

Star watching on Waiheke

Our monthly star watching column highlights celestial objects accessible for naked eye or small binocular viewing. Nalayini Davies will shine a spotlight on a different celestial object each month and explain terminology to improve our enjoyment of astronomy.



This is a good month to enjoy the richness of the winter southern hemisphere night sky. The centre of our Milky Way galaxy, around which it rotates and appears brightest, is in the direction of the seasonal constellations Sagittarius and Scorpius. On 8 August, a partial

lunar eclipse will be visible in the dawn sky (it's our spotlight this month).

The elusive planet Mercury can be sighted, naked-eye, in the early evening along with Saturn and Jupiter. A couple of new constellations Corvus and Virgo are visible and the stars Vega and Formalhaut appear for the first time.

Circumpolar celestial objects (i.e. those that circle the south celestial pole, SCP) include the smallest constellation Crux (Southern Cross), Alpha and Beta Centauri (The Pointers), dwarf galaxies the Larger and Smaller Magellenic Clouds (LMC and SMC), asterisms (notable star patterns that are not one of the 88 officially recognised constellations), the Diamond Cross and the False Cross. They remain ever present in our skies.

The best time for viewing

Astronomical twilight ends around 7pm at the start of this month and becomes gradually later, moving to 7.30pm towards the end. As we are viewing the sky from Waiheke, which is a dark sky location, almost all objects discussed here can be seen on any clear night.

From 15 to 22 August the moon rises after midnight and sets before astronomical twilight, so from 7pm to midnight it will be dark and free of moonlight and will offer the very best viewing of the night sky.



Image 3: Partial Lunar Eclipse
(Credit: Mr. Eclipse)

Star chart

The Star Chart shows the celestial objects easily visible mid-month around 8pm (9pm at the start of the month and 7pm at the end of the month). When you go outside, raise this page over your head with North pointing to the north and you will find the chart points to the correct directions.

Planets

Until mid-month, Mercury appears like a bright star low in the west just after sunset. It sets at 8pm at the beginning of the month and before 7pm by 20 August. Jupiter remains the brightest object in the sky until its disappearance around 11pm at the start of the month and 9pm at the end. Saturn is in the sky all night until close to the morning. If you have a telescope, this is a good period to view the moons of Jupiter and the rings of Saturn.

Constellations (and asterisms)

Now familiar constellations Crux (the Southern Cross), Scorpius (S-shaped) and Sagittarius (teapot-shaped) are joined by Corvus (quadrilateral-shaped) and Virgo (containing Spica as its brightest star). Circumpolar asterisms, Diamond Cross, the False Cross and The Pointers are also visible.

Bright stars

Excluding the Sun (the brightest and closest star to us), 12 of the 20 brightest stars are in the August sky making it an excellent time for naked-eye stargazing. Most of them are already familiar to the readers of this column. They are Canopus, low in the south-west (second brightest); the Pointers, Alpha Centauri and Beta Centauri (third and 12th); orange star Arcturus, low in the northern sky (fourth); Vega, high in the north-east (fifth); orange Achernar in the lower south sky (ninth); Acrux and Beta Crucis from the Southern Cross (12th and 19th); Altair (13th); orange Antares in Scorpius (15th); Spica, the bright star close to Jupiter (16th); and the newly appearing Formalhaut in the south-east (18th).

Galaxies

The Milky Way dominates the sky and LMC and SMC are visible on a dark night as unmoving fuzzy clouds in the south.

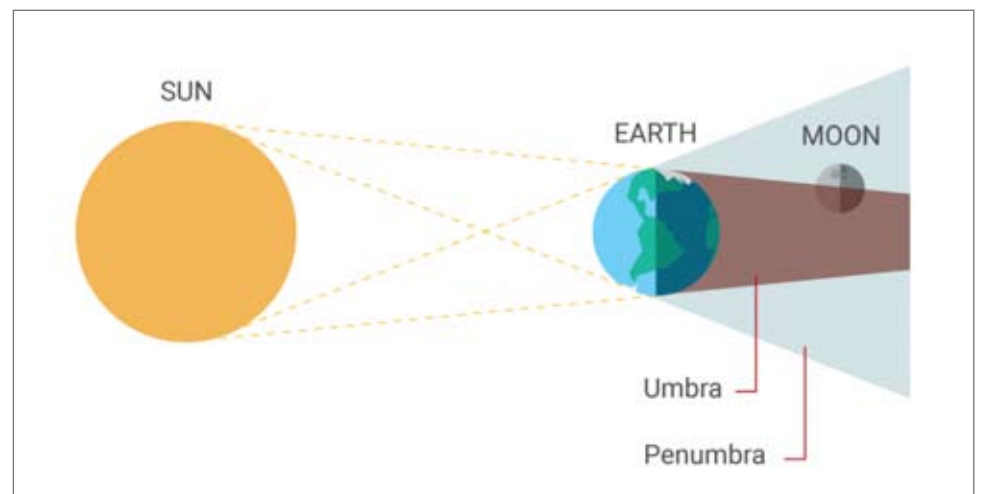
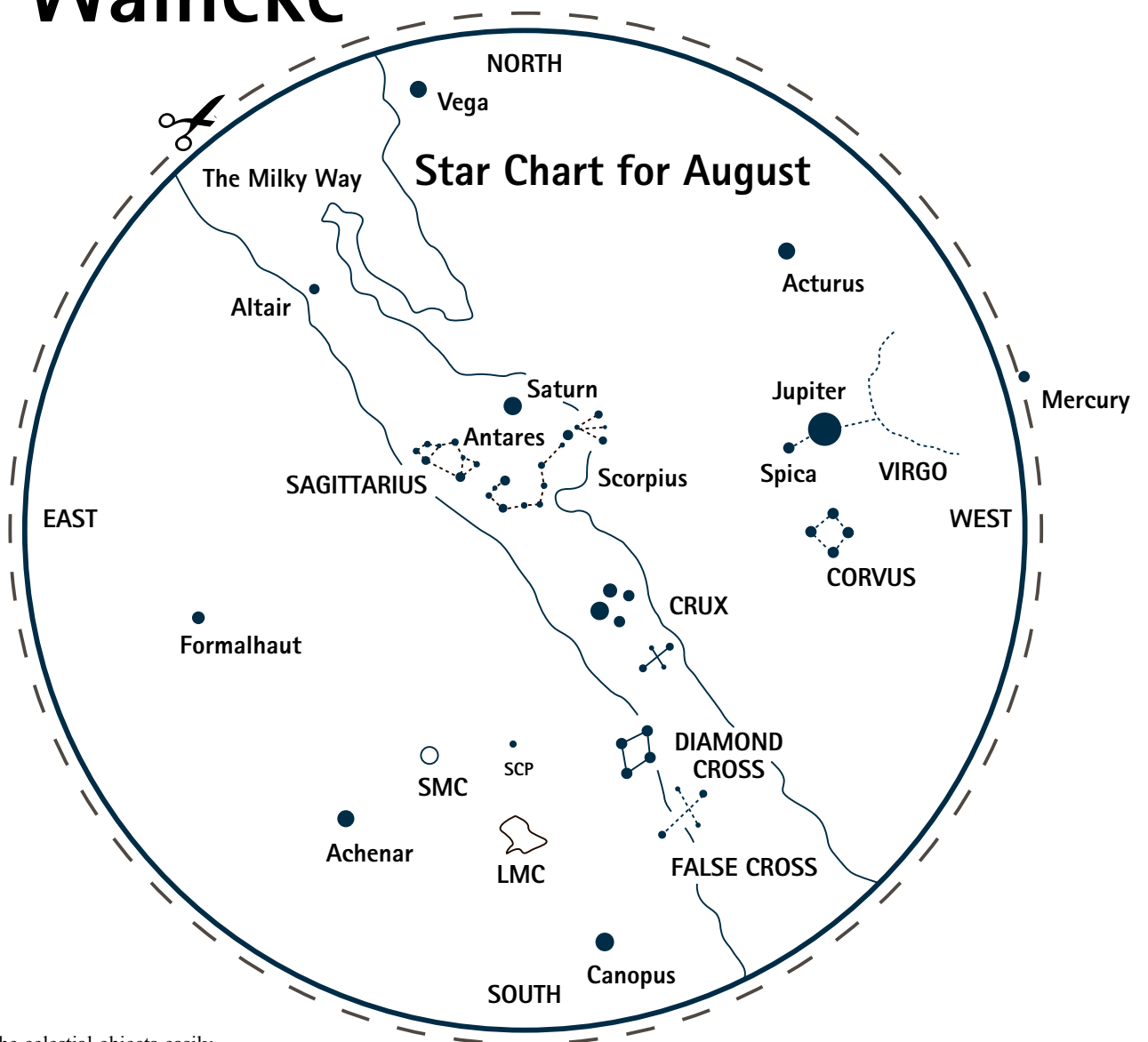


Image 2: Geometry of a Lunar Eclipse

(Credit: Time and Date)

August spotlight

A lunar eclipse happens when the Moon is in the shadow of Earth at the time of Full Moon (when the Sun's rays usually illuminate the full face of the Moon). Most of the time, the Moon orbits either above or below the plane of Earth's orbit (i.e. where Earth's shadow falls) as its orbital path around Earth is inclined at 5° to Earth's orbital path around the Sun. But a few times a year, it passes through Earth's shadow which results in lunar eclipses.

Image 2, though not to scale with respect to sizes and distances, shows what happens when Earth fully blocks the rays of the Sun during umbral shadow and partially blocks during penumbral shadow during full Moon. A partial lunar eclipse occurs when the Sun, Earth and Moon are not in a perfectly straight line, and a portion of the moon passes through Earth's umbral shadow and the remainder passes through Earth's penumbral shadow. Although not as rare as a total solar eclipse or a full lunar eclipse a partial lunar eclipse is still a special event.

In the morning on 8 August, a partial lunar eclipse can be witnessed naked eye. The eclipse

starts with the Moon brushing Earth's shadow around 5am and progressing to a quarter of the Moon in Earth's shadow around 6.20am. Image 3 left shows the appearance of the Moon during a partial lunar eclipse.

The rare and astronomically exciting total solar eclipse (when the Moon passes between the Sun and Earth and obscures the Sun during New Moon i.e. when the Moon is not visible from Earth) will occur on 21 August. Regrettably, it will not be visible from New Zealand. We are going to have to wait until the year 2028!

Clear Skies! ■

Nalayini is a member of the Royal New Zealand Astronomical Society and the Auckland Astronomical Society. She is Chairperson of AstronZ, which was established to make astronomy more accessible to New Zealanders. Nalayini is an advocate of the Dark-Sky movement, a campaign to preserve sky quality and increase the visibility of stars through reducing light pollution. Nalayini has had a home in Rocky Bay for 30 years and continues to enjoy the dark skies on Waiheke.