

WHAT IS AN ECLIPSE?

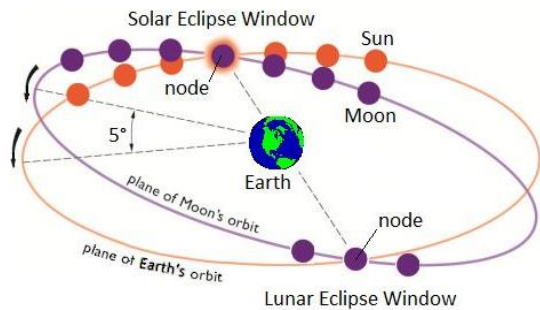
VISIT: yorku.ca/science/observatory/solar-eclipse-2024



Eclipses on the Earth come in two main sorts, lunar and solar eclipses. Lunar eclipses occur when the Moon moves into Earth's shadow: Sun-Earth-Moon. Solar eclipses occur when the Moon casts its shadow down onto Earth: Sun-Moon-Earth. The Moon takes one month to go around the Earth. If the orbits are in the same plane, an eclipse can occur, but only if the Earth, Moon, and Sun align. Otherwise, a shadow cannot be cast and an eclipse cannot take place.

WHY DON'T WE HAVE ECLIPSES EVERY MONTH?

The moon orbits around the Earth with a tilt of about 5 degrees with respect to the ecliptic (where the Earth and Sun line up). Lunar nodes are the locations where the Moon crosses the Earth's orbital plane, and at these locations eclipses are possible. Lunar eclipses occur when a Full Moon happens near a lunar node. Solar eclipses occur when a New Moon happens near a node.



ECLIPSE SHADOWS: The **umbra** is the dark center portion, while the **penumbra** is a type of half-shadow.

Image Credit (top image): Chris Vaughan
Image Credit (right images): www.timeanddate.com

TOTAL VS PARTIAL LUNAR ECLIPSES

The most widely seen eclipses on Earth are Lunar eclipses. When they occur half the Earth can see them!

MAIN TYPES OF SOLAR ECLIPSES:		
PENUMBRAL	PARTIAL	TOTAL
<p>Total Lunar Eclipse: Earth casting its shadow on the Moon. The Moon appears dark red during event.</p>		
<p>Partial Lunar Eclipse: Part of the Moon dips into Earth's umbra. A dark area is seen but is never total.</p>		
<p>Penumbral Lunar Eclipse: Part of the Moon dips into the Earth's penumbra, it's faint and hard to notice.</p>		

TOTAL VS PARTIAL SOLAR ECLIPSES

The most common type of solar eclipse is the partial solar eclipse where only a portion of the sun's light is blocked.

MAIN TYPES OF SOLAR ECLIPSES:		
PARTIAL	TOTAL	ANNULAR
<p>Total Solar Eclipse: The Moon casts its shadow on Earth, only a small area of the Earth is covered.</p>		
<p>Annular Solar Eclipse: The Moon is at its largest distance from Earth and a 'ring of fire' eclipse is seen.</p>		
<p>Partial Solar Eclipse: The Moon does not align, a dark area on Sun is seen only with optical aides.</p>		