

The Warrumbungle Observer



warrumbungle
observatory

Night Sky & Telescope Viewing.
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September 2009 Volume 1 Edition 6

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Welcome to Coonabarabran, Astronomy Capital of Australia.

We hope you enjoy your stay in Coonabarabran and take time to explore the astronomy activities the area has to offer. The Warrumbungle Observer informs visitors to the area places to visit and what to look out for in the Coonabarabran night sky in this year in this year, The International Year of Astronomy.



'WOW!' OF THE MONTH JUPITER

Jupiter is the brightest object excluding the moon in the evening sky this month. It can be found in the constellation Capricorn which looks like the letter 'D' in the eastern evening sky. Careful observations of Jupiter's position each night will show Jupiter moving compared to the other stars in Capricorn and appearing to be moving up the left side of 'the letter D'.

Four of Jupiter's moons are easily seen with a pair of binoculars appearing as a straight line of stars. Each night they are in a different configuration. Galileo was the first to observe this 400 years ago and are called the Galilean moons.

Through a telescope the disc of Jupiter can be easily seen with a pair of parallel brownish stripes. These are cloud bands equivalent to the trade winds on Earth and move in the opposite direction to the spin of the planet. On a night of good seeing, the Great Red Spot can be seen. The Great Red Spot is swirling storm larger than the Earth and has been visible for as long as man has viewed Jupiter through a telescope.

Jupiter is the 5th planet from the Sun and the largest in the solar system. 11 earths can fit side by side across the equator. Jupiter is larger than all the other planets combined. Jupiter is classified as a gas Giant and is primarily composed of the same gas as the Sun, hydrogen. Though it is not hot like the Sun but a chilly 100 degrees C below zero at the cloud tops. Jupiter is also the fastest rotating planet with one day lasting just under 10 hours. Makes a short working day or school day but not much time to do your homework. There are plenty of days in a year though with one year equivalent to 12 Earth years. Makes you feel young when you live there. Jupiter lies 614 million kilometres away or a mere 700 year drive in your car.



Planets Visible this Month

SATURN

Saturn is only visible early in the month sinking in the West. It is most unusual with the rings not visible in September. This occurs once every fourteen years. The rings are made of lumps of ice and are therefore very reflective. The rings are very wide, the width of several Earths however they are extremely thin at little more than 100 metres This is flatter than a piece of paper on the same scale. Little wonder they are invisible when edge on at 1.5 billion kilometres away. This view makes it clearer to identify the Moons of Saturn which appear in a straight line. The shape of Saturn is also clear as a slightly squashed ball through a small telescope. This is due to its fast rotation once every 10 hours 13 minutes.



2005

May 2009

September 2009

NEPTUNE

Neptune like Jupiter is in the constellation Capricorn 5 degrees below Jupiter. It is not visible to the naked eye but is accessible with a small telescope but only appears as a bright bluish star. Neptune's diameter is 4 times that of the Earth but appears so small due to its large distance of 4.5 billion kilometres.

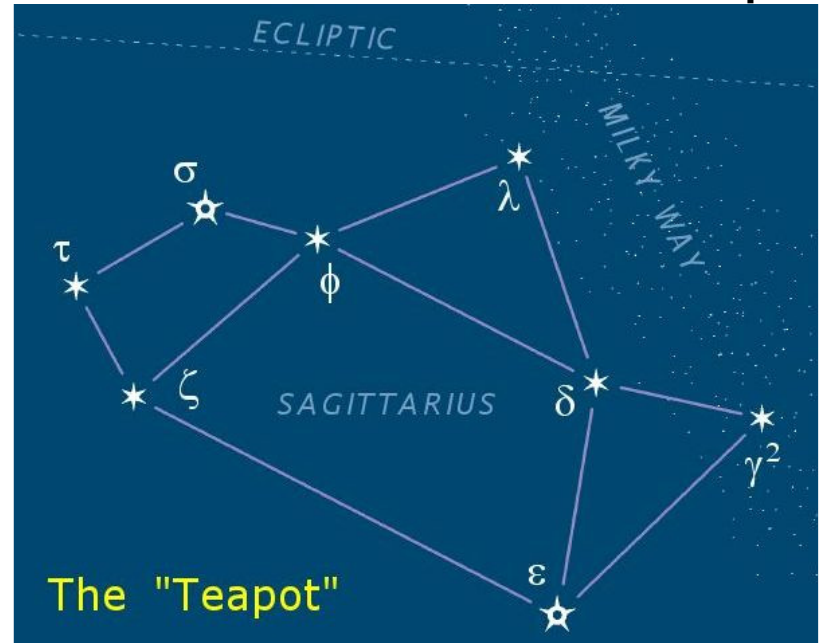
URANUS

Uranus is located 30 degrees lower in the sky than Neptune in Pisces. This appears as a greenish star with a pair of binoculars. The planet has an interesting name, much the joke for some, but has had an identity crisis over the years. Its discoverer William Herschel named it after King George III of England in 1781, others named it Herschel and Neptune all before the name Uranus was given.

MERCURY

Mercury is only visible in the first 10 days of September in the early evening setting soon after the Sun. It appears as a bright yellowish star and a crescent moon through a small telescope.

Constellation of the Month: The Teapot



The 'Teapot' is another name for the constellation Sagittarius. It is located directly overhead in September in the early evening in the heart of the Milky Way, bordered by Scorpio and Capricorn. Sagittarius comes from Greek mythology and is a half man half horse with a bow and arrow or The Centaur. The arrow is aimed at the bright red star in Scorpio named Antares. This is quite obvious after a couple of glasses of wine. However for those 'off the wagon' it resembles more like a teapot with the arrow being the spout.

The teapot is located on the galactic centre and is a treasure-trove of goodies for those who own a telescope. The teapot is home to a number of emission nebulae, the Lagoon Nebula, Trifid Nebula, Swan Nebula and the famous Pillars of Creation or Eagle Nebula. There are also many star clusters. It is also a treasure-trove for professional astronomers. Many planets have been found in orbit around other stars, and the super massive black hole at the centre of the galaxy.

Astronomical Attractions In & Around Coonabarabran

Anglo Australian Telescope

Australia's Largest Optical Telescope. Visitor's Gallery, open 9:30am to 4pm, 7 Days.

Siding Spring Exploratory

The Exploratory has an exhibition with hands on astronomy displays, a gift shop, & café. Open 9:30am to 4pm Monday to Friday, 10 am to 2pm weekends. Ph 6842 6211. For more information contact the **Warrumbungle National Park Visitors Centre** on 6825 4364.

Warrumbungle Observatory, Telescope & Night Sky Viewing

Book in to view through telescopes at night and learn about the night sky and astronomy. Bring your SLR camera to take photos through the telescopes. Open nightly 6:30pm, Adults \$15, Seniors \$12.50, School Age \$5, Family 2A2c \$35. Solar Viewing: Midday - 2 pm Weekends only, \$5pp, Family \$10. Ph 0488 425 112 to make a booking.

World's Largest Virtual Solar System Drive

This is a scale model of the solar system centred on the Anglo Australian Telescope at Siding Spring. The Sun is represented by the dome of the AAT. The planets size and distance from the AAT are to scale and are replicated on the 5 major roads out of Coonabarabran. Even Pluto is included in this solar system! For more information visit the web at www.solarsystemdrive.com or contact the Visitors information Centre.

Warrumbungle National Park Visitors Centre

The Warrumbungle National Park conducts tours at Siding Spring Observatory during school holidays and caters for tour & school groups booking in advance. Starry Starry Nights are also held during school holidays. For more information contact the visitors centre on 6825 4364.

Astronomy For Beginners Workshop: 23rd - 25th October at Warrumbungle Mountain Motel & Warrumbungle Observatory. Course is designed as an introduction into amateur astronomy, understand how telescopes work, how to purchase, how to set up your own telescope, how to navigate around the sky, how to take astrophotographs, basic astronomy on life & death of Stars and The Big Bang. Lots of night time observing. For more information, contact Peter Starr at Warrumbungle Observatory on 0488 425 112.

Coonabarabran Festival of the Stars, October 2009.

Siding Spring Observatory Open Day Sunday 25th October, 10am - 4pm.

Bart Bok Lecture: Sunday 25th October, 7pm Coonabarabran Public School.

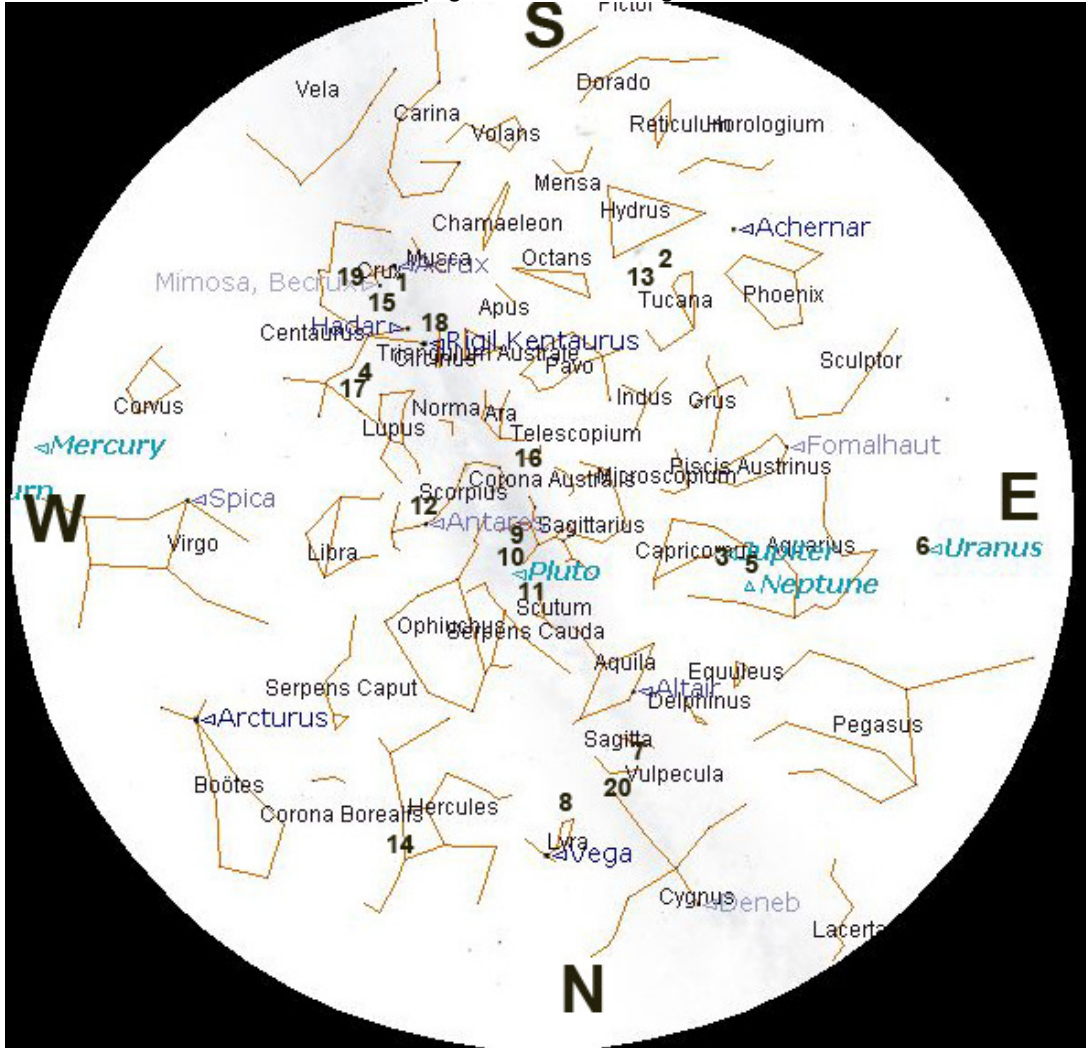
Moon Phases

The moon phases will determine how bright the night sky is, the brightest sky with the full moon, and the darkest sky with new moon. To view galaxies, and nebula it is best to observe when the moon is not in the night sky or sets in the west soon after sunset. The best time to view the moon is between new moon and first quarter. The craters and shadows within them are easily seen through small telescopes. Still plenty to see if the moon is full, stars and planets are easily seen no matter what the phase of the moon is.

September 26th First Quarter September 5th Full Moon
September 9th Last Quarter September 16th New Moon

September Sky Chart

Rotate map according to the direction you are facing. Line up the direction with the direction at the bottom of the page. This view is facing north.



What's up in September

Objects listed are visible in the evening sky unless otherwise stated. The fainter objects are best seen on moonless evenings. The locations are depicted on the map to the left. All are shown at Warrumbungle Observatory each night with a detailed explanation given on each of them.

Naked Eye Observing

Times to View the International Space Station

The International Space Station can be seen in the evening or morning sky appearing as a bright star moving across the sky. The table below lists the dates and times it can be seen over Coonabarabran, its brightness (Mag 0 is equivalent to the brightest star in the sky, the smaller the number the brighter it is), its position (Alt is the number of degrees above the horizon it is, 90 degrees is straight over head).

Date	Mag	Starts			Max. altitude			Ends		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
1 Sep	-0.7	18:28:59	10	WS W	18:31:22	22	NW	18:33:44	10	N
9 Sep	-0.6	05:49:45	10	N	05:52:11	22	NE	05:54:33	10	ESE
11 Sep	-1.0	05:03:57	10	N	05:06:24	24	NE	05:08:53	10	ESE
12 Sep	-3.3	05:28:03	10	NW	05:30:59	66	SW	05:33:58	10	SE
13 Sep	-1.2	04:20:45	25	ENE	04:20:45	25	ENE	04:23:09	10	ESE
14 Sep	-3.3	04:45:08	61	SW	04:45:10	61	SW	04:48:08	10	SE
16 Sep	-0.2	04:01:50	13	SE	04:01:50	13	SE	04:02:15	10	SE
17 Sep	-0.4	04:25:44	12	S	04:25:44	12	S	04:26:04	10	S

Source: www.heavens-above.com

Milky Way Galaxy: Best month of the year to observe particularly on a moonless night. Spans from horizon to horizon. Many dark areas are visible throughout which are called dark nebulae. They are giant clouds of hydrogen gas and dust.

The Emu. An aboriginal constellation joining the darker areas (dark nebulae) throughout the Milky Way. The head is adjacent to the Southern Cross with the neck passing through the 2 pointer stars and body through to Scorpio.

(1) **The Coal Sack:** Appears as a large dark patch in the Milky Way next to the Southern Cross. This is the head of The Emu, but really a gigantic cloud of dust and gas hiding the more distant stars.

(2) **The Small Magellanic Cloud:** Two close by galaxies easily seen as two milky clouds on a dark moonless night. Both are low on the southern horizon.

(3) **Jupiter,** Seen as a white looking star in the east around 9pm, brighter than any other star in the sky at this time.

Jupiter and the moon very close Sept 2nd and 29th in Capricorn

Venus appears as a bright looking star in the predawn sky very low in the east.

Mars Appears as a bright reddish star in the predawn sky in Gemini.

The Moon, Close to the bright star Antares on the 4th, find the Rabbit in the Moon on the 7th of July, Penumbral lunar eclipse on the 7th of July, look for the earthshine on the dark side of the moon just after sunset in the last week of July.

Constellations: See the star map, Scorpio, Sagittarius, Capricorn, and the Southern cross are very recognisable patterns in the sky.

Binocular Observing

Jupiter and its Moons

(4) **Omega Centauri:** A globular cluster in the south east to the east of the Southern Cross.

Milky Way: Explore the richness of the Milky Way from Scorpio through the Southern Cross to carina

The Moon: View the craters & seas, for example The Sea of Tranquility.

The Small Magellanic Cloud

Find Uranus. Close to the Moon in Pices on September 5.

Observing Through Small Telescopes

Planets / Moon / Sun:

(3) **Jupiter**

(5) **Neptune:** Rising in the east after 9pm in the same field of view.

(6) **Uranus**

Venus: Visible through a telescope in the middle of the day as a crescent.

Moon: Shadows in the craters are easily visible in the first week of July.

Sun: Never look at the Sun unless using a solar telescope with appropriate filters. Prominences are visible most days, sunspots seem to be rare this year.

Nebulae: (Clouds of gas & dust)

(7) **The Dumbbell Nebula:** A Planetary Nebula that looks like an eye in the constellation Hydra. This is an example of a dead star & what our Sun may end up looking like in 6 billion years.

(8) **Ring Nebula**

(9) **Lagoon Nebula,**

(10) **Triffid Nebula,**

(11) **Swan Nebula**

Globular Star Clusters:

(4) **Omega Centauri:** To the left of the Southern Cross or in the south east. Contains 10 million stars. Perhaps the relic of a galaxy that was swallowed up by the Milky Way Galaxy.

(12) **M4:** A loose globular next to a bright red star in the heart of Tucana, only half a million stars here.

(13) 47 Tucanae

(14) M13 Globular cluster in Hercules

Open Star Clusters:

(15) **Jewel Box:** Does look like a set of jewels, one not to miss close to the second brightest star in the Southern Cross.

(16) **Butterfly Cluster,** in the east underneath Scorpio's tail.

Galaxies:

(17) **Centaurus A:** Also called the Hamburger Galaxy to the east of Omega Centauri. It has a prominent wide dark band dissecting it. Brighter than the full moon if your eyes could detect radio waves. 13 million light years distant.

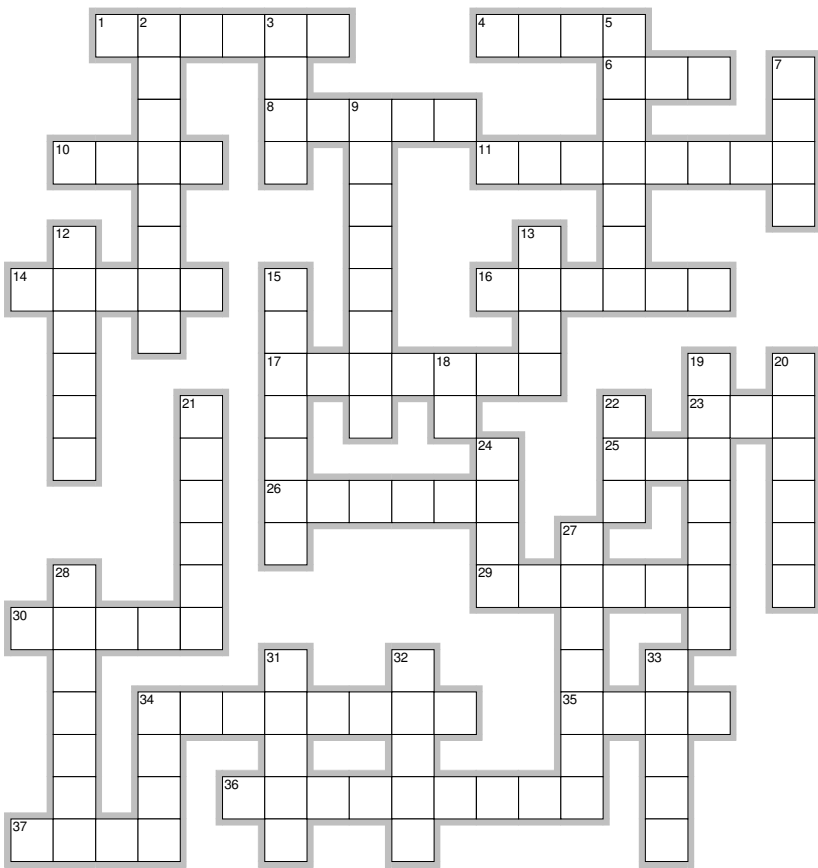
Multiple Stars:

(18) **Alpha Centauri** in Centaurus: Bottom and brighter star of the 2 pointers below the Southern Cross. Appears as a bright double star like a pair of headlights. Each star is of a similar size to our Sun but 4.3 light years distant. Only Proxima Centauri is closer to us and appears to orbit this pair but not seen in the same field of view as Alpha Centauri.

(19) **Acrux** in the Southern Cross is a triple star.

(20) **Albireo** in Cygnus. A pretty double star containing a yellow and a blue star.

Astro Crossword



EclipseCrossword.com

Across	Down
1. Martian Moon	2. Primary constituent of Jupiter
4. Fifth brightest star	3. Hypothetical cloud of comets at the edge of the Solar System
6. Fifth sign of the Zodiac	5. Pretty double star in Cygnus
8. Type of Telescope at Mopra	7. Remnants of a dead star in Lyra, _____ Nebula
10. Constellation named after a musical instrument	9. Planetary Nebula in Vulpecula
11. Imaginary line from South to Zenith to North	12. Opposite Nadir
14. A member of the Summer Triangle	13. American space agency
16. Large nebula in Sagittarius	15. Largest planet in the Solar System
17. Forest north of Coonabarabran	18. Volcanic satellite of Jupiter
23. Aboriginal constellation high in the sky this month	19. Planet in Capricorn this month
25. South celestial pole	20. Space Telescope
26. Icy Jovian Moon that may contain an ocean	21. Satellite of Pluto
29. Planet with no visible rings this month	22. International Space Station
30. Author of Cosmos and Contact	24. The Red Planet
34. Open Cluster in the Southern Cross	27. First century astronomer
35. Zena	28. Father of modern astronomy
36. Open Cluster in Scorpio	31. Morning Star
37. Lunar	32. Often described as a dirty snowball with a long tail
	33. Current astrological sign
	34. Main street of Coonabarabran

Answers: see www.tenbyobservatory.com