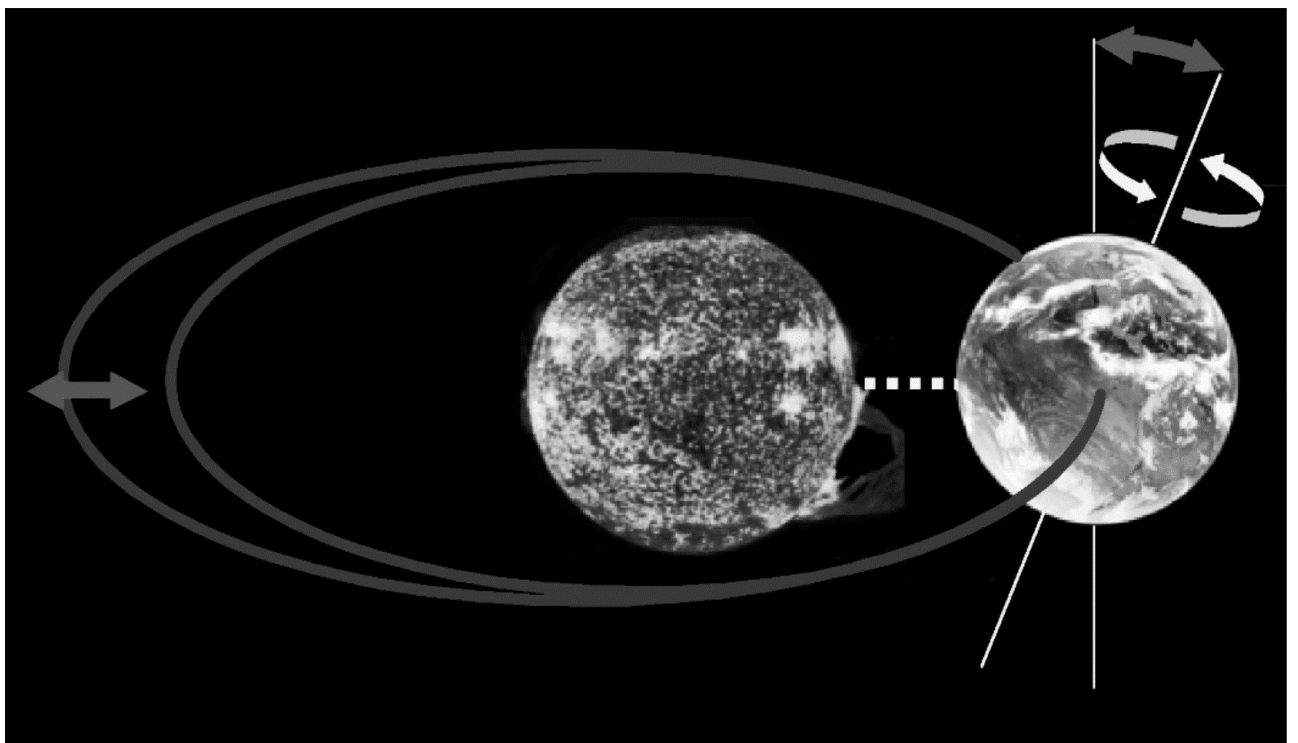


WELLINGTON ASTRONOMICAL SOCIETY



MONTHLY MEETING: Milankovitch cycles
WEDNESDAY 14th NOVEMBER 2007
7.30 PM
SCIENCE HOUSE
TURNBULL STREET
THORNDON
WELLINGTON

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Dancing to the orbital band: How Milankovitch cycles influence Earth's climate by Dr Tim Naish

One of the great enigmas of 21st century climate science continues to be the cause of the ice ages and intervening warm periods. As far back as the early 20th century Serbian mathematician Milan Milankovitch hypothesised that Earth's climate was controlled, on long time scales (of tens of thousands years duration), by periodic changes in its orbital parameters (precession of the equinoxes, obliquity, and eccentricity). These orbital changes led to predictable patterns in the amount of solar radiation (insolation) received at the Earth's surface, which in turn was thought to control the timing and magnitude of the great ice ages. Milankovitch theory, as it became known, was proven in the 1960s by the advent of radiocarbon dating. Deposits of the last glaciation were found to be 20,000 years old in agreement with the orbital calculations. By the 1980s, oxygen isotope records (tracers of past ice volumes) from the deep ocean sediment cores showed more than sixty, orbitally-influenced ice-age cycles, and associated fluctuations in global sea-level extending back to about 3 million years - the age of the northern hemisphere ice sheets. Indeed we now know that these orbital variations have also influenced the behaviour of the Antarctic ice sheet over the last 40 million years. This talk will be a beginner's guide to Earth's orbital climate cycles. The impact of human-induced warming on a background of this natural variability will also be discussed.

Request for Galactic Circle Co-ordinator

After twelve years co-ordinating Galactic Circle both John Field and Marilyn Head are reluctantly standing down. Both have got new jobs which preclude being able to take this wonderful group of enthusiastic primary school children - future members of WAS - and their fantastically supportive parents. We hope that there are parents and astronomers out there who will take up the challenge and the joy of taking this group once a month- third Wednesday of the month 4.30 -6.00pm at the Carter observatory. John and Marilyn would be delighted to help anyone willing to give it a go and can promise that you will find it very rewarding. Galactic Circle will be held as usual on the 3rd Wednesday in November. Marilyn Head, Science Writer www.writerfind.com/mhead.htm
105 Owen Street, Newtown Wellington, Ph: 389 0882 Fax: 64 4 938 8144 Mobile: 021 740 423

2007 AGM

The 2007 annual general meeting of the Wellington Astronomical Society will be held on Wednesday 14th November at 7.30pm at Science House, Turnbull Street, Thorndon. The Auditors report and accounts are attached separately.

Donation of envelopes

New Zealand Post has kindly donated Wellington Astronomical Society 500 post paid envelopes to help post out the newsletter each month. Thanks to New Zealand Post.

2007 President's Report by Ross Powell

This year we had more people in council than last, and it made things very much easier. We have continued to manage WAS finances carefully, and we have now eliminated our deficit. At the last AGM, two suggestions from the floor were made, which we have acted upon. We applied for free postage from New Zealand Post and have been granted a substantial amount for next year. Experiments have been underway with making the newsletter available electronically for those who wish to receive it that way. An excellent newsletter has continued to appear monthly. I find it very handy myself as a quick reference for current information. We have continued to make rental telescopes available to members and maintain a library well stocked with magazines and books, thanks to donations from members. We also have a website to help people connect, and people have put time into maintaining it. Star parties happen regularly at Gifford and Pauatahanui thanks to some of our members who give time to them. Some of the Council went to the Upper Hutt Carnival at Trentham, and showed passers by the sun and moon.

My thanks to all those whose work has helped keep these activities running. I also would like to thank our guest speakers who have enabled us to present a programme of monthly talks of great interest. My thanks especially to those who have served on the Council and my best wishes to the incoming Council for next year.

New Year Getaway

Do you want an opportunity to escape for New Year and do some leisurely astronomy in tandem with all the things offered by the Kapiti Coast? Greater Wellington Regional Council is organising camping at Queen Elizabeth Park from 29th to 31st December. This is a totally informal event. You bring your own tent, food, telescopes, binoculars etc. The camping is free. Groups are encouraged to publicise their hobby, which for us is astronomy. Wellington Vintage Machinery Club has invited us to join them there. If you have a solar filter for your telescope, do bring it. For more details email bjohnston@astronomy.wellington.net.nz, phone 461-6612 daytime Tuesday to Friday or 478-9008 after 7pm.

Upcoming Star Parties

We often post up-to-date information about upcoming star parties on the society's announcements' email group. If you'd like to join, send a blank email to: announce-subscribe@was.org.nz.

The Pauatahanui Star Party will be held on Saturday November 10th Observing will commence after dark. The Phone number at Pauatahanui is 021-102-6056

The Gifford Observatory is not hosting a star party in November

Please note that mobile charges may apply when you phone some of these numbers

Thomas King Observatory

Although Carter Observatory is closed Ross Powell will be at the TKO every night suitable for observing between Wednesday and Saturday each week. Contact Ross Powell Ph 389-9765, email rpowell@was.org.nz or Vicki Irons Ph 970-5215 email virons@was.org.nz for more details.

Stardate North Island 2008 Information taken from Royal Astronomical Society of New Zealand . Email Newsletter Number 85, 23 September 2007

Stardate will be held at Tukituki, near Havelock North from Thursday January 10 - Monday January 14 2008. For details see <http://www.astronomynz.org.nz/stardate/expression-of-interest.html>

Stardate South Island 2008. Information taken from Royal Astronomical Society of New Zealand . Email Newsletter Number 85, 23 September 2007

Stardate South Island will be held at Staveley, inland from Christchurch (a long way inland!), on Feb 15-17, Friday to Sunday. Staveley is a dark-sky site with cabins, kitchen, lecture theatre and camping ground. More details in the next Newsletter

Phoenix Society Almanacs for sale

The Phoenix Astronomical society are now in the process of taking orders for *The New Zealand Almanac* 2008. The retail price is \$20 + p&p. Bulk prices are available. The almanac is a beautiful calendar with wonderful photographs taken by New Zealand astronomers. Every year the photographs seem to become better and this coming year is no exception. The almanac is also packed with interesting information on astronomical events and information presented in an interesting and easily accessible calendar format. Almanacs make wonderful Christmas presents, so consider giving them as Christmas stocking fillers. Order forms will be available at the October Wellington Astronomical Society meeting otherwise send the details of your order to Almanac P.O. Box 156 Carterton, 5743

What's in the sky in November: Information provided courtesy Carter Observatory

Planets

November is a fair month for viewing the planets. Jupiter, Mars, Venus and Saturn are visible all month. Mercury will not be seen, as it is visually too close to the Sun.

Jupiter will be visible in the early evening in the western sky. At the start of the month it sets at 23 25 and at 21 59 by month's end. Jupiter is in the constellation of Ophiuchus. Its magnitude fades slightly from -1.9 to -1.8 by the end of November.

Mars will be visible for the last two thirds of the night. At the start of November it rises at 01 00 and at 23 08 by month's end. Mars is in the constellation of Gemini. Its magnitude brightens from -0.6 to -1.3 during the month.

Saturn is visible in the eastern morning sky for the last quarter of the night. It rises at 03 52 at the start of November and at 02 03 by month's end. Saturn is in the constellation of Leo, in which it remains until September 2009. Its magnitude is a constant 0.8 during the month.

Venus will be visible in the eastern morning twilight sky. At the start of November it rises at 04 22 and at 03 49 by month's end. Venus starts the month in the constellation of Leo, moving into Virgo on November 4. Venus slightly fades from -4.4 to -4.2 during November.

Mercury is visually too close to the Sun to be seen. Mercury starts the month in the constellation of Virgo, moving into Libra on November 18.

All times are for Wellington unless otherwise stated. Other centres may vary by a few minutes.

Phases of the Moon

Last Quarter – November 2 at 10 18. New Moon – November 10 at 12 03. First Quarter – November 18 at 11 33. Full Moon – November 25 at 03 30.

Comets

No bright **comets** are predicted to be visible during November (if planning on visiting the northern hemisphere look in Perseus).

Meteor Showers

Four **meteor showers** are active in November although only two of these reach their maximum activity during the month.

The Taurids S shower is active until November 25 and reaches a maximum on November 03, when up to 10 meteors an hour are expected. The mean magnitude of the meteors is 2.3, and the radiant is at R.A. 03h 20m and Dec +14°. The radiant is to the West of Aldebaran (alpha Tauri) and to the South of the Pleiades (M45, NGC 1432), which is visible for all but the very beginning of the night.

The Orionids shower is active until November 07, having reached maximum activity on October 22. The mean magnitude of the meteors is 2.9, and the radiant is at R.A. 06h 20m and Dec +16°. The radiant is near gamma Geminorum (Alhena or Almeisam), which is about half way between Betelgeuse and Pollux (the brighter of the twins, Caster and Pollux), which is visible for the last two thirds of the night.

The alpha Monocerotids shower is active from November 15 to November 25 and reaches a maximum activity on November 21, when about 5 meteors an hour are expected. The mean magnitude of the meteors is 2.7, and the radiant is at R.A. 07h 48m and Dec -06°. The radiant is just to the South of Procyon (alpha Canis Minoris), which is visible for the last half of the night.

The Phoenicids shower is active from November 28 to December 09 with a maximum on December 06 when up to 100 meteors an hour are occasionally recorded (though an hourly rate of 5 is more typical). The mean magnitude of the meteors is 2.8, and the radiant is at R.A. 01h 12m and Dec -53°. The radiant is near Achernar (alpha Eridani), which is visible all night.

Diary of Astronomical Phenomena: Information provided courtesy Carter Observatory

Nov

- 2 Mercury stationary against the background stars at 02 00, as its motion changes from a Westerly to an Easterly direction.
- 9 Mercury at greatest Westerly elongation from the Sun (19°) at 10 00.
- 10 Moon at apogee (furthest from the Earth) at 02 00 (Distance = 0.0027184 AU = 406,670 km).
- 10 New Moon at 12 03.
- 16 Mars stationary against the background stars at 05 00, as its motion changes from an Easterly to a Westerly direction.
- 24 Moon at perigee (closest to the Earth) at 13 00. (Distance = 0.0023877 AU = 357,190 km).
- 25 Full Moon at 03 30
- 29 Venus close to Spica in the morning twilight.

Alongside are Sunrise and Sunset times for each Monday of the month for Wellington,. The table also gives the time of Transit (Trans), the maximum Altitude (Alt) and the Azimuth (Az).

The time of transit is when the Sun crosses the local North-South meridian from East to West. At the time of transit, shadows will point South. The transit time is also the time at which the Sun is at its maximum altitude (Alt). Assuming your horizon is at sea level, the Azimuth is the position on the horizon where the Sun rises or sets. The angle is measured from true North (not magnetic North), towards the East for Sunrise and towards the West for Sunset.

An azimuth of 90°, for Sunrise, means the Sun rises exactly in the East and for Sunset the Sun sets exactly in the West. For azimuths less than 90°, the Sun rises to the North of East and sets to the North of West (Winter months). For azimuths greater than 90°, the Sun rises to the South of East and sets to the South of West (Summer months). Other New Zealand centres may differ slightly from Wellington below.

Date	Rise	Set	Trans	Alt	Az
Nov	H M	H M	H M	°	°
5	06 04	20 06	13 05	64	111
12	05 56	20 15	13 05	66	114
19	05 50	20 23	13 06	68	117
26	05 45	20 31	13 08	70	119

Moonrise/Moonset

The table below gives the Moonrise and Moonset times for Wellington for the month. The times for other New Zealand centres may deviate by up to 30 minutes, and this difference will vary during the month. (Unfortunately it is not possible to estimate this difference by consulting the Sunrise and Sunset tables above as the Sun differences between Auckland, Wellington, Christchurch and Dunedin bear little resemblance to the Moon differences because of the Moon's declination).

In the table, we include the Azimuth (Az) that the Moon rises and sets on the horizon. It assumes your horizon is sea level. Azimuth is measured in degrees from True North (not Magnetic North) either towards East or West depending on whether it is for Moonrise or Moonset. So for an Azimuth of 90°, the Moon will rise exactly in the East and set exactly in the West. For Azimuths less than 90°, the Moon will rise to the North of East and set to the North of West. Similarly, for Azimuths greater than 90°, the Moon will rise to the South of East and set to the South of West.

Date	Rise	Az	Set	Date	Rise	Az	Set	Date	Rise	Az	Set
Nov	H M	°	H M	Nov	H M	°	H M	Nov	H M	°	H M
1	01 56	56	11 04	11	06 01	123	21 44	21	16 16	81	03 15
2	02 32	61	12 16	12	06 38	127	22 43	22	17 34	72	03 40
3	03 01	68	13 24	13	07 22	129	23 37	23	18 56	64	04 08
4	03 25	75	14 30	14	08 16	129	-- --	24	20 20	57	04 43
5	03 46	82	15 33	15	09 16	126	00 24	25	21 39	53	05 27
6	04 05	90	16 34	16	10 21	122	01 03	26	22 49	52	06 22
7	04 24	98	17 34	17	11 30	116	01 36	27	23 45	55	07 29
8	04 44	105	18 36	18	12 39	108	02 04	28	-- --	55	08 43
9	05 05	112	19 38	19	13 50	100	02 29	29	00 28	59	09 59
10	05 31	118	20 41	20	15 02	91	02 52	30	01 01	65	11 11

Accurate Sunrise/set and Moonrise/set times for any location, in New Zealand or anywhere in the World, are available from Carter Observatory. Other data, such as the position in the sky of the Sun and Moon (or planets) at a particular time, twilight times, illumination from the Sun or Moon, can also be supplied. There may be a charge for this information.

2008 RASNZ Conference at Lake Tekapo: Information taken from Royal Astronomical Society of New Zealand . Email Newsletter Number 86, 21 October 2007

The hosts for next year's RASNZ Conference will be the Canterbury Astronomical Society. The conference will be held at the Godley Resort Hotel, Lake Tekapo from 23 to 25 May 2008. Please note the dates, which are just one week before Queens Birthday weekend next year. Lake Tekapo is ideally placed for great late autumn holiday in the South Island so why not plan to take a holiday around the conference and explore the region? The Godley Resort Hotel has reserved rooms for those attending the conference. For more information about the Godley Hotel see the webpage <http://www.tekapo.co.nz/>. Alternatively Lake Tekapo has a number of delightful holiday homes for hire at very reasonable rates, just a short distance from the Conference venue. See the holiday homes webpage <http://www.tekapoholidayhomes.co.nz/>.

The Conference Organising Committee are working hard to ensure a great RASNZ conference next year. The focus will be on the work at Mount John and the Dark Skies of the Mackenzie Basin. Conference presentations are not limited to this theme and presentations on other aspects of astronomy will also be welcome. If you would like to make a presentation (either oral or poster papers welcome) at next years conference please contact the Scientific Organising Committee at conference@rasnz.org.nz. The Conference will be preceded by the full day workshop "Introduction to CCD Photometry" run by Tom Richards. As numbers attending this workshop will be strictly limited we suggest you pre-register your interest in this workshop by emailing Pauline Loader at varstar@rasnz.org.nz to ensure a place is reserved for you. Further information about the Conference and workshop can be found on the RASNZ website <http://www.rasnz.org.nz/> and following the conference links.

How to receive your WAS newsletter by email

At our last AGM, the incoming council was asked to set up a system where WAS members could receive their newsletter over the internet (rather than by post). If you wish to receive your newsletters this way, then please send an email to newsletter-subscribe@was.org.nz with your full name in the body of the email (a subject line is not required). I need your name in the email as it is not clear from some email addresses who the email is actually coming from.

You should then receive an automatic reply, asking you to confirm you want to subscribe (and to check your email address is okay). I (as moderator) will then get a request to subscribe you. After I okay your subscription you should get another message telling you it's been done. When each newsletter becomes available, I will email a short message to all subscribers to that effect and provide a link to the newsletter. In this way you can download the newsletter at your own convenience. The newsletters will be in pdf format, and are typically 1 - 2MB in size.

Note that this is only intended for current WAS members, which is why I have to okay each subscription request. The only exceptions will be for companies that advertise in the newsletter or other astronomical societies that swap newsletters with us. Further note that for the first few months you will also continue to receive your newsletter in the post. Once we're confident the system is working well, you will only receive the newsletter via email

From Galileo Galilei to Sustainable Lighting : Article from Royal Astronomical Society of New Zealand . Email Newsletter Number 86, 21 October 2007

2009 has been declared the International Year of Astronomy (IYA) by UNESCO and will be a global celebration of astronomy and its contributions to society and culture, highlighted by the 400th anniversary of the first use of an astronomical telescope by Galileo Galilei.

The New Yorker website recently published an informative article in the New Yorker about the loss of the starry sky and the measures now being taken to curb light pollution.

"In 1610, Galileo Galilei published a small book describing astronomical observations that he had made of the skies above Padua. His homemade telescopes had less magnifying and resolving power than most beginners' telescopes sold today, yet with them he made astonishing discoveries: that the moon has mountains and other topographical features; that Jupiter is orbited by satellites, which he called planets; and that the Milky Way is made up of individual stars. It may seem strange that this last observation could have surprised anyone, but in Galileo's time people assumed that the Milky Way must be some kind of continuous substance. It truly resembled a streak of spilled liquid-our word "galaxy" comes from the Greek for milk-and it was so bright that it cast shadows on the ground (as did Jupiter and Venus). Today, by contrast, most Americans are unable to see the Milky Way in the sky above the place where they live, and those who can see it are sometimes baffled by its name. The stars have not become dimmer; rather, the Earth has become vastly brighter, so that celestial objects are harder to see. Air pollution has made the atmosphere less transparent and more reflective, and high levels of terrestrial illumination have washed out the stars overhead-a phenomenon called "sky glow." Anyone who has flown across the USA on a clear night has seen the landscape ablaze with artificial lights, especially in urban areas. Today, a person standing on the observation deck of the Empire State Building on a cloudless night would be unable to discern much more than the moon, the brighter planets, and a handful of very bright stars-less than one per cent of what Galileo would have been able to see without a telescope.

What has this to do with Clean Green New Zealand?

87% of New Zealanders live in urban areas, unable to see the true majesty of the night sky from their homes. *Light pollution dims the universe from view.*

Prime Minister Helen Clark noted in June this year that public lighting is the single largest source of greenhouse gas emissions from Local Councils, accounting for between 30-50% of all Council greenhouse gas emissions. She stated that poorly designed and implemented street lighting was wasteful and contributed not only to excessive energy consumption but also to emissions, glare and light pollution. The PM indicated that continued Government

leadership in sustainability would be forthcoming and that updated street lighting efficiency measures lay ahead, for introduction by 2009 (IYA).

The technology to reduce light pollution exists now; full cutoff fixtures with energy efficient lamps directed downwards will significantly reduce energy consumption, spillover light and glare. What is required to reclaim the night environment is the *determination* to reduce light pollution, the same determination that will reduce greenhouse gasses, climate change, vision, human health and ecological impacts of over bright and poorly directed lighting.

Twenty-eight New Zealand Local Government Authorities have signed up to the Communities for Climate Protection (CCP) programme. This international programme includes the Local Government Association of South Australia who, in their South Australian Strategic Action Planning Guide for Sustainable Public Lighting, claim they can save from 60-65% of their energy bill for public lighting by changing to sustainable lighting. Sustainable lighting provides economic, social and environmental benefits.

-- Steve Butler, Convenor, RASNZ Dark Sky Group.

Comet C/2007 F1 (LONEOS): Information taken from Royal Astronomical Society of New Zealand. Email Newsletter Number 86, 21 October 2007

Comet C/2007 F1 (LONEOS) should be a binocular and small-telescope object low in the south-western evening sky from the second week of November. It passed perihelion, 0.4016 AU (60 million km) from the sun on October 28.6 TT. The following ephemeris is based on a download from the Minor Planet Center. It gives the comet's position at 9h UT on the dates shown.

Example: Nov. 8 9h UT = November 8 at 10 pm NZDT.

2007	R.A. (2000) Dec.				2007	R.A. (2000) Dec.			
9h U.T	h	m	°	m1	9h U.T	h	m	°	m1
Nov 8	16	39.1	-33 44	6.7	Nov 13	16	57.8	-41 02	7.7
Nov 9	16	43.4	-35 27	6.9	Nov 14	17	00.8	-42 09	7.9
Nov 10	16	47.5	-37 02	7.1	Nov 15	17	03.6	-43 12	8.1
Nov 11	16	51.2	-38 28	7.3	Nov 16	17	06.2	-44 10	8.3
Nov 12	16	54.6	-39 48	7.5	Nov 17	17	08.7	-45 07	8.5

m1 is the comet's total magnitude: A star of this magnitude, defocused to the size of the comet's head, matches the comet's brightness. To be obvious to the naked eye a comet needs to be minimum m3 (note this comet does not rise above m6.7)

-- Alan Gilmore

COUNCIL OF THE WELLINGTON ASTRONOMICAL SOCIETY INC.

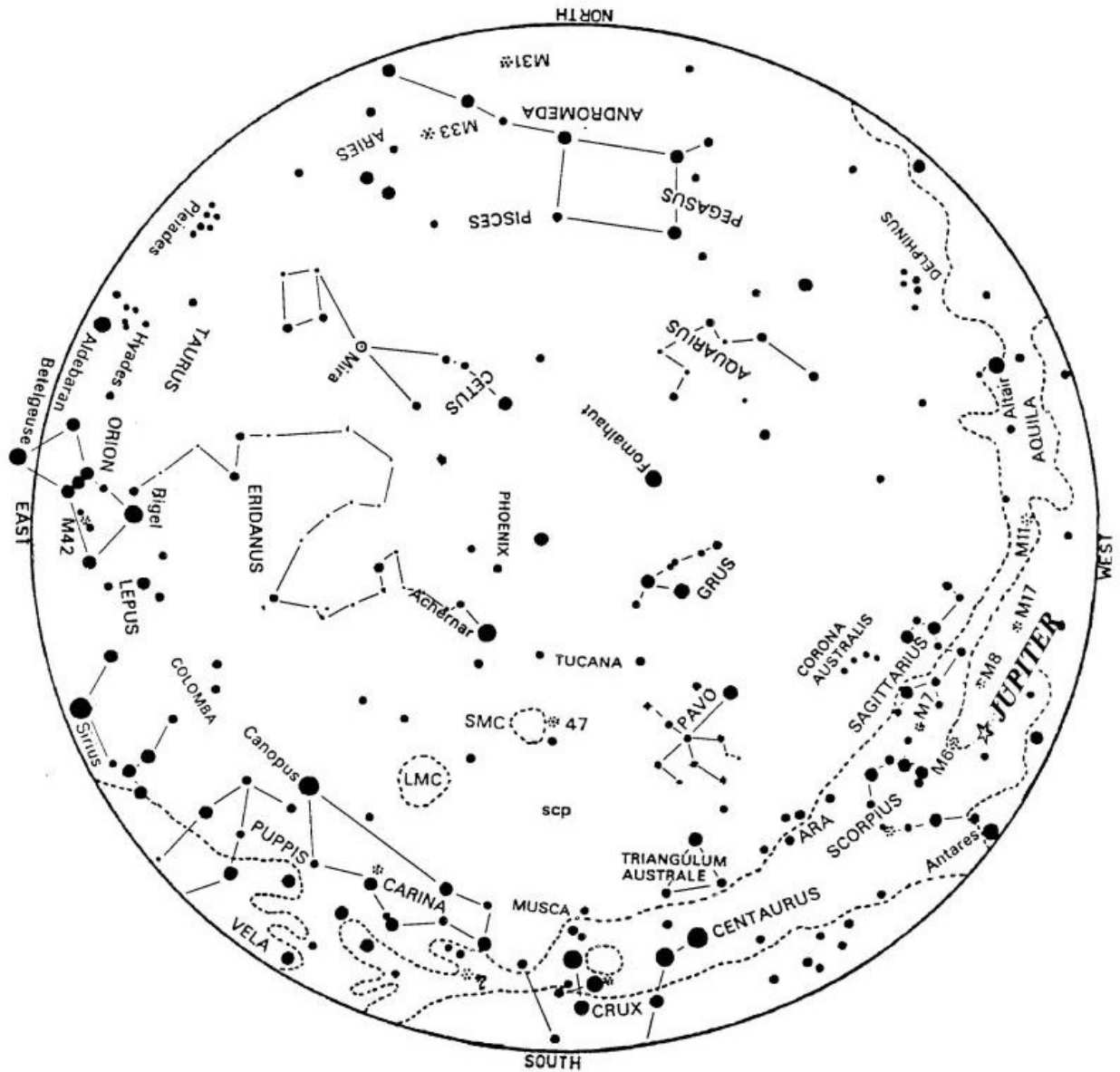
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November Sky Map provided by Carter Observatory

This chart shows the sky as it appears at about 22 00 for ~November 15.



How to Use the Sky Charts

To use the sky chart hold it up to the sky so that the direction in which you are looking is at the lower edge of the map. For example, if you are looking at the western horizon then the map should be held so that the "WEST" label is at the lower edge. The altitude and direction of the stars and planets will then be correctly shown. The centre of the chart will be directly overhead. The above chart is for 21:00 NZST, but other month's charts, from previous WAS Newsletters, can be used at other times of the night. The table below indicates which month's chart, from back copies, can be used at other times during this month.

For this time of the night:	00 00	02 00	04 00
Use this month's charts:	Dec.	Jan.	Feb.

Note that although the stars will be correctly positioned, the planets will not be correct as they move against the background stars from month to month.



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GS600	200mm f/5, 8x50mm finder, PL9&25 eyepieces
- **Dobsonian Mounted**

GS580	150mm f/8, 6x30mm finder, PL25 eyepiece
GS680	200mm f/6, 8x50mm finder, PL25 eyepiece
GS880	250mm f/5, 8x50mm finder, SP26 eyepiece
GS980	300mm f/5, 8x50mm finder, SP32 eyepiece
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 - fans to aid rapid mirror cooling
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- **SV Superviews** 15 – 50mm, 5 elements, 65-70°FOV, 20mm eye relief
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