

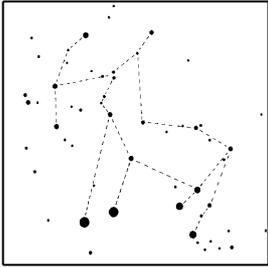
The chart is orientated for  
 July 15 at 10 p.m. NZST  
 Aug. 1 at 9 p.m. "  
 Aug. 15 at 8 p.m. "  
 Sep. 1 at 7 p.m. "

### Evening sky in August 2016

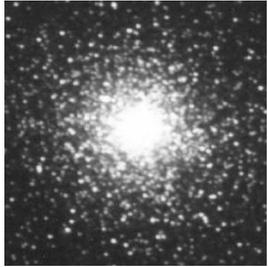
To use the chart, hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge. As the earth turns the sky appears to rotate clockwise around the south celestial pole (SCP on the chart). 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.

Venus, the brilliant silver 'evening star', appears in the west at dusk. It sets before 8pm so isn't on the chart. Above it is Jupiter, for most of the month. Near them, but fainter, is Mercury. Mars and Saturn are north of the zenith. Orange Arcturus in the northwest often twinkles red and green. The Pointers and Crux, the Southern Cross, are midway down the southwest sky. Canopus is low in the south. The Milky Way spans the sky from northeast to southwest with its broad centre overhead. The Scorpion's tail curls around the zenith. Vega crosses the northern sky, staying low.

## Interesting Objects in the Southern Sky



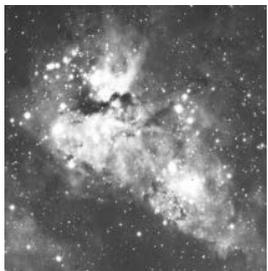
**Centaurus**, with the bright 'Pointers', and **Crux** the Southern Cross, are in the southwest sky. They make a tight grouping of bright stars. Originally Crux was the hind legs of the Centaur, the horse-man of Greek mythology. The complete Centaur, with bow, is outlined at left. It was only in the 17<sup>th</sup> 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**, to the right of the Pointers, is a globular cluster, a ball-shaped cluster of millions of stars. Its total mass is six million times the sun's. 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.

**Coalsack nebula**, above and left of Crux, looks like a hole in the Milky Way. It is a cloud of dust and gas 300 light years away, dimming more distant stars. Many 'dark nebulae' can be seen along the Milky Way, appearing as slots and holes. These clouds eventually form new stars.

**The Jewel Box** is a compact cluster of young bright stars about 7000 light years away. The cluster formed less than 10 million 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 below 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 Carinae. It is estimated to be 60 times heavier than the sun. It is a 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. (Eta is the Greek 'e'. )

**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 LMC is about 160 000 light years away; the SMC is around 200 000 light years away, 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 (seen in 'The Pot' in the summer evening sky) 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.