



# Total Solar Eclipse 4th December, 2002

The Astronomical Society of South Australia hopes you will enjoy this spectacular event of nature

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A brief, late afternoon total solar eclipse will be visible, weather permitting, from South Australia within a narrow path about 32 kilometres wide stretching from Ceduna to Cameron Corner. Other locations in South Australia will experience a partial solar eclipse.

To view the moon completely covering the sun, your location needs to be within the path marked on the map, at the time specified in the table below. Locations closer to the centre of the parallel track on this map will experience greater totality times.

Every effort should be made to experience the precious moments of totality on the 4th December 2002.

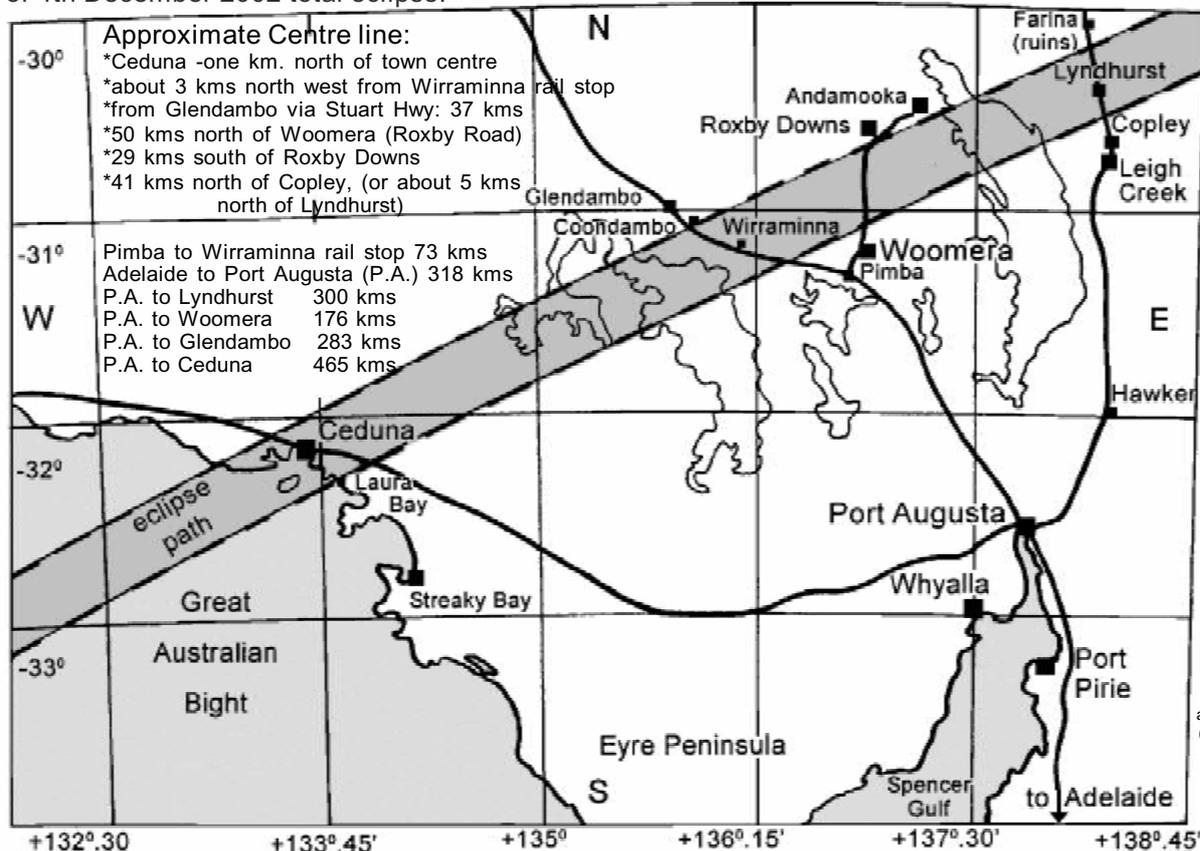
The next total eclipse visible from Australia is on the 12th November 2012.

Eclipse times listed below are expressed in (hours: minutes: seconds) Australian Central Summer Time. This is Universal Time plus 10 hours 30 minutes, using a 24-hour clock (e.g.: 19:00 = 7pm).

At all locations in the table, the sun is still partially eclipsed when it sets.

Location	partial eclipse begins	total eclipse begins	time of maximum eclipse	total eclipse ends	% of sun eclipsed
Adelaide	18:39:32		19:37:26		88
Andamooka	18:42:50		19:41:26		99.7
<b>Ceduna</b>	18:40:15	19:40:10	19:40:26	19:40:42	TOTAL 32 seconds
Glendambo	18:41:59		19:41:12		99.5
Leigh Creek	18:43:00		19:41:06		99.3
<b>Lyndhurst</b>	18:43:14	19:41:07	19:41:21	19:41:33	TOTAL 26 seconds
Port Augusta	18:41:16		19:49:32		95
Roxby Downs	18:42:40		19:41:23		99.7
<b>Wirraminna rail stop</b>	18:41:54	19:40:43	19:40:58	19:41:13	TOTAL 30 seconds
Woomera	18:42:08		19:40:56		99.8

Path of 4th December 2002 total eclipse:



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Centre of path experiences up to 32 seconds of total eclipse. The total eclipse duration decreases to zero at the edges of the path.

# Safe viewing of an eclipse

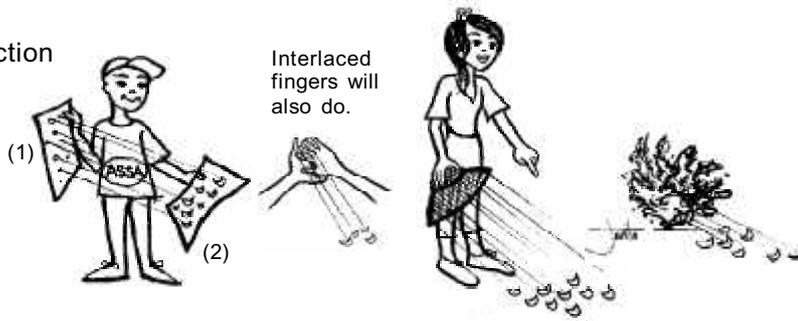
**IT IS NEVER SAFE TO LOOK AT THE SUN, OR THE PARTIAL PHASES OF ANY SOLAR ECLIPSE, WITHOUT PROPER EQUIPMENT AND TECHNIQUES. FAILURE TO USE PROPER OBSERVING METHODS MAY RESULT IN PERMANENT EYE DAMAGE OR BLINDNESS.**

It is **SAFE** to look with any of these:

 Eclipse shades worn correctly. These are designed for direct viewing of the sun. Welder's glass (grade 14 or darker). Solar Filters designed especially for viewing the sun. Pinhole projection: onto a card, or use a loose-woven straw hat to project onto the ground, (see illustrations). Telescopic projection under the supervision of an experienced astronomer.

## Safe: pinhole projection

Make a pinhole camera with two pieces of white card. Be creative - put a few holes in one card with different small sizes: (pin; nail; hole punch), or prick out a word or picture. Hold holey card (1) up to sun and look at sun crescents only on blank card (2).

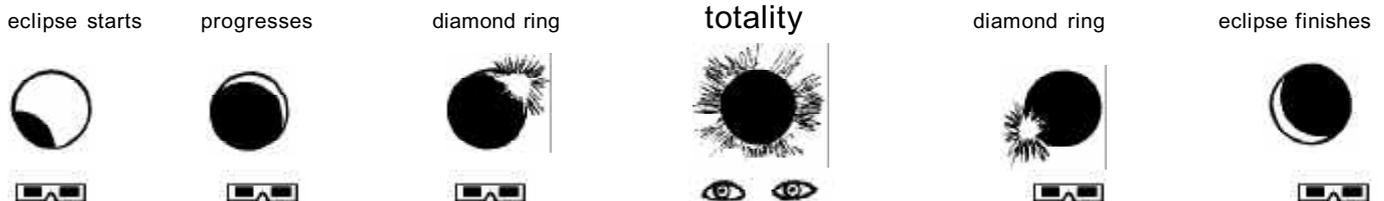


The gaps in a loosely woven straw hat are ideal pinhole cameras

The tree pinhole camera: Tiny pools of light filtered through trees onto the ground are round. During an eclipse these little round pools become crescent shaped as they follow the eclipse. Find a tree or bush nearby to see this happen.

It is extremely **UNSAFE** to look at the sun with any of these:

Naked eyes. Using clouds in front of the sun as shield. ANY type of ordinary sunglasses. Polarising lenses or sheets, including "crossed polars". Exposed photographic film, neutral density or coloured photographic filters. Any type of coloured/tinted/smoked/sooty glass, welder's glass lighter than grade 14, any camera/binocular/telescope that does not have a special Solar Filter mounted over its front end. Ordinary aluminised Mylar, (eg: wine cooler bags, space blankets). CD-ROM discs of any kind or floppy discs. Telescope eyepiece "sun filters", (now banned), and anything else not mentioned in the "Safe" category.



What you will see: The Moon starts to cross the face of the Sun around 6.40 p.m. Totality occurs about 7.40 p.m. and lasts for 0 - 32 seconds. The few seconds before and after totality gives an effect called 'the diamond ring.' During the brief interval of totality – **AND ONLY DURING TOTALITY** – you can look safely at the eclipsed sun with no eye protection at all. This is the most beautiful and exciting sight. The eclipse on December 4th, 2002 is very *very* brief - remember: you only have between 0 - 32 seconds. Be smart. Protect your vision. View safely.

See these web sites for further information:

The Astronomical Society of South Australia 2002 Eclipse Page: [www.assa.org.au/observing/eclipse2002](http://www.assa.org.au/observing/eclipse2002)

The Astronomy Pages: [astronomy.trilobytes.com.au](http://astronomy.trilobytes.com.au)

South Australian Tourism Commission 2002 eclipse page: [www.outback2002-southaustralia.com/events/eclipse.html](http://www.outback2002-southaustralia.com/events/eclipse.html)

Eye Safety During a Solar Eclipse: [sunearth.gsfc.nasa.gov/eclipse/SEhelp/safety2.html](http://sunearth.gsfc.nasa.gov/eclipse/SEhelp/safety2.html)

NASA 2002 Eclipse home page: [sunearth.gsfc.nasa.gov/eclipse/TSE2002/TSE2002.html](http://sunearth.gsfc.nasa.gov/eclipse/TSE2002/TSE2002.html)

Advice for outback travellers from the Royal Flying Doctor Service: [www.rfds.org.au](http://www.rfds.org.au)

This eclipse occurs in early summer. It could be quite hot. Travellers should carry their own water and supplies at all times. No permanent rivers or streams exist, and all lakes in the area are salt. Most towns are small and have limited facilities and supplies, and large crowds are expected for this eclipse. You *must* inform the police if going on back tracks. The part of the Woomera Prohibited Area affected by this eclipse is between Glendambo, Woomera and Roxby Downs and it will be patrolled. You are allowed to stop on adjoining road edges of the bitumen roads. You should have detailed road maps.

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