again prominent in the eastern sky, raising his club to swat the pesky Bull that forever charges at him. Orion's two dogs are with him as well, with Procyon (brightest star in the Small Dog) lower in the east and Sirius (brightest star in the Large Dog) to the southeast of Orion. It's unclear, however, whether the dogs are paying attention to Orion's problems or to the hare which is hopping by between Orion and the Large Dog.

High in the southeast shines Canopus, second brightest star in the sky and brightest star in the huge ancient constellation of Argo, the great exploring ship that sought the Golden Fleece. Today it's split up into several smaller constellations such as the Sails and the Keel. If the Argo is headed to or from Cape Town, it's only logical that Table Mountain is in view, and it is just possible (on a dark night far from city lights) to see the dim stars of the Table Mountain (Mons Mensae) constellation in the far south. Thanks to Nicolas de Lacaille, who added more than a dozen constellations to the southern sky as he observed from Cape Town, Table Mountain is the only geographical feature on Earth to have its own place in the stars. You'll probably find it easier to see the Tablecloth, represented by the Large Magellanic Cloud. The LMC, as astronomers know it, is a satellite galaxy of our own Milky Way, and a mere 180 000 light years away. It's the closest galaxy to our own which is not actually being 'digested'. Our Milky Way is cannibalising two small galaxies at the moment, and neither is fully separate anymore. Part of the LMC (which looks to the eye like a stray patch of the Milky Way) slops over into the nearby constellation of the Swordfish, and the remainder of the southern sky is taken up with an odd collection of birds, water creatures and scientific instruments such as the Peacock, the Crane, the Water Snake, and the Rhomboidal Net. The instruments, like Table Mountain, owe their place in the sky to Lacaille's mapping of the southern sky in the mid-eighteenth century.

Flowing from the southwest corner of Orion is the long winding constellation of Eridanus the celestial river, with bright Achernar near its 'mouth' high in the southwest. Canopus was 'Naka' (the 'Horn' star), in the Sotho calendar, while Achernar was 'senakane', the 'little horn'. To the west of Eridanus is a rather watery part of the sky including the Whale, the Fishes, the Water Bearer and the Sea Goat. Fomalhaut (meaning 'mouth of the southern fish') is the brightest star in the western sky, but almost all the bright stars in this month's morning sky are in the east. It's relatively nearby (only 25 light years away) and a mere 200 million years old, making it just a baby compared to the sun. A huge disk of icy dust, four times the diameter of our solar system, surrounds Fomalhaut. There is a clear area around the star itself which may have been caused by the formation of a system of planets, but the actual planets elude detection so far. It's quite likely that there are planets. As of June this year, the Extrasolar Planet Encyclopedia listed 303 planets. No less than 30 multiple-planet systems have been found so far.



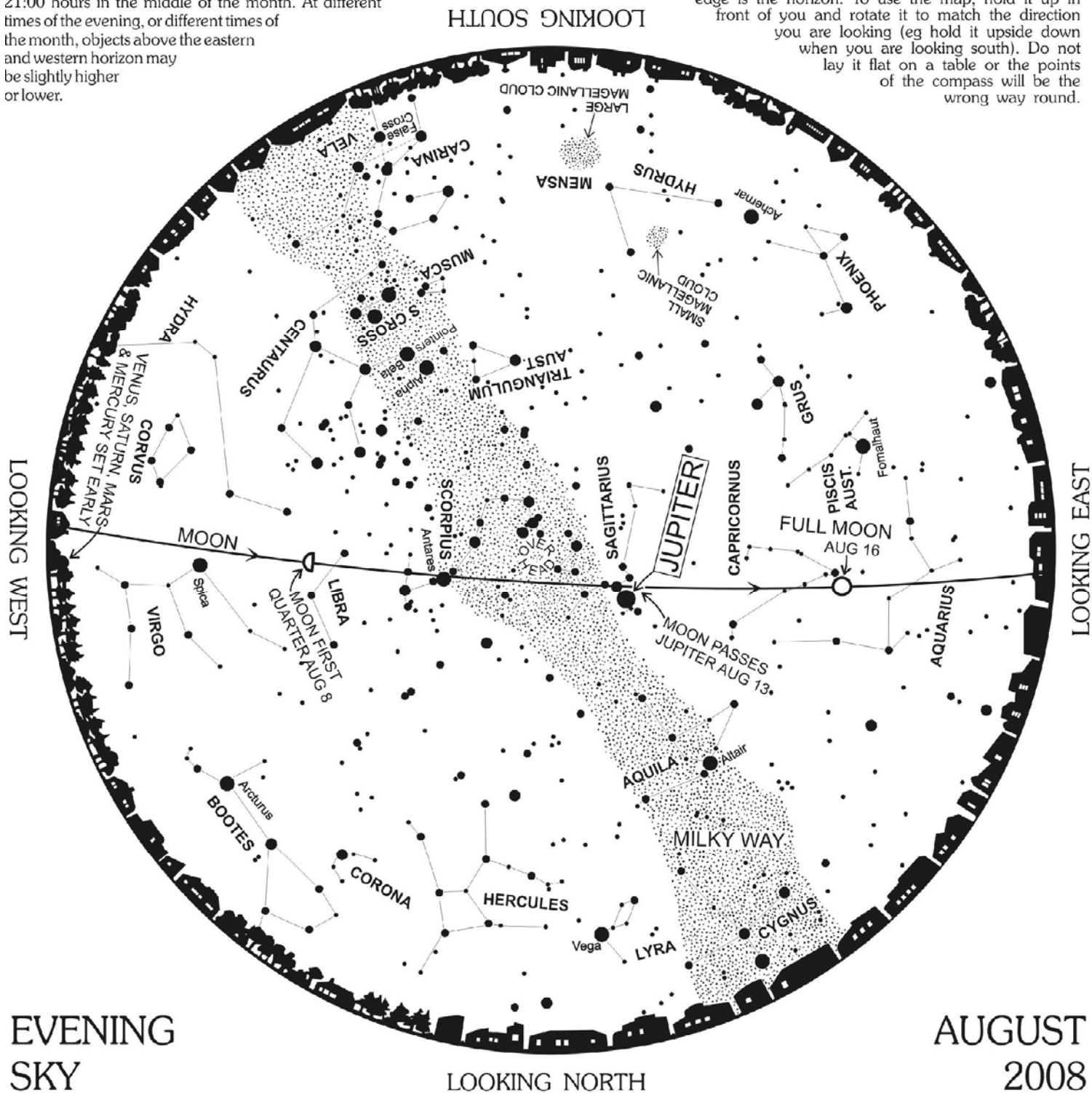
# Iziko PLANETARIUM

25 QUEEN VICTORIA STREET, PO BOX 61, CAPE TOWN, 8000.

TEL 021 481-3900, FAX 021 481-3990

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 horizons 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 (eg 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

AUGUST  
2008