

The chart is oriented for
 April 15 at 10 p.m. NZST
 May 1 at 9 p.m. "
 May 15 at 8 p.m. "
 June 1 at 7 p.m. "

Evening sky in May 2022

To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). Stars rise in the east and set in the west, just like the sun. The sky makes a small extra westward shift each night as we orbit the sun.

Sirius, the brightest star, is midway down the western sky. Directly below it are bright stars Rigel and Betelgeuse with 'The Pot' between them. Canopus, the second brightest star, is southwest of overhead. Crux, the Southern Cross, and the Pointers, Alpha and Beta Centauri, are southeast of the zenith. Orange Arcturus, in the north, often twinkles red and green. Scorpius, with orange Antares at its heart, is low in the southeast sky where the Milky Way is broadest and brightest.

The bright planets are in the morning sky so not shown on the chart. We see the end of an eclipse of the Moon on May 16. The full Moon will rise while still half in the Earth's shadow.

The Evening Sky in May 2022

As the sky darkens **Sirius** appears midway down the western sky. It is the brightest star and twinkles with all colours when setting in the southwest around midnight. Sirius, 'the Dog Star', marks the head of **Canis Major** the big dog, now head down, tail up. **Canopus**, second brightest star, is southwest of overhead.

Below Sirius are bluish **Rigel** and reddish **Betelgeuse**, the brightest stars in **Orion**. Between them is a line of three stars, Orion's belt. To southern hemisphere star watchers, the line of three makes the bottom of 'The Pot', now tipped on its side.

Crux, the Southern Cross, is southeast of the zenith, to the right of 'The Pointers'. **Alpha Centauri**, the brighter Pointer, is the closest naked-eye star, 4.3 light years* away. Beta Centauri, like most of the stars in Crux, is a blue-giant star hundreds of light years away. Canopus is also very luminous and distant: 13 000 times brighter than the sun and 300 light years away.

Following the Milky Way down into the southeast finds **Scorpius**. Orange **Antares** marks the Scorpion's body. The scorpion's upside-down tail curves to the right of Antares. **Antares** is a red-giant star like Betelgeuse: around 12 times the mass of the sun but wider than Earth's orbit. It is 600 light years away and 19 000 times brighter than the sun.

Orange **Arcturus** is the brightest star in the northern sky. It often twinkles red and green when low in the sky. **Arcturus** is the brightest red star in the sky but, at 37 light years, is much closer than Antares. It is about 120 times brighter than the sun.

The **Milky Way** is brightest in the southeast toward **Scorpius** and **Sagittarius**. In a dark sky it can be traced up past the Pointers and Crux and fading toward Sirius. The Milky Way is our edgewise view of the galaxy, the pancake of billions of stars of which the sun is just one. The thick hub of the galaxy, 30 000 light years away, is in Sagittarius. The nearby outer edge is by Orion where the Milky Way is faintest. A scan along the Milky Way with binoculars shows many clusters of stars and some glowing gas clouds, particularly in **Carina** and **Scorpius**.

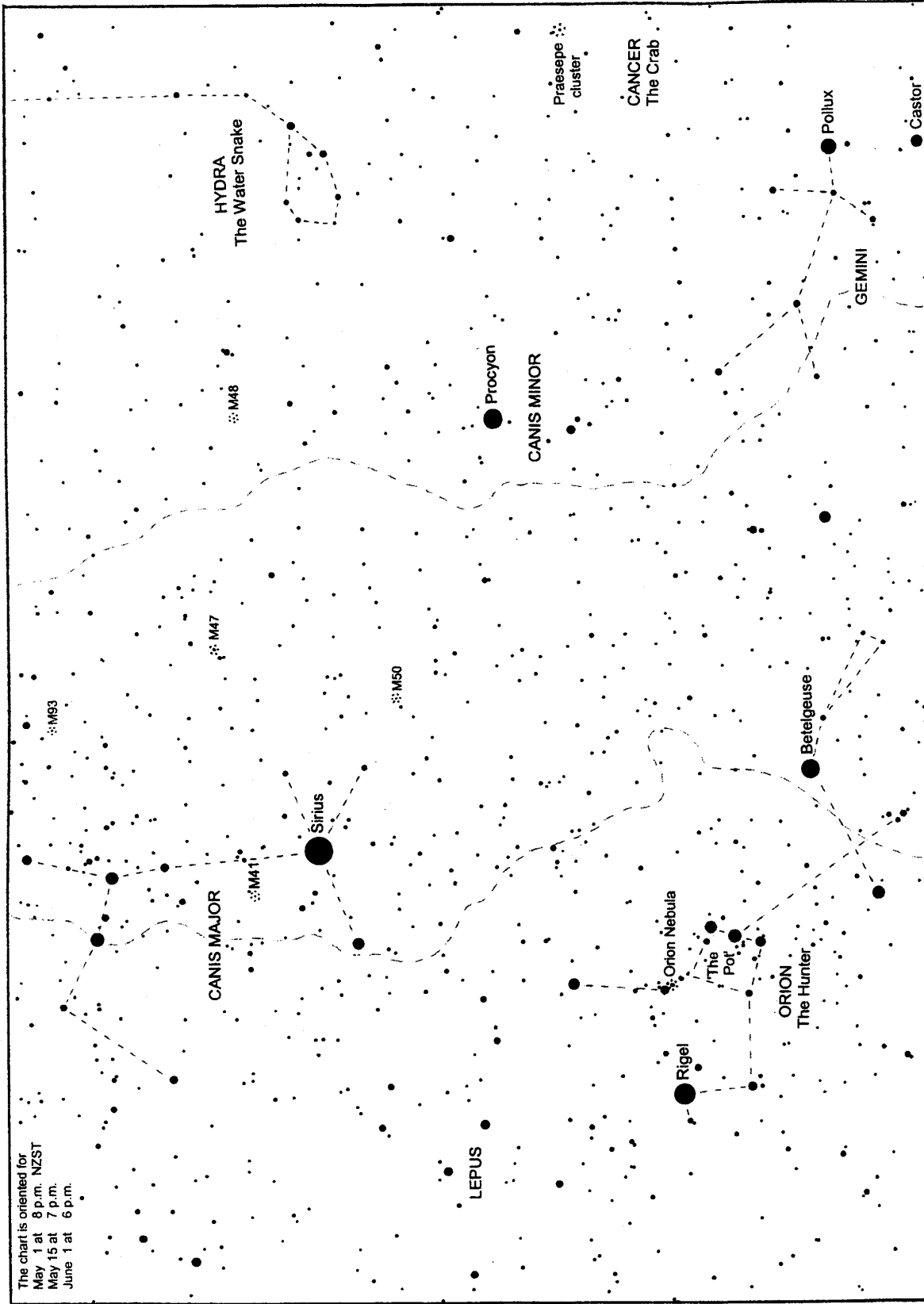
The Clouds of Magellan, **LMC** and **SMC**, are midway down the southern sky, easily seen by eye on a dark moonless night. They are small galaxies. The Large Magellanic Cloud is 160 000 light years away and the Small Cloud is around 200 000 light years away. They are much smaller than our Milky Way Galaxy but there are many billions of stars in each.

The bright planets are all in the morning sky (so are not on the chart.) **Saturn** is the first to appear, rising in the east around 1 a.m. at the beginning of the month. It is cream-coloured and of medium brightness, but the brightest 'star' in this part of the sky. **Mars** follows it around 2:30. It is the same brightness as Saturn but red coloured. Around 4 a.m., at the beginning of the month, bright **Jupiter** and brilliant **Venus** appear looking like a pair of unmatched headlights. Venus is silver, Jupiter is golden. By that time Saturn, Mars and the Venus-Jupiter pair are equally spaced down the eastern sky.

Saturn and Jupiter rise four minutes earlier each morning as we catch them up. Mars continues to rise around 2:30 while Venus slowly slips lower as it moves to the other side of the Sun. In the last week of May Jupiter will be approaching then passing Mars. On the morning of the 25th the Moon will be above the two planets. The Moon will be above Venus on the 27th and below it on the 28th.

There is an **eclipse of the Moon** on May 16 but we see only the end of it. The moon will rise partly eclipsed. It moves clear of the Earth's inner shadow by 5:55 pm and clear of the outer shadow an hour later.

*A **light year (l.y.)** is the distance that light travels in one year: nearly 10 million million km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.



The chart is oriented for
 May 1 at 8 p.m. NZST
 May 15 at 7 p.m.
 June 1 at 6 p.m.

Northwest Evening Sky in May
 The chart shows the northwest sky at dusk. Interesting star clusters and nebulae are marked with asterisks. They are described on the back of the chart.

Chart produced by Guide 8 software; www.projectpluto.com. Labels added by Alan Gilmore, University of Canterbury's Mt. John Observatory. www.canterbury.ac.nz

The Western Sky at Dusk in May

Orion the Hunter is prominent in the western evening sky, below **Sirius** the brightest star. Sirius marks the head of one of the two dogs following the hunter down the sky. **Procyon** marks the lesser dog. Well to the right of Orion are the pair of stars making **Gemini** the Twins. Above and right of Castor and Pollux is the **Praesepe** star cluster marking the shell of **Cancer** the Crab.

Sirius is the brightest star, though star-like Venus and Jupiter, and sometimes Mars, are brighter. Sirius appears bright because it is both brighter than the sun -- 23 times brighter -- and relatively a close 8.6 light years* away. Sirius was often called 'the dog star' being the brightest star in Canis Major, one of the two dogs that follow Orion across the sky. Canis Major is heading down the western sky; the dog's hindquarters are marked by four bright stars above Sirius. Sirius, being bright, often twinkles like a diamond when low, as the air breaks its light into separate colours.

Orion the Hunter, or warrior, is now upside down in the west in our southern hemisphere view. Its brightest stars are **Rigel** and **Betelgeuse**. Rigel is a blue-giant star 40 000 times brighter than the sun and much hotter. It is 800 light years away. Betelgeuse is a red-giant star, cooler than the sun but hundreds of times bigger; 9 000 times brighter than the sun and 400 light years from us. Between them is a line of three stars: Orion's belt. The line of faint stars above and left of the belt form Orion's Sword in the northern view, hanging from his belt. To most southern hemisphere sky watchers the belt and sword form **The Pot** or The Saucepan, now lying on its side. In early June Orion can be seen both in the west at dusk and in the east at dawn.



The **Orion Nebula** is visible in binoculars as a misty glow around the middle star of Orion's Sword or the handle of The Pot. It is a vast cloud of dust and gas about 1300 l.y. away and more than 20 l.y. across. Ultra-violet light from a massive, extremely hot star in the cloud causes it to glow. Some stars in this region are around two million years old. The sun, by contrast, is 4.6 billion years old. Stars continue to form in a giant cloud behind the glowing nebula. There are many bright and dark nebulae in this region. The Horsehead nebula, a favourite of astronomy books, is beside the top star of Orion's Belt, but too faint to be seen in small telescopes.

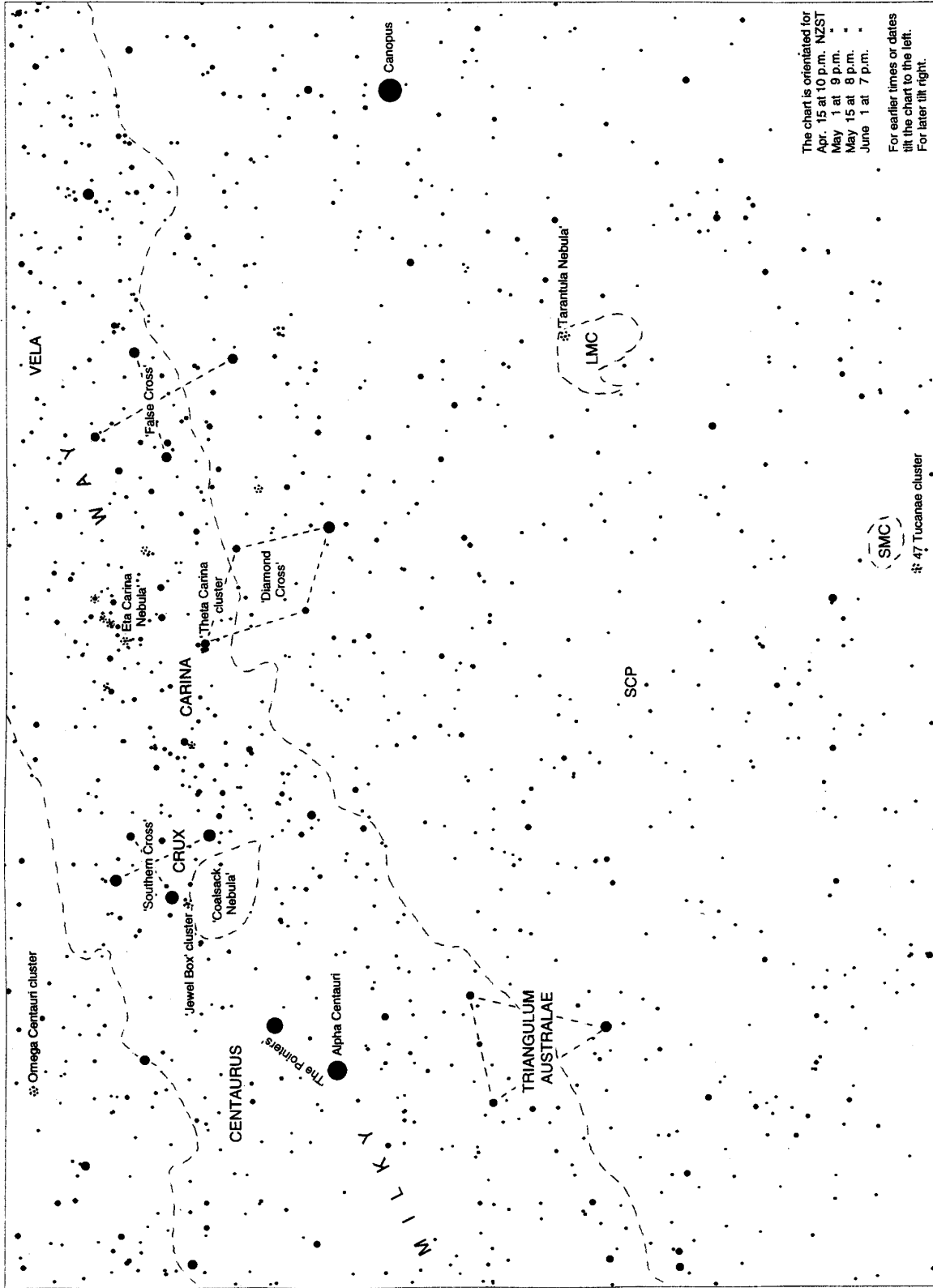
The Milky Way is faint in this region as we are looking toward the nearby edge of the disk. Several star clusters visible in binoculars or small telescopes are marked with asterisks. The numbers beside them are from a catalogue compiled by Charles Messier, an 18th Century French comet searcher. **M47** is visible to the naked eye as a fuzzy spot though it is 1600 l.y. away. **M41**, **M50** and **M93** are best seen in a telescope. Messier also catalogued the Orion Nebula (M42) and the Praesepe cluster (M44).

Procyon is a relatively close star, just 11 light years away. It's about 7 times brighter than the sun.

Pollux and **Castor** mark the heads of the Gemini, the twins. Though paired in myths, the two stars are not related at all. Castor is a hot white star like Sirius but 52 light years away. Golden Pollux is bigger and brighter but cooler than Sirius and 34 light years away.

The **Praesepe cluster** marks the shell of **Cancer** the crab. To the eye, in a dark sky, it is a spot of light bigger than the full moon. It is also known as the Beehive and binoculars show how it got that name: dozens of stars are seen like bees around a hive. The cluster is some 500 light years from us. It formed in a gas cloud about 700 million years ago.

*A **light year (l.y.)** is the distance light travels in one year: about 10 million million km (10^{13} km) or 6 million million miles. Light from the sun reaches us in 8 minutes. Light from the moon gets here in 1 second. Sunlight takes 4 hours to reach Neptune, the outermost significant planet, and 4 years to reach Alpha Centauri, the nearest star.

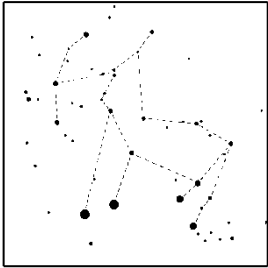


Southern Evening Sky in May

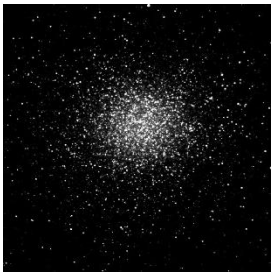
The chart shows the area of sky from just south of overhead to midway down the southern sky. Interesting star clusters and nebulae are indicated with asterisks. They are described on the other side of this page.

Chart produced by Guide 8 software; www.projectpluto.com. Labels added by Alan Gilmore, University of Canterbury's Mt John Observatory
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Interesting Objects in the Southern Sky



Centaurus, with the bright 'Pointers', and **Crux**, the Southern Cross are south-east of overhead, the tightest grouping of bright stars in the sky. Originally Crux was the hind legs of the Centaur, the horse-man of Greek mythology. The complete Centaur, with bow, is outlined at left. It was only in the 17th Century that Crux was split off as a separate constellation. The slow wobble of Earth's axis allowed this part of the sky to be seen from more northerly places in ancient times. The fainter Pointer and the three bluish-white stars of the Crux are all super-bright stars hundreds of light years away. Alpha Centauri is just 4.3 light years* away and the reddish top star of Crux is 90 light years from us.



Omega Centauri, also southeast of the zenith, is a globular cluster, a ball-shaped cluster of millions of stars. Its total mass is six million times the sun's mass or weight. It is 17 000 light years away and 200 light years across. Globular clusters are very ancient, around 10 billion years old, twice the age of the sun. Omega Centauri is the biggest of the hundred-odd globulars randomly orbiting our galaxy. It may originally have been the core of a small galaxy that collided with the Milky Way and was stripped of its outer stars.

47 Tucanae, by the SMC, is a similar sort of cluster 16 000 l.y. away.

Coalsack nebula, left of Crux, looks like a hole in the Milky Way. It is a cloud of dust and gas 600 light years away, dimming the distant stars in the Milky Way. Many 'dark nebulae' can be seen along the Milky Way, appearing as slots and holes.

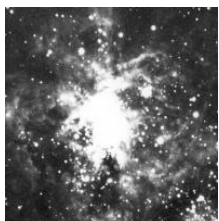
The Jewel Box is a compact cluster of young bright stars about 7000 light years away. The cluster formed around 16 million years ago. To the eye it looks like a faint star close by the second-brightest star in Crux. A telescope is needed to see it well.



Eta Carinae nebula, a luminous spot in the Milky Way to the right of Crux, is a glowing gas cloud about 8000 light years from us. The thin gas glows in the ultra-violet light of nearby hot young stars.

The golden star in the cloud, visible in binoculars, is Eta [Greek 'e'] Carinae. It is estimated to be to be 80 times heavier than the sun. It is four million times brighter than the sun but is dimmed by dust clouds around it. It is expected to explode as a supernova in the next few thousand years. Many star clusters are found in this part of the sky.

Large & Small Clouds of Magellan (LMC & SMC) appear as two luminous clouds, easily seen by eye in a dark sky. They are galaxies like the Milky Way but much smaller. Each is made of billions of stars. The Large Cloud contains many clusters of young bright stars seen as patches of light in binoculars. The Large Cloud is 160 000 light years away, the Small Cloud 200 000 light years; very close by for galaxies.



Tarantula nebula is a glowing gas cloud in the LMC. The gas glows in the ultra-violet light from a cluster of very hot stars at the centre of the nebula. The cloud is about 800 light years across. It is easily seen in binoculars and can be seen by eye on moonless nights. This nebula is one of the brightest known. If it was as close as the Orion nebula then it would be as bright as the full moon.

*A **light year (l.y.)** is the distance that light travels in one year: nearly 10 million million km, or 10^{13} km. Sunlight takes eight minutes to get here; moonlight about one second. Sunlight reaches Neptune, the outermost major planet, in four hours. It takes four years to reach the nearest star, Alpha Centauri.