

ECLIPSE OF THE MOON

An eclipse of the Moon occurs when the Moon moves into the shadow cast by the Earth. Because the Earth casts a big shadow, there is usually an eclipse of the Moon at least once each year. As the Moon moves into the Earth's shadow, a lunar observer would see the light fading as the Earth starts to block out the Sun. The Moon is in the "outer shadow" or penumbra. Then we see the Moon fade a lot more, and the curved edge of the Earth's shadow moving over the Moon's face. Our lunar observer will see the Earth completely blocking out the Sun. The Moon is now in "full shadow," or the umbra. Sometimes the Moon only goes through the outer shadow, giving us a penumbral eclipse.

When in full eclipse, the Moon is lit only by light refracted through our atmosphere. All the blues and greens are blocked, leaving only red light. This is why our sunsets are predominantly red and yellow. If our atmosphere is clean, the Moon will be a beautiful copper colour. If our atmosphere is dirty, perhaps due to volcanic eruptions or pollution, the Moon might appear a dull, ash grey.

ECLIPSE OF THE SUN

It is an amazing cosmic coincidence that the Moon appears in the sky with the same apparent size as the Sun.

On rare occasions, observers in some small area of the Earth's surface will have the shadow cast by the Moon sweep over them. For maybe two or three minutes, the Sun will be covered – a total eclipse. Observers in the outer shadow will see the Sun only partially covered – a partial eclipse. Since the distance between the Earth and Sun changes slightly, as does the distance between the Moon and Earth, sometimes, when we are at our closest to the Sun and the Moon is at its furthest from us, the Moon will be too small to cover the whole solar disc so that we see a ring of uncovered Sun – an annular eclipse.

Looking at the Sun is dangerous. Pointing a telescope or binoculars at it without proper filters or other APPROPRIATE protection can be deadly. There are safe ways to observe the Sun. If you don't know them, or have any doubts, consult those who do know.

SUMMARY

Eclipses occur when the Earth, the Sun, and the Moon are in a direct line.

Because the Moon's orbit is inclined to the orbit of the Earth, eclipses only occur when the Moon is crossing the plane of the Earth's orbit at the time of the new or full Moon.

A **lunar eclipse** occurs during a full Moon when the Earth is directly between the Sun and the Moon, casting its shadow on the face of the Moon.

A **solar eclipse** occurs during a new Moon when the Moon is directly between the Sun and the Earth, blocking out the Sun's rays.

The Earth is bigger than the Moon and casts a bigger shadow. The Earth's shadow is large enough to cover the whole Moon, whereas the Moon's shadow during a solar eclipse falls on just a small area of the Earth.

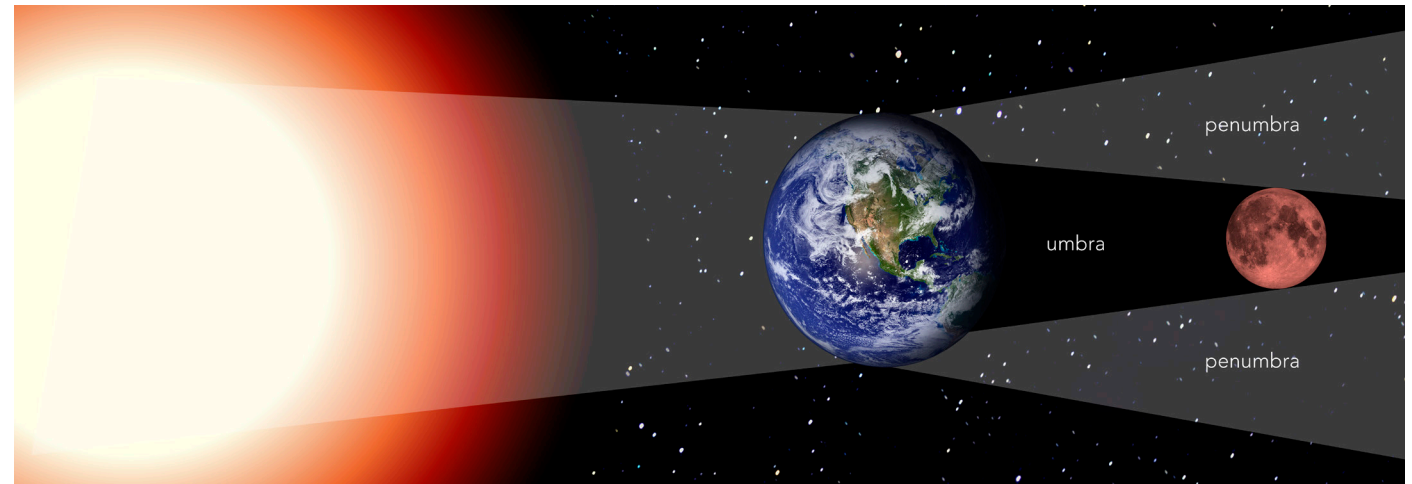
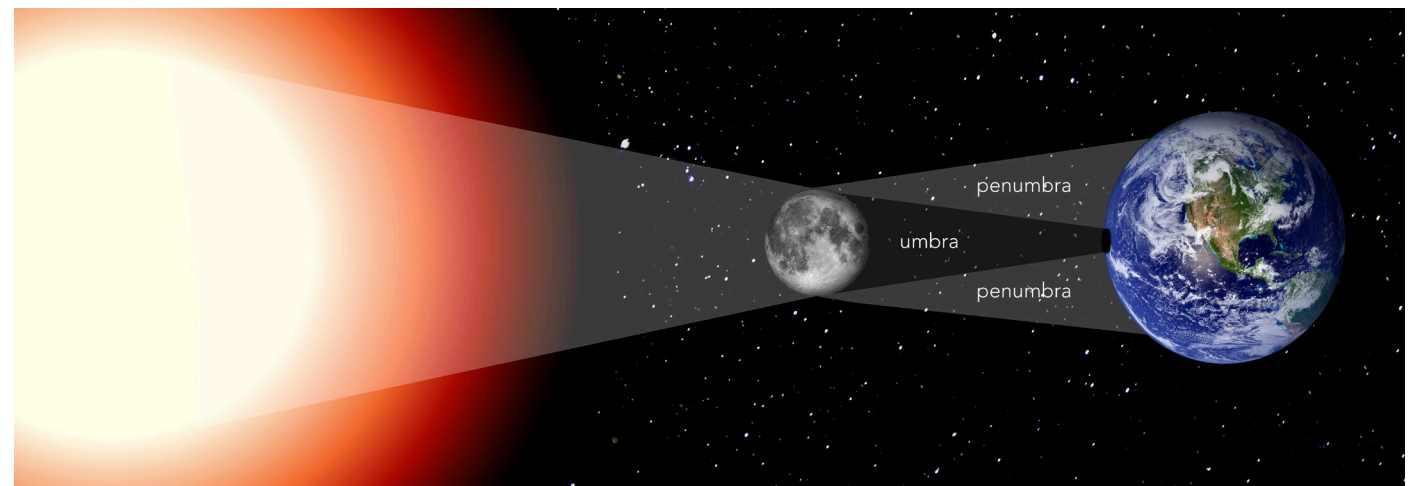


Diagram of what occurs during a lunar (above) and solar (below) eclipse.





Unlike solar eclipses, It is quite safe to watch the progress of a lunar eclipse through a telescope or binoculars.

Lunar and solar eclipses happen several times a year. Sometimes we get to see them from Canada. Lunar eclipses are visible from Canada almost every year. Solar eclipses are rarer.

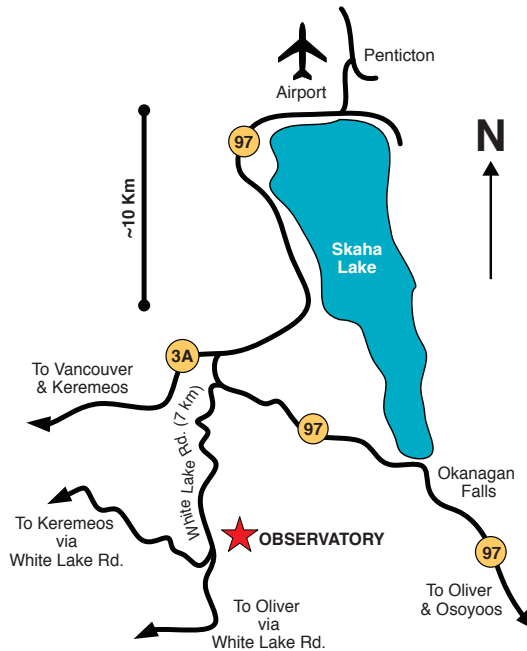
HOW COME WE CAN SEE A FULL MOON? WHY ISN'T THERE A LUNAR ECLIPSE EVERY MONTH?

At the time of a full Moon, the Earth lies between the Sun and Moon, but the three bodies are not exactly in line. The Sun shines past us, lighting up the face of the Moon. When the Moon is new, the Moon lies between us and the Sun, but once again the three bodies are not completely in line. The unlit side of the Moon is facing us, and it is lost in the glare anyway. We only see eclipses when the three bodies are exactly in line, so that one body falls in the other's shadow.

VISITOR INFORMATION

The grounds of the Observatory and Visitors' Centre are open to the public:

- 10 a.m. to 5 p.m., Monday to Friday, for self-guided tours (year-round).
- 10 a.m. to 5 p.m., weekends and statutory holidays, guided tours Easter to Thanksgiving with staff on duty.
- 2 p.m. to 5 p.m., special tours led by Observatory staff; Sundays only in July and August.



CONTACT

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 General information

