Wellington Astronomical Society October 2015 Volume 45 Issue 9
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The next WAS meeting will be held on Wednesday 7th of October 2015 at 7:30 pm

Cosmology

Matt Visser, Victoria University of Wellington

This guest speaker for the 7th October WAS meeting is Matt Visser, and he will be talking about Cosmology. The talk is scheduled to begin at 7:30 pm, venue is our usual room at Carter Observatory.

Matt Visser (FRNZS) is Professor of Mathematics at Victoria University Wellington. He has published widely in the areas of general relativity, quantum field theory, and theoretical cosmology. He is best known for his contributions to the theory of traversable wormholes, chronology protection, and analogue spacetimes.

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PRESIDENTS REPORT OCTOBER 2015 GORDON HUDSON

The month of September has had another interesting talk with Professor Denis Sullivan from Victoria University. His talk covered highlights from his 40 plus years of Optical Astronomical Observing.

Denis showed us many of the results of his observing and the problems that went with them. He showed his first Photoelectic Photometer from which he developed his two channel photometer and from that he developed his three channel photometer. This means he could look at the Variable Star and the comparison star and the check star all at the same time. However they all had to be in the field of view. A Photometer traditionally has a small field of view. He later changed his photoelectric photometer over to CCD which increased the field of view and the sensitivity of the Photometer.

We have also been asked to move from the evening of Wednesday 4th of November which is our AGM evening as the WCC will be using the room. The WAS AGM will now be held on Monday 2nd November in the same room at Carter Observatory

For many of us the news of John Talbot's triple bypass operation has come as a shock. John was taken into hospital on 24 July and his operation was on 7th August. However although the operation was successful, he had a stroke while in recovery. He was put into ICU and is now out of there. His recovery process is going to be slow.

On Monday 17 August John was moved to Kenepuru Hospital which is the stroke recovery unit for Capital & coast Health. I visit John on most days as Kenepuru Hospital is only 3km from my place. He was looking much better although the stroke is down his left side and he will be slow to recover.

John hopes to be back at his home before the end of September (he made a short visit to his home on 15th September). They are looking at moving him to a rehab unit out at Waikanae, however, he is not likely to be back at WAS this year.

With John not available to run the Research Group Murray Forbes has stepped in to carry out what John would normally have done. Thanks Murray.

The funds from the Syd Cretney Bequest has been invested in a Trust fund with the Lawyers who acted on our behalf in obtaining this Bequest.

The planning for the Gifford Observatory has begun on the WAS automated telescope. There are many decisions to be made and a new committee to be formed as this is going to be on going for the next year and possibly longer.

The membership cards were distributed to those attending members at the July meeting and these should be worn at all WAS meetings. Those of you who have not picked up your card would you do so at the next meeting.

On October Monday 5th Professor Chris Lintott is visiting Wellington on the way to the Aoraki Mackenzie Starlight Festival at Twizel. This should be quite a memorable occasion, and details for this lecture are on the Royal Society of New Zealand and WAS websites. However the talk he is to present is not the talk that was advertised by WAS in the last newsletter. I don't know who changed this or why it was changed. There will be cost to enter this lecture which is $10 for paid up WAS members and $15 for the General Public.

The WAS dome which has been stored at my place for the last two years is still there. Work has begun on ground preparation for the piles and pier and we should be in a position to move the dome to Tawa during the school holdiays.

The volunteering at Carter is going well but it is mainly through the efforts of a couple of our members. We need more volunteers.

We assist on Tuesdays and Saturday evenings so put your hand up at the next meeting.

There may be another evening to consider (Thursday) but this is still in discussion with the Wellington Museums.

The WAS observing evening at Tawa College was on September 19th and this was the International "Observe the Moon" event. Unfortunately it was raining and the moon was not visible (although I saw it for about 5min in a small break in the clouds). The next observing evening at Tawa College will be on October 17th and we will have a 4 day old Moon to look at.

November 2nd will be the WAS AGM (Note the change of the day to Monday) and it is time to start thinking if you would like to be on the WAS Council for the next year. There will be two motions to considered and passed to the AGM:

(continued on next page)

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a) **Motion #1 to be put to the AGM:** *"That the Wellington Astronomical Society implement the plans for the Cretney Bequest contained in the proposal prepared by the WAS observatory steering group and approved by Lunden's Law, the executors of the Cretney estate".*

Notes: The approval of members is required as the previous approvals authorised by Special General Meeting in July 2014 were for:

(i) *"The Wellington Astronomical Society should accept the conditional bequest from the late Syd Cretney but we need further time to explore options and proposals which will fulfil the conditions"*: Moved: John Talbot, Seconded: Frank Andrews, carried by vote without dissention; and,

(ii) "*That this Special General Meeting approves that the Council of the Wellington Astronomical Society appoints a steering committee, separate to the Council, to help to explore the options and report back to members at a future General Meeting"*: Moved: Graham Blow, Seconded: Duncan Hall, carried by vote without dissention. The approved option was: 'the Internet accessible remote controlled telescope based at the Gifford Observatory is the preferred option.' The option is retained of re-locating at a later date the Cretney Bequest-funded equipment to an astronomically better site.

b) **Motion #2 to be put to the AGM**: *"That after election at this AGM the council of the Wellington Astronomical Society,be empowered to appoint a 'Cretney Bequest Project Committee' to implement the plan for this project. This committee shall have a working capital up to $25,000. It shall fully record and report all expenditure to the WAS council and obtain approval for proposed expenditure of greater than $5,000 prior to incurring that expenditure from the WAS council."*

2015 — 2016 Subscriptions Due

The new subscription year begins in September, so WAS looks forward to receiving your subscription renewal.

Renewal forms can be found on the website, but a summary follows:

Subscription for Newsletter by Email 2015-2016

Adult/Waged: $ 50.00

Student/Unwaged: $ 30.00

Family: $ 70.00

Payment methods:

Cheque - make out to Wellington Astronomical Society Inc, and mail to PO Box 3181, Wellington 6140

Direct Deposit or Internet Banking - use Acc No: 03-0502-0508656-00, please include reference so WAS knows who is making the payment

Cash - please bring exact amount to meeting

WAS COUNCIL MEMBERS AND CONTACTS

Council Members

The following members were elected to Council at the Nov 2014 AGM

President: Gordon Hudson

gordon@kpo.org.nz ph 04 - 2365125

Vice President: John Talbot john.talbot@xtra.co.nz ph 04 293 4620

Secretary: Chris Monigatti

chrismon@xtra.co.nz mob 021 890 222

Treasurer: Lesley Hughes

Councilors:

Aline Homes

John Homes + Webmaster

Roger Butland

Frank Andrews

Murray Forbes

Antony Gomez

Duncan Hall

Newsletter Editor: editor@was.org.nz

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PROFESSOR CHRIS LINTOTT: HOW TO DISCOVER A PLANET FROM YOUR SOFA - SPECIAL PRESENTATION, OCTOBER 5TH

Astronomers have discovered that planets are common – most stars we see in the night sky probably have worlds circling them – but many of these places are stranger than we could possibly have imagined.

This talk will explore these new discoveries, ask whether aliens are out there somewhere, and explain how you can help in the search.

Chris Lintott is Professor of Astrophysics and Citizen Science in the Department of Physics at Oxford University, and is involved in a number of popular science projects aimed at bringing astronomy to a wider audience.

He is currently the primary presenter of the BBC series The Sky at Night, and has also co-authored 'Bang! - The Complete History of the Universe' with the late Sir Patrick Moore and Queen guitarist and astrophysicist Brian May.

Date: Monday 5th October

Time: 6pm

Venue: Te Whare Apārangi, Royal Society of New Zealand, 11 Turnbull St, Thorndon, Wellington

Tickets: General public $15, students and RSNZ/WAS members $10 (on presentation of membership card). Available from Royal Society website or door sales (credit card/ Eftpos/cash).

Enquiries (only): 04 472 7421 or lectures@royalsociety.org.nz

Stellarium – great planetarium freeware

There are a number of programs and apps that can show the night sky. A favourite is Stellarium, the program that Frank used during his night sky presentation at the September meeting.

Stellarium is available at http://www.stellarium.org/ , and as they say:

"Stellarium is a free open source planetarium for your computer. It shows a realistic sky in 3D, just like what you see with the naked eye, binoculars or a telescope.

It is being used in planetarium projectors. Just set your coordinates and go."

Not only is it free, but it is also being regularly improved and is available for various operating systems, not just Windows.

Looking for satellites in the sky

A useful website to check before any observing session is:

http://www.heavens-above.com/

Note: you must enter your location and confirm your time-zone.

Among a wealth of information, two of the most useful pages to check are:

- ISS – this will indicate any visible passes of the International Space Station in the next ten days
- Iridium flares – again this will indicate any 'Iridium flares' that will be visible over the next ten days – occasionally flares can be -8.0 magnitude!

Both of these satellites are fun to look for, and especially to image. The data tables are very accurate, and exposures of 20 – 30 seconds can show nice ISS trails or bright flashes.

Auckland Astronomical Society 2015 Burbidge Dinner

The guest speaker for the Auckland Astronomical Society 2015 Burbidge Dinner this year is Professor Chris Lintott from Oxford University, UK. His talk will be "Is the Milky Way Special?"

The evening will include the presentation of the Beaumont prize for the best article written in the Auckland Astronomical Society Journal by a member and the Astrophotography Competition including the Harry Williams Trophy.

Date: Saturday, 3rd October 2015, starting at 6:30 pm.

Venue: Alexandra Park, Epsom.

Tickets: $60 per person. Includes a buffet dinner. Tickets can be purchased through the Astronz website (http://www.astronomy.co.nz/shop/category.aspx/burbidge-dinner/30/)

or by emailing events@astronomy.org.nz .

Horowhenua Astronomical Society Astrophotography Weekend

The Horowhenua Astronomical Society is hosting its third annual astrophotography weekend. The weekend is open to everyone interested in astrophotography from beginners to advanced.

The activities will include opportunities for practical astrophotography, image processing workshops, presentations, bring-and-buy and (if the weather is bad) late-night movies.

Guest speakers and presenters include Peter Auldous, Steve Lang, Stephen Chadwick, George Ionas, Jonathan Green, Amit Kamble and Trevor Fafeita.

Dates: 13th-15th November

Venue: Foxton Beach Bible Camp, Foxton beach, Horowhenua

Please book ASAP by going to the web address: www.horoastronomy.org.nz or email stevechads@hotmail.com.

Aoraki Mackenzie Starlight Festival

This year, the key note speakers at the Aoraki Mackenzie Starlight Festival are Dame Anne Salmond, Professor Chris Lintott and Dr Seth Shostak. (http://www.phys.canterbury.ac.nz/starlightfestival/keynote_speakers.shtml)

The full programme is online: at http://www.phys.canterbury.ac.nz/starlightfestival/programme2015.shtml.

Dates: Friday 9th to Sunday 11th October

Venues: Twizel Events Centre, Twizel with some events at Lake Tekapo and Mt Cook village

Tickets: available from http://www.phys.canterbury.ac.nz/starlightfestival/programme2015.shtml.

Enquiries: Sharlene Mullen (sharlene.mullen@canterbury.ac.nz)

Facebook: https://www.facebook.com/AorakiMackenzieStarlightFestival

Stardate 2016

Stardate 2016 will be held at Stonehenge Aotearoa, near Carterton in the Wairarapa (same venue as last year). The main part of the programme will be based around the 8th, 9th and 10th of January but attendees will be able to arrive earlier by arrangement.

The facilities are still basic, so camping is the order of the day. Attendees will be able to use the toilets in the AV centre and basic showers will be erected. There are no bunk rooms, however full details of local accommodation are available at: http://www.stonehenge-aotearoa.co.nz/Tours++Treks/Booking+Your+Visit/Carterton+Accommodation.html .

Dates: Saturday, 8-10th January 2016 (attendees able to arrive earlier by arrangement)

Venue: Field behind the visitor's centre, Stonehenge Aotearoa, Carterton, Wairarapa.

Registration: Still to be confirmed, but expected to be $23 for adults; children (pre-teens) accompanied by parents free.

Enquiries: If you are interested in attending, please send expression of interest to Kay Leather at hellfa@xtra.co.nz with Stardate in the subject line. If you would like to give a presentation, please send details to Richard (hamal@xtra.co.nz)or Kay Leather at hellfa@xtra.co.nz.

Central Star Party

The Inter-Society Astronomical Advancement Committee (ISAAC) is holding it's first annual Central Star Party in January 2016. at the Tuki Tuki Camp site in the Hawkes Bay.

The goal is to provide a fun social astronomical gathering laced with talks and activities.

Accommodation is tenting, staying in the dormitories or using one of the four powered caravan sites.

See http://www.censtar.party/ for more details, and please contact the organisers if you wish to give a talk or presentation.

Dates: 7th-11th January 2016

Venue: Tuki Tuki Camp site, Hawkes Bay.

Registration: $47 for early bird attendees

Variable Stars South Symposium

The 4th Variable Stars South Symposium will be held in Sydney on Easter Friday, 25th March 2016.

The venue is the University of Sydney´s Law Building (Camperdown Campus) which is centrally located, with good transport links, and plenty of accommodation options nearby.

The event is being held in conjunction with the 27th National Australian Convention of Amateur Astronomers, NACAA XXVII, which will run over the entire Easter Weekend.

Chair of the Programme Committee is David O´Driscoll.

Dates: Easter Friday, 25th March 2016

Venues: University of Sydney´s Law Building (Camperdown Campus)

Enquiries: David O´Driscoll (Chair of the Programme Committee)

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Occultation Alert

I've only found one noteworthy occultation prediction for October – when a faintish star (TYC 6886- 01476-1, a 9th magnitude star) will be occulted by (10291) 1985 UT at 8h 46m 0s (UT) on Wednesday 28 October 2015. The minor planet has an estimated diameter of 22 km, was presumably discovered in 1985 and hasn't yet been assigned a name by the Minor Planet Center.

The picture with the globe map gives the details of the event. The path of the asteroid's shadow runs roughly north-east along New Zealand. The maximum duration of the occultation (which would be observed if you were located in the middle of the shadow) will only be 0.8 seconds, which means this event is not suitable for visual observers. There will also be a full moon in the sky, which may make it more difficult to find the star. Fortunately the moon is a large (angular) distance away from the star. The star is at a 45° altitude above the horizon, so there won't be any problems with it disappearing below a hill if you live in a valley (like I do) or being cut-off by the blind-spot I have due to the clam-shell design of my dome.

Looking at the zoomed in version of the map, the two solid lines indicate the two edges of the shadow. The truly dedicated could travel ~50 km to the south-east of Wellington to be nearer the centre of the predicted path. However the accuracy of the prediction is considered to be quite low, as can be seen by the width of the dotted lines. These are the '1-sigma' lines – which mean there is a 66% probability that the actual shadow will travel *somewhere* between these lines. I used the Occult program to generate a prediction for my home observatory's location which shows, that although I am outside the predicted shadow path, I still have a 7% chance of seeing an occultation. I expect the odds will be much the same for other Wellington observers, although they will be smaller for Kapiti Coast observers. All this means I plan to do my observing from home.

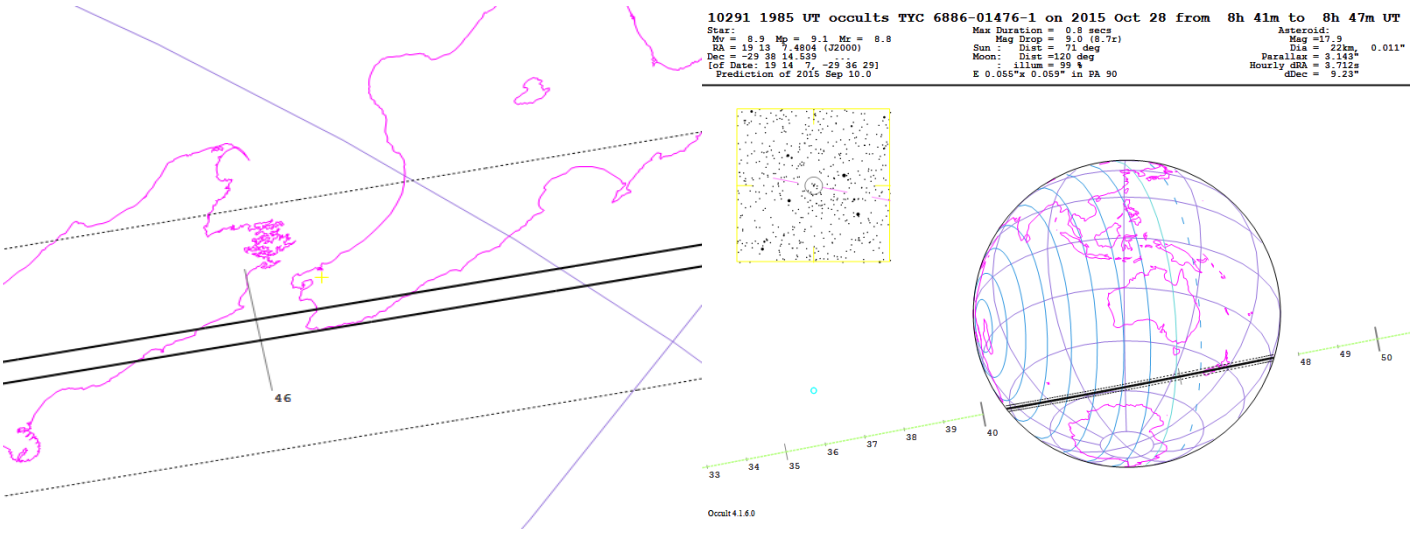
The star is in Sagittarius, at RA 19h 13m 7s, Dec -29° 38' 14''. There are two bright stars to the west that are suitable for pre-pointing;

Pre-Point Time UT			Star	J2000				Dec Offset	Star Name
				RA		Dec			
h	m	s	(mag)	(h)	(m)	(°)	(')	(ArcMin)	
08	35	31	2.6	19	02.6	-29	53	+14.8	SAO 187600
07	54	01	2.7	18	21.0	-29	50	+12.6	SAO 186681

I have a spare occultation toolkit that I'm prepared to lend to a good home (observatory) for this event, so if anyone has a telescope but doesn't have the appropriate video camera/GPS VTI gear, give me a call (murray_forbes@xtra.co.nz).

Cheers,

Murray.



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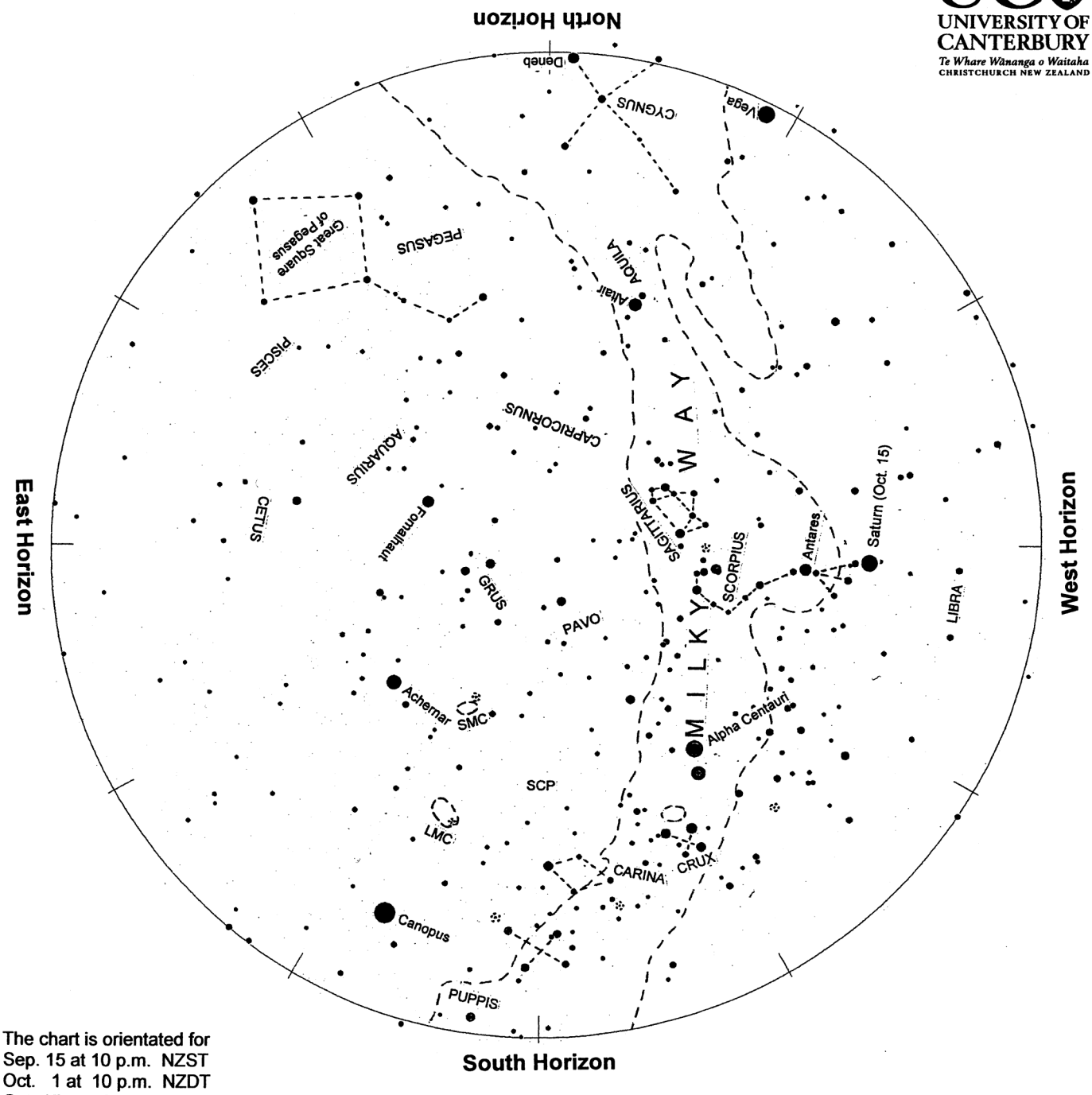
CHRISTCHURCH NEW ZEALAND



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.

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

The Night Sky in October

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 way; 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.

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