

# Two minutes of 'darkness'

Sky watchers, look out. There will be a chance to witness – weather and cloud cover permitting – a spectacular natural phenomenon on Boxing Day: A rare annular solar eclipse dubbed the “greatest astronomical event in Singapore”.

## WHAT IS AN ANNULAR SOLAR ECLIPSE

- It occurs when the Earth, Moon and Sun line up.
- The Moon covers the Sun's centre but is too far from the Earth to entirely blot out the Sun, resulting in a dark circle bordered by a bright "ring of fire".
- Singapore will be able to witness this rare phenomenon tomorrow for the first time in more than 20 years.

## What we will experience

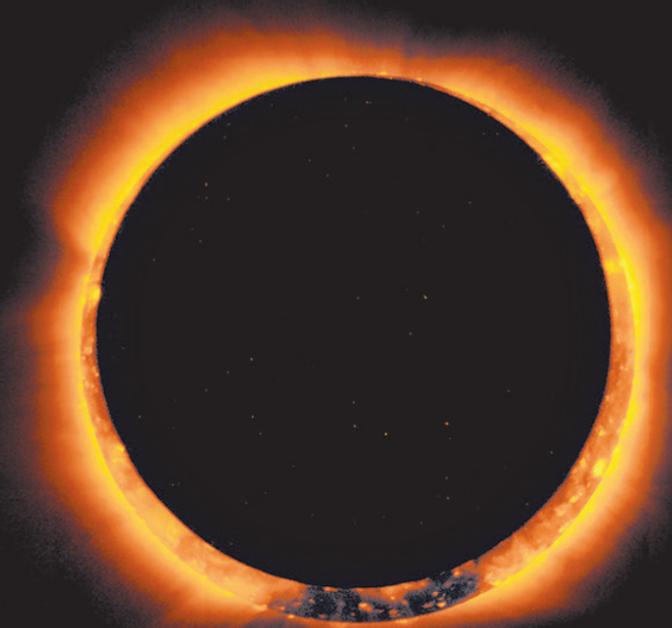
- There will be twilight-like partial darkness. Birds and animals enter a night-time routine, thinking sunset is nigh.
- There will be a change in wind conditions and stronger wind will be experienced in open areas.

## FAST FACTS

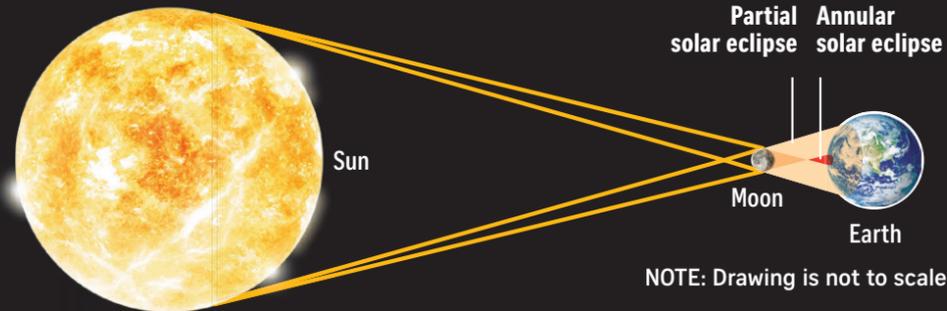
**Feb 28, 2063**

Next annular solar eclipse visible from Singapore.

- The Moon is inching about 3.8cm away from Earth each year.
- It is estimated that in about a billion years, the Moon will be too distant from Earth to completely cover the Sun.



On Jan 4, 2011, the Hinode satellite – an international mission to study the Sun – captured this breathtaking image of an annular solar eclipse with its characteristic “ring of fire”. The name “annular” is derived from the Latin word, “annulus”, for ring.



NOTE: Drawing is not to scale.

## THREE MAIN TYPES OF SOLAR ECLIPSES

### Partial eclipse



The Moon crosses in front of the Sun off centre, leaving a crescent-shaped portion of the Sun visible.

### Total eclipse



The Moon totally covers the brilliant disc of the Sun, making the Sun's gaseous outer atmosphere, called the corona, visible.

### Annular eclipse

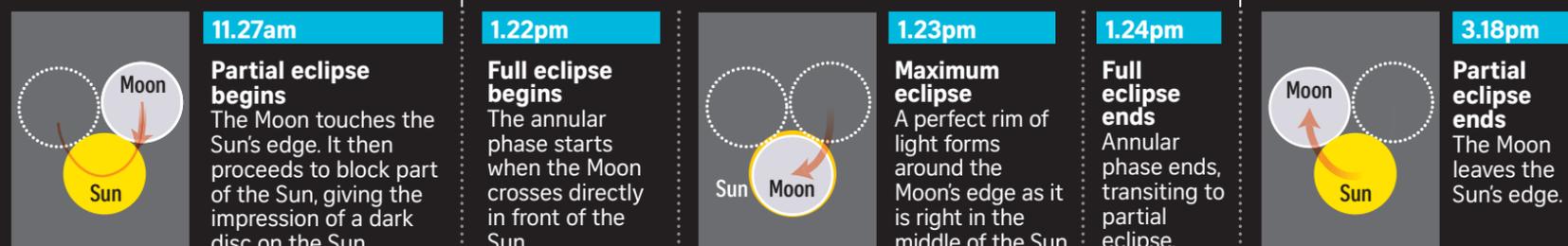


The Sun's surface is exposed in the shape of a ring.

## WHAT WE CAN EXPECT TO SEE HERE

Duration of the Moon's journey across the face of the Sun: **3 hours and 51 minutes**

Annularity: **1 minute and 58 seconds**



## VIEWING SAFELY

**Do not look directly at the sun**

Here are some ways to view a solar eclipse safely without damaging the retina of the eye.



### "Eclipse" glasses

Cardboard eyeglasses mounted with solar filters.



### Binoculars

Safe to use **only if** paired with solar filters.



### Telescope/ Camera

Safe to use **only if** solar filters are fitted to the front of the aperture or camera lens.



### Pinhole projection

A card with a small hole punched in it projects an image of the eclipse on a white card below.

- ISO-certified safe solar glasses can be purchased online or at Science Centre Singapore's Curiosity Shop for \$5 a pair.

- Solar filters and solar viewers can be purchased from the Astro Scientific Centre at Science Centre Singapore.

## SOME PLACES TO VIEW THE ECLIPSE

### PAssion WaVe @ Jurong Lake Gardens, 100 Yuan Ching Road

**Admission:** Free

**Time:** 11am to 4pm

#### Highlights:

- See the eclipse from a kayak on the lake.
- Free workshops to make your own solar viewer, Japanese pastel nagomi art, watercolour painting.
- Six solar telescopes and a giant set of binoculars on site.
- Sign up via [onepa.sg](https://www.onepa.sg), or just drop by.

### National Junior College, 37 HillCrest Road

**Admission:** Free

**Time:** 9am to 4pm

#### Highlights:

- Observe the Sun magnified up to 500 times its size at the school's High-Resolution Solar Research Observatory.
- Three self-built solar telescopes, including the largest and highest resolution amateur-class solar telescope in Singapore.
- Sign up through a Google form uploaded onto the school's Facebook page, or click this link: <https://tinyurl.com/C-Reg-NJC-Eclipse>

### imPact@Hong Lim Green, 20 Upper Pickering Street

**Admission:** Free

**Time:** 10am to 7pm

#### Highlights:

- Six solar telescopes will be on site.
- Get a complimentary pair of solar glasses on a first-come-first-served basis by signing up at [onepa.sg](https://www.onepa.sg)
- Visit AstroFest 2019, a space-themed carnival.
- Salute the sun in a mass yoga session from 11am to noon.

### Science Centre Singapore, 15 Science Centre Road

**Admission:** Charges apply

**Time:** 11am to 3pm

#### Highlights:

- Catch a special planetarium show The Ring Of Fire at the Omni-Theatre (additional charges apply).
- Live streaming of the eclipse will also take place at the Marquee and E3 Exhibition, and will be available on [Facebook.com/SCOBservatory](https://www.facebook.com/SCOBservatory)



### Tzu Chi Humanistic Youth Centre, 30A Yishun Central 1

**Admission:** Free (additional charges apply for the talk)

**Time:** 10am to 4pm

#### Highlights:

- Guest speaker, Mr Muhammad Faizal Othman, resource person for the Singapore Islamic Calendar, will be conducting a talk (in English and Malay) on the eclipse at Power Station 1.
- Sign up at <https://www.tinyurl.com/astronomyseries03>

### Kebun Baru Spring Amphitheatre, 134 Ang Mo Kio Avenue 3

**Admission:** Free

**Time:** 11am to 3.30pm

#### Highlights:

- 300 free pairs of paper solar glasses available.
- Four interactive game booths will be set up by Ask Kopi Kakis volunteers.