



The chart is orientated for  
 Sep. 15 at 10 p.m. NZST  
 Oct. 1 at 10 p.m. NZDT  
 Oct. 15 at 9 p.m. "

### Evening sky in October 2015

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 clockwise rotation each night as we orbit the sun.

Saturn, looking like a cream-coloured bright star, is midway down the western sky at dusk. Orange Antares is directly above it. Canopus, is low in the southeast, twinkling colourfully as it moves up into the eastern sky. Vega sets on the opposite horizon. Crux, the Southern Cross, and the Pointers are in the south-west. The Milky Way spans the sky from north through west and into the south. The Magellanic Clouds, nearby galaxies marked as LMC and SMC on the chart, are misty glows above Canopus. On moonless nights, in dark rural skies, the Zodiacal Light can be seen in the west.

## The Evening Sky in October 2015

**Saturn** is the only planet in the evening sky. It is midway down the western sky at dusk and sets in the southwest around 10 pm mid-month. The moon is just below Saturn on the 16th and well to its right on the 17th. Above it, and fainter, is orange **Antares**, the brightest star in **Scorpius**.

**Antares** marks the heart of the Scorpion. (Scorpions don't actually have hearts, but this is star lore not entomology.) The Scorpion's tail loops up the sky in the evening, making a back-to-front question mark with Antares being the dot. The curved tail is the 'fish-hook of Maui' in Maori star lore. Antares is a red giant star: 600 light years\* away and 19 000 times brighter than the sun. Red giants are dying stars; wringing the last of the thermo-nuclear energy from their cores. Massive ones like Antares end in a spectacular supernova explosion. Antares is about 20 times heavier than the sun. Above and right of the Scorpion's tail is 'the teapot' made by the brightest stars of **Sagittarius**. It is upside down in our southern hemisphere view.

**Canopus** is low in the southeast at dusk often twinkling colourfully. It swings up into the eastern sky during the night. Canopus is 13 000 times the sun's brightness and 300 light years\* away. On the opposite skyline is **Vega**, setting in the late evening. Vega is 50 times brighter than the sun and 25 light years away. Vega is the 5th brightest star.

In the southwest are 'The Pointers', Beta and **Alpha Centauri**, making a vertical pair. They point down to **Crux** the Southern Cross. Alpha Centauri, the top Pointer, is the closest naked eye star at 4.3 light years away. Beta Centauri is a blue-giant star, very hot and very luminous, hundreds of light years away.

The **Milky Way** is brightest and broadest in Scorpius and Sagittarius. In a dark sky it can be traced down to the south. In the north it meets the skyline right of **Vega**. From northern New Zealand the star **Deneb** can be seen near the north skyline in the Milky Way. It is the brightest star in **Cygnus** the Swan. 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 actual centre, with a black hole three or four million times the sun's mass, is hidden by dust clouds in space. Its direction is a little outside the Teapot's spout. The nearer 'interstellar' clouds appear as gaps and slots in the Milky Way. The dust and gas has come from old stars that have thrown much of their material back into space as they faded or blew up. New stars eventually condense from this stuff. A scan along the Milky Way with binoculars shows many clusters of new stars and some glowing clouds of left-over gas. There are many in Scorpius and Sagittarius and in the Carina region.

The Large and Small Clouds of Magellan, LMC and SMC, look like two misty patches of light in the southeast sky. They are easily seen by eye on a dark moonless night. They are galaxies like our Milky Way but much smaller. The Large Cloud is about 5% the mass of our Galaxy and the small one 3%. That is still many billions of stars in each. The LMC is around 160 000 light years away; the SMC around 200 000 l.y.

On moonless evenings in a dark rural sky the **Zodiacal Light** is visible in the west. It looks like late twilight. One sees a faint broad column of light passing through Libra. It is sunlight reflecting off meteoric dust in the plane of the solar system. The dust may have come from a big comet, many centuries ago.

Bright planets appear in the eastern dawn sky. Brilliant silver **Venus** rises two hours before the sun through October. That's around 5 a.m. at the beginning of the month. Golden **Jupiter** is on the dawn horizon at 6 a.m. below and right of Venus. Between the two bright planets, at the beginning of the month, are the white star Regulus and the reddish planet **Mars**. They are similar in brightness but much fainter than the bright planets. Jupiter moves up the dawn sky. By mid-month it is passing Mars. The pair are less than a full-moon's width apart on the morning of the 18th. Around the 26th Jupiter passes by Venus, making an eye-catching pairing of bright planets in the dawn. Jupiter and Mars are on the far side of the sun. Jupiter is 920 million km away; Mars 345 million km. Venus is on our side of the sun, 92 million km away on the 15th.

\*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.