

NEWSLETTER

**The next WAS meeting
will be held on Wednesday 5th December 2012 at 7:30pm
at Carter Observatory, Upland Road, Kelburn, Wellington**

**There will be several short talks on
Results from the Solar Eclipse
by members who observed from NZ, Queensland,
and a Cruise ship in the Pacific**



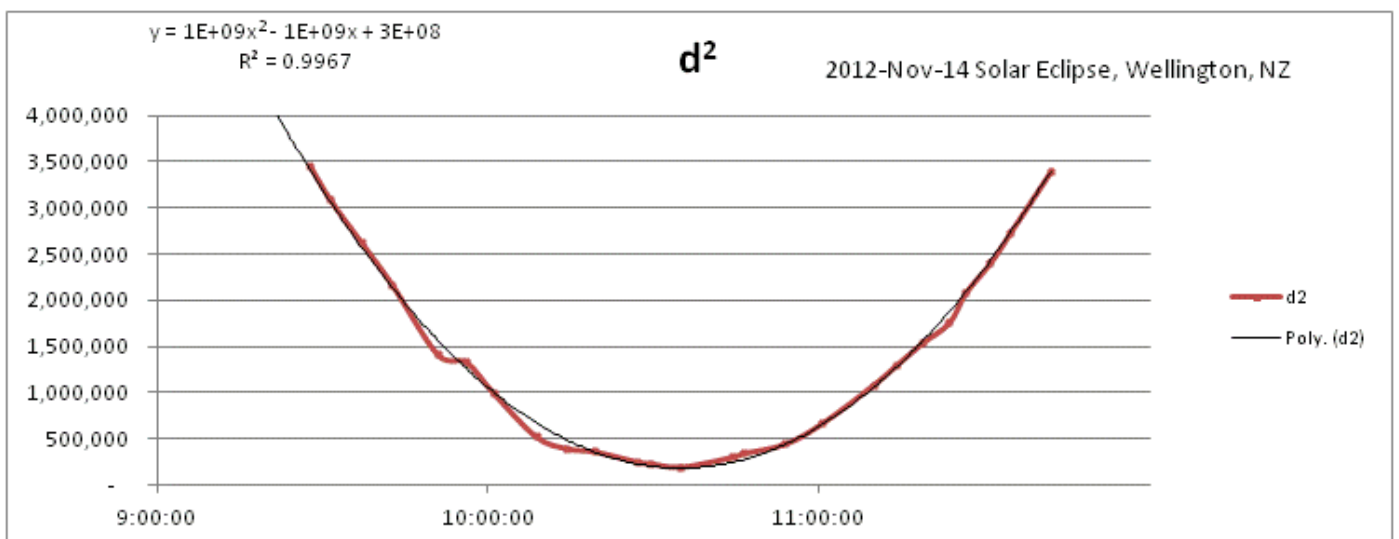
Some of the visitors to WAS public observation of the Solar Eclipse from Civic Square

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Solar Eclipse

On **Wednesday 14th November** Wellington had a partial Solar Eclipse in the morning. WAS had a small team at the City to Sea bridge form Civic Square from about 9:00 am to about 11:50 am for public viewing. We had up to about 60 people at one time near the maximum standing 6 deep watching the sun funnel. Pictures above were taken at about 5 to 15 minute intervals. The first frame shows picture of PC time setting just after synchronising with IRL timeserver. This indicated the need for a 3.97 second adjustment to get to UTC. The coordinates of the sun and moon in each image were measured using MS Paint and after a little calculation in Excel yielded the curve below.



The time of the observed minimum is estimated at 10:36:00 compared to the predicted time of 10:34:10.

The kinks in the curve are mainly caused by the camera not being as square on to the screen as it should have been. This results in an elliptical image rather than a round one and the measurement accuracy suffers as a result. The times were recorded to an accuracy of about 0.1 second from the camera clock in the EXIF information in the JPG images.

Thanks to Bill, Lesley and Roger for their help at the site and to Toby Acheson (WCC) and Rebecca Chilton (Wellington City Library) for their help and support.

John Talbot

Thomas Cooke Telescope Volunteers

Thanks to the members who have volunteered to help with Saturday evening viewing following the planetarium show. We need more volunteers for December and January, As the days are now longer the time you need to be there is much later and shorter duration. So please put your hand up to do a shift one Saturday evening. A list of dates will be at the next meeting so please come and sign on. Please text Chris Monigatti on his mobile 021 890 222 if you are not at the meeting but would like to take a turn.

Subscription time

The end of the WAS financial year fell on Friday 31st August. That means the new subscription year started in September. WAS Council considered the subscription rates at our last meeting and decided that they should remain the same for another year. A renewal form was attached to Page 10 at the end of the October newsletter or can be down loaded from <http://was.org.nz> If you have not already paid please bring subs to December meeting or post to the address on the form or pay by online banking (please put your name or phone number as a reference) and email a copy of the filled-in renewal form to Lesley Hughes hpwas@hugpar.gen.nz.

WAS Research Astronomy Group Report

The group meets each month at 6:30 pm before the main meeting. These meetings are open to all WAS members. We regularly have 6 to 12 people attend these and would welcome more people who even think they might like to try some research type observing to attend these.

Occultation predictions for the Wellington area are published on our web site at <http://was.org.nz/01Occs.html> or look at the RASNZ Occultation Section web site at <http://occsec.wellington.net.nz>

UPCOMING EVENTS:

The next observing evening at the Tawa College observatory will be on:

Saturday 8th December (reserve day 15th).

Text Chris Monigatti on his mobile 021 890 222 if you want to attend.

Note There will be no meeting in January and the first meeting for 2013 will be on Wed 6th Feb.

Comets coming

In 2013, there are already two comets which may be easily visible, Comet PANSTARRS in early 2013 and, toward the end of 2013, Comet ISON.

The comet was christened C/2011 L4 (PANSTARRS). Comets are usually named after their discoverers, but in this case a large team of observers, computer scientists, and astronomers was involved, so the comet was named after the Hawaiian telescope Pan-STARRS (Panoramic Survey Telescope & Rapid Response System) on Mount Haleakala. See <http://pan-starrs.ifa.hawaii.edu/public/>

Comet PANSTARRS from Wikipedia:

Comet PANSTARRS will pass closest to Earth on 5 March 2013 at a distance of 1.09 au. It will come to perihelion (closest approach to the Sun) on 10 March 2013. An estimate from October 2012 predicts the comet may brighten to apparent magnitude M-4 (roughly equivalent to Venus), but previous predictions were that it would brighten to roughly magnitude 0."

More information can be found at <http://www.space.com/15108-comet-panstarrs-skywatching-countdown-2013.html>

Comet ISON

The current details on **Comet ISON's** brightness are less predictable as it will pass quite close to the Sun and may fragment. Again from Wikipedia:

On closest approach, the comet will pass about 0.072 AU (10,800,000 km; 6,700,000 mi) from Mars on 1 October 2013, and it will pass about 0.42 AU (63,000,000 km; 39,000,000 mi) from Earth on 26 December 2013. One prediction suggests it could be much brighter than PANSTARRS but probably only for a day or two in late November 2013.

More information can be seen at

<http://earthsky.org/space/big-sun-diving-comet-ison-might-be-spectacular-in-2013>

and

<http://remanzacco.blogspot.co.nz/2012/09/new-comet-c2012-s1-ison.html>

The Evening Sky in December 2012

Jupiter is the 'evening star', appearing in the northeast soon after sunset. Its disk and four big moons are easily seen in a telescope. Binoculars, steadily held, will show one or two moons looking like faint stars close to the planet. Jupiter is 620 million km away, the closest it gets this year.

Mars is the only other naked-eye planet in the evening sky, on the opposite side of the sky. It sets in the southwest soon after dark. Mars is 180 million km away.

Other than star-like Jupiter, the brightest true stars are in the east and south. **Sirius**, the brightest star, is due east at dusk, often twinkling like a diamond. Left of it is the bright constellation of **Orion**. The line of three stars makes Orion's belt in the classical constellation. To southern hemisphere skywatchers they make the bottom of 'The Pot'. The faint line of stars above and right of the three is the Pot's handle. At its centre is the Orion Nebula, a glowing gas cloud nicely seen in binoculars. **Rigel**, directly above the line of three stars, is a hot blue-giant star. Orange **Betelgeuse**, below the line of three, is a cooler red-giant star of enormous size.

Left of Orion, above Jupiter, is a triangular group making the upside down face of **Taurus** the bull. Orange **Aldebaran** is the brightest star in the inverted V shape. Aldebaran is Arabic for 'the eye of the bull'. Still further left is the **Pleiades /Matariki/Seven Sisters/Subaru** cluster. Most eyes see six stars in the group; the seventh sister has faded since classical times. Binoculars show many more. The cluster is 400 light years* away and around 70 million years old.

Canopus, the second brightest star, is high in the southeast. Low in the south are **The Pointers, Beta** and **Alpha Centauri**, and **Crux** the Southern Cross. In some Maori star lore the bright southern Milky Way makes the canoe of Maui with Crux being the canoe's anchor hanging off the side. In this picture the Scorpion's tail can be the canoe's prow and the Clouds of Magellan are the sails.

The **Milky Way** is wrapped around the horizon. The broadest part is in **Sagittarius** low in the west at dusk. It narrows toward **Crux** in the south and becomes faint in the east below **Orion**. 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 the faint part of the Milky Way below Orion. A scan along the Milky Way with binoculars will show many clusters of stars and a few glowing gas clouds.

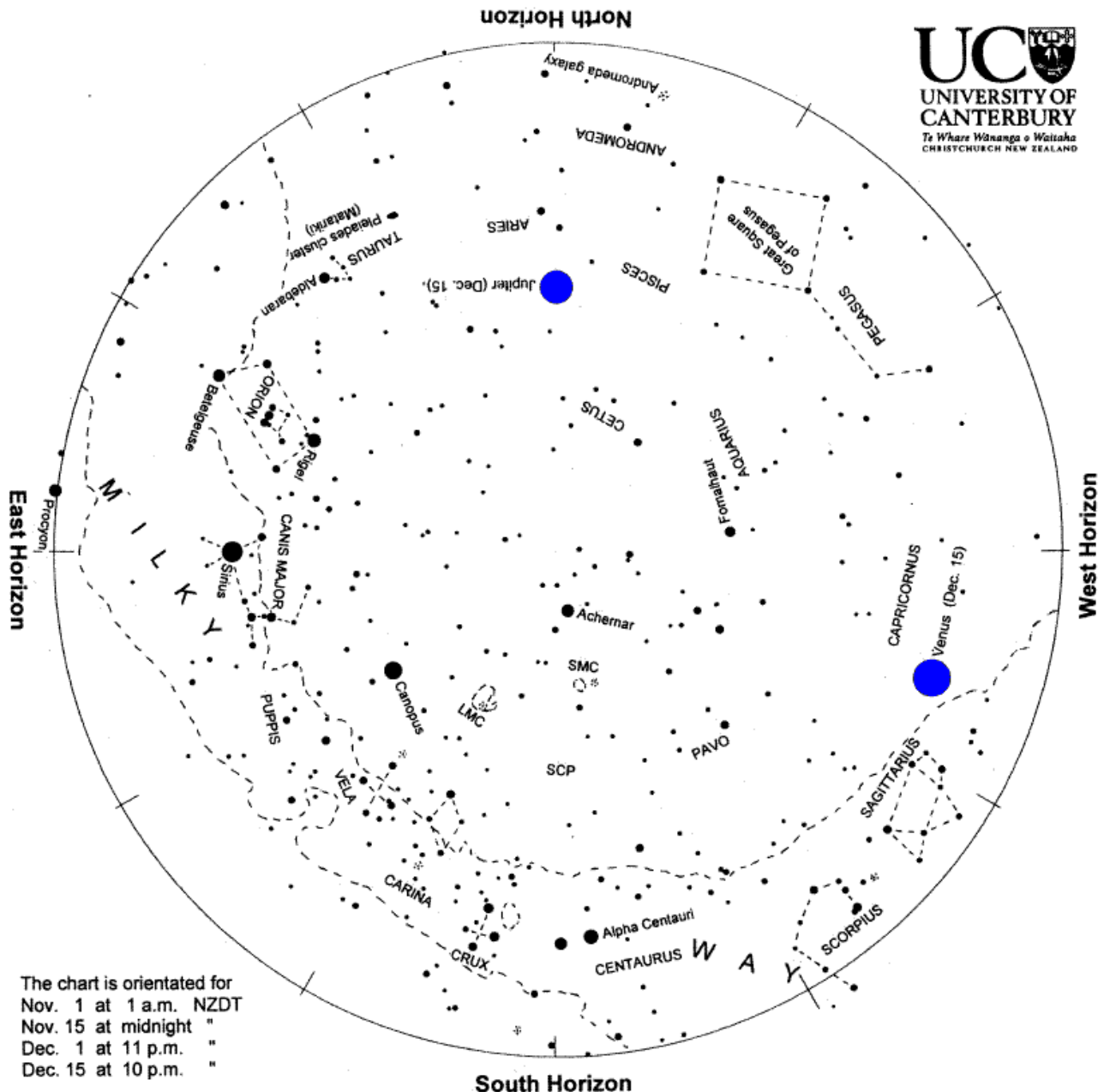
The Clouds of Magellan, **LMC** and **SMC**, high in the southern sky, are two small galaxies about 160 000 and 200 000 light years away, respectively. They are easily seen by eye on a dark moonless night. The larger cloud is about 1/20th the mass of the **Milky Way** galaxy, the smaller cloud 1/30th. That's still many billions of stars in each galaxy.

Very low in the north is the **Andromeda Galaxy** seen in binoculars in a dark sky as a spindle of light. It is similar in size to our Milky Way galaxy and three million light years away.

The **Geminid meteor shower** peaks in the morning hours of December 14. The meteors appear to come from the constellation of Gemini, low in the northeast at midnight, moving to the north by dawn. This is a particularly good year for seeing this shower as there is no moon brightening the morning sky.

Saturn, Venus and **Mercury** make a line sloping down the dawn sky to the east. At the beginning of the month the three planets are roughly equally spaced with brilliant Venus in the middle. During the month Saturn moves up the morning sky, along with the stars. Venus and Mercury stay low in the dawn twilight. Saturn is 1570 million away, Venus 220 million km away, and Mercury 190 million km away at mid month. Venus and Mercury are leaving us behind as they move to the far side of the sun. Of the three only Saturn is worth a look in a telescope. The crescent moon will be near Saturn on the morning of the 11th and close to Venus on the 12th.

*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 sunlight four years to reach the nearest star, Alpha Centauri.



The chart is orientated for
 Nov. 1 at 1 a.m. NZDT
 Nov. 15 at midnight "
 Dec. 1 at 11 p.m. "
 Dec. 15 at 10 p.m. "

Evening sky in December 2012

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 also shows a small extra clockwise rotation each night as we orbit the sun.

Jupiter is the first 'star' out after sunset, low in the northeast. It is in the north sky at midnight and sets in the northwest at dawn. Sirius, the brightest star, is due east, twinkling like a diamond. Left of it is Orion, with 'The Pot' at its centre. Further left, above Jupiter, is orange Aldebaran in Taurus, and the Pleiades/Matariki star cluster. Mars is a lone orange star near the southwest skyline, setting after 11 pm. The Pointers and Crux, the Southern Cross, are low in the south. The Milky Way is bright along the skyline from southwest to southeast but fades below Orion. Right of Canopus, the second brightest star, are the Clouds of Magellan (LMC and SMC on the chart), two nearby galaxies. The Andromeda Galaxy is low in the north, best seen in binoculars.

Chart produced by Guide 8 software; www.projectpluto.com. Labels and text added by Alan Gilmore, Mt John Observatory of the University of Canterbury, P.O. Box 56, Lake Tekapo 7945, New Zealand. www.canterbury.ac.nz