

November 8, 2022 Total Lunar Eclipse

An Astronomy Club of Asheville Presentation



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November 8, 2022

Total Lunar Eclipse

At dawn on Tuesday morning, November 8th, 2022, “Earthlings” will experience this year’s second Total Lunar Eclipse! The first one occurred on night of May 15/16th.

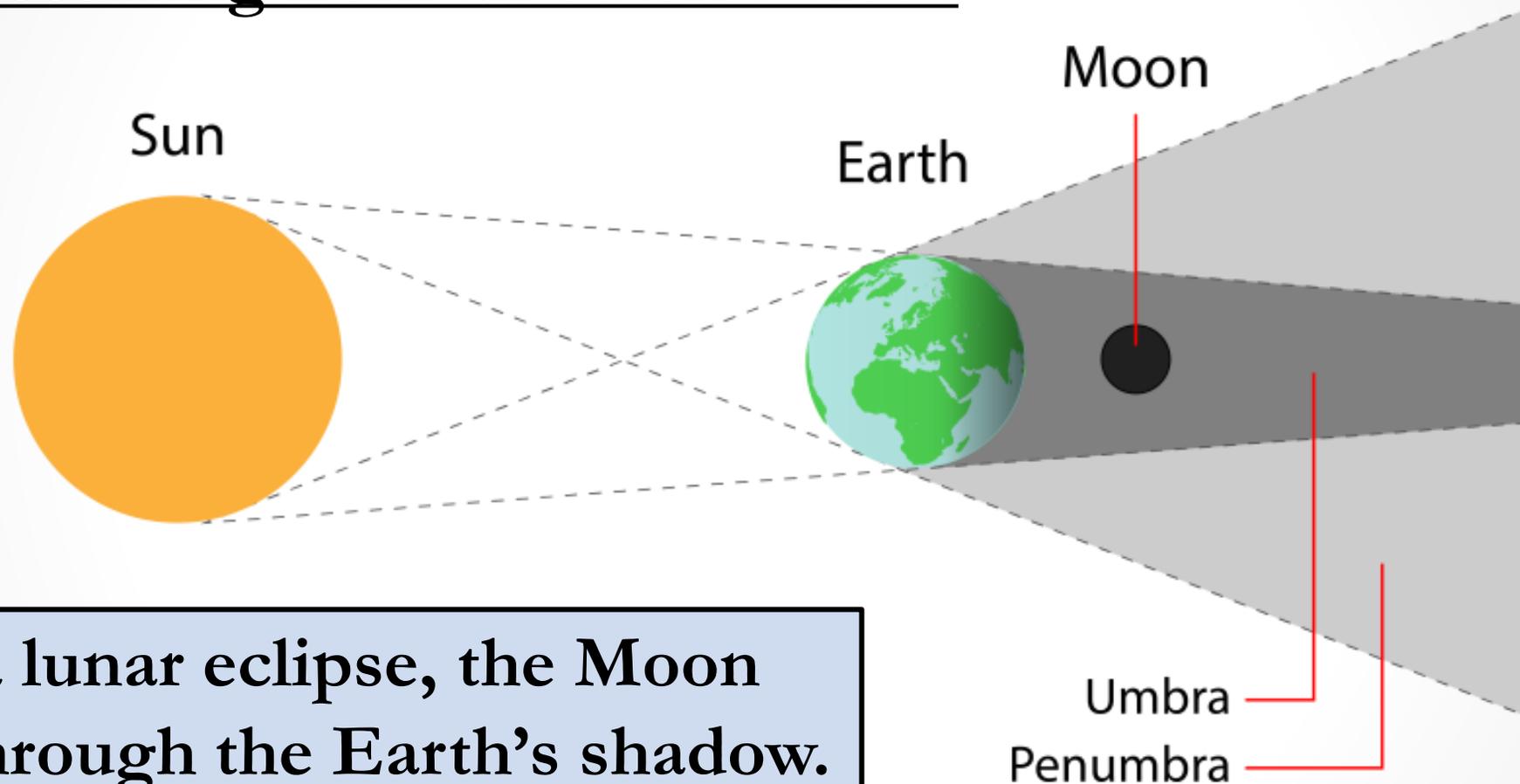
During a total lunar eclipse, the Full Moon is often described as a “Red Moon” or “Blood Moon”.



This November Full Moon is commonly referred to as the Beaver Moon.

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What's occurring from an outside view:



During a lunar eclipse, the Moon passes through the Earth's shadow.

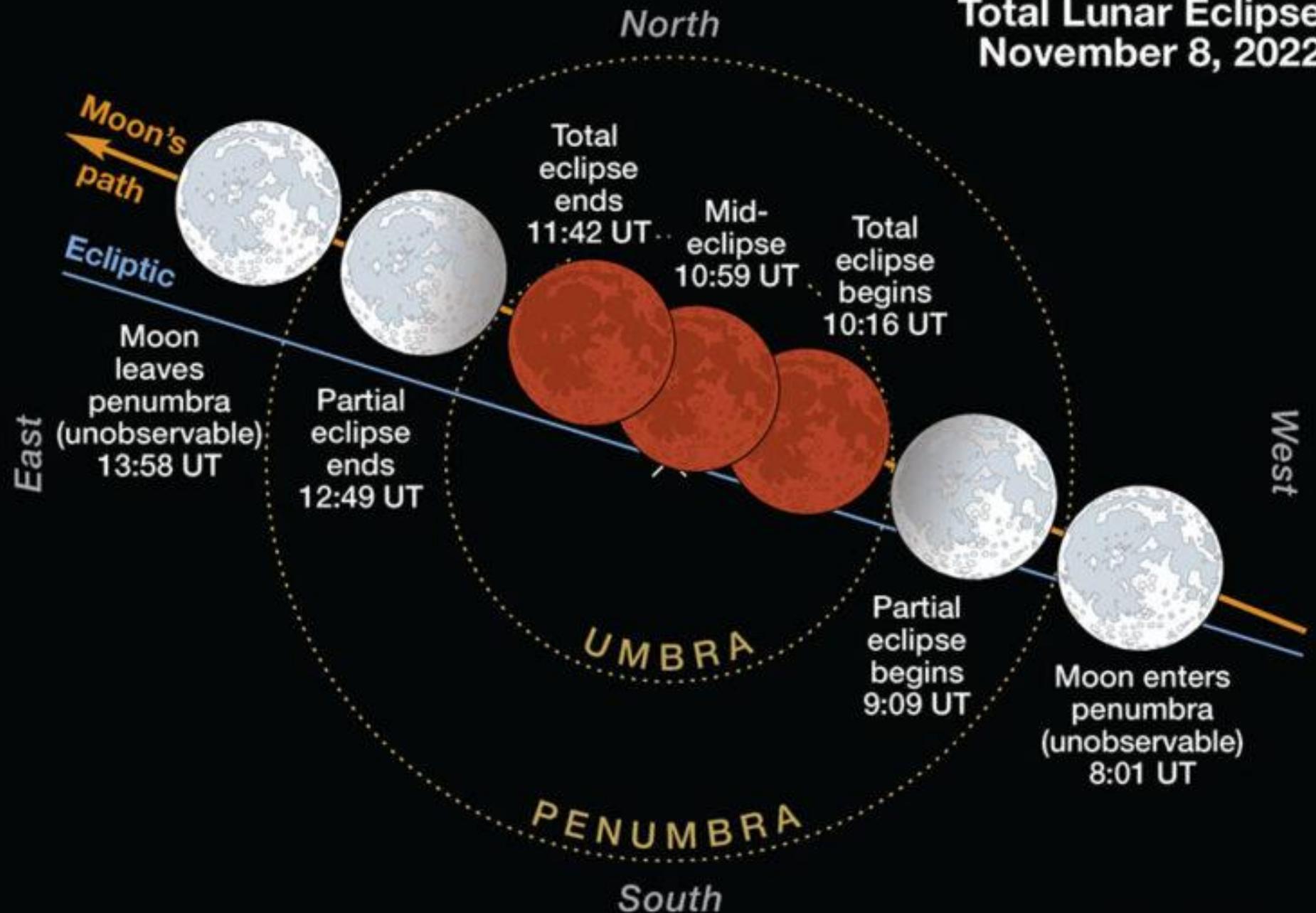
A lunar eclipse can occur only at the Full Moon.

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Eclipse Timing on early Tuesday morning for the Asheville region
“Totality” lasts about 86 minutes!

Approx. Local Time	Action
3:01 a.m.	Moon begins to enter the Earth's penumbra
4:09	Moon begins to enter the Earth's umbra; partial eclipse begins
5:16	Moon fully within Earth's umbra; total eclipse begins
5:59	Midpoint of eclipse/totality
6:42	Moon begins to leave the Earth's umbra; total eclipse ends
7:05	Moonset in the West-Northwest
6:59	Sunrise --- so from the right location with clear skies, you could briefly see both the Full Moon and the Sun's disk simultaneously on opposite horizons!

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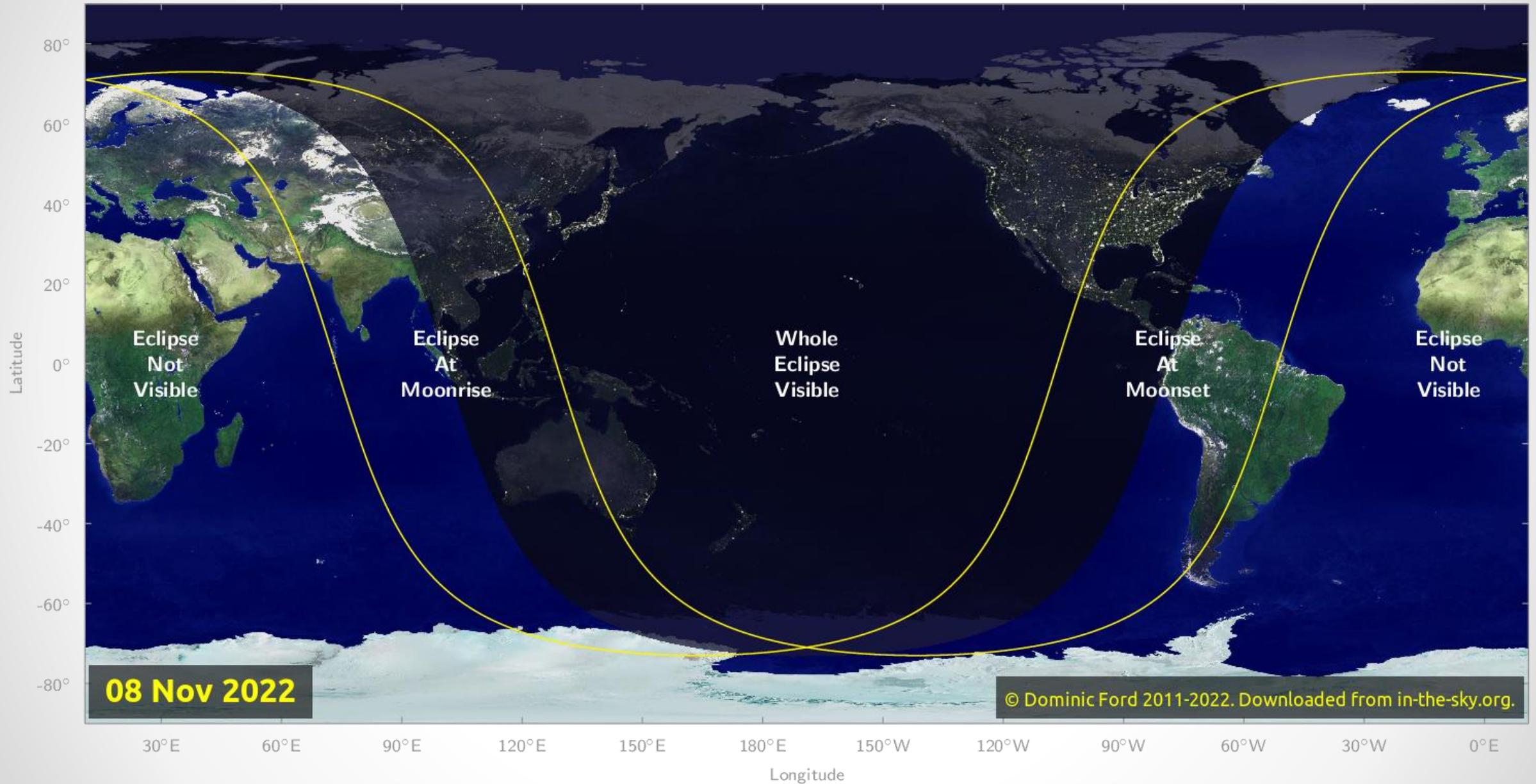


The Moon will set in the W-NW at 7:05 ET, about 23 minutes after the end of totality.

To get Eastern local time, subtract 5 hours from these UT times.

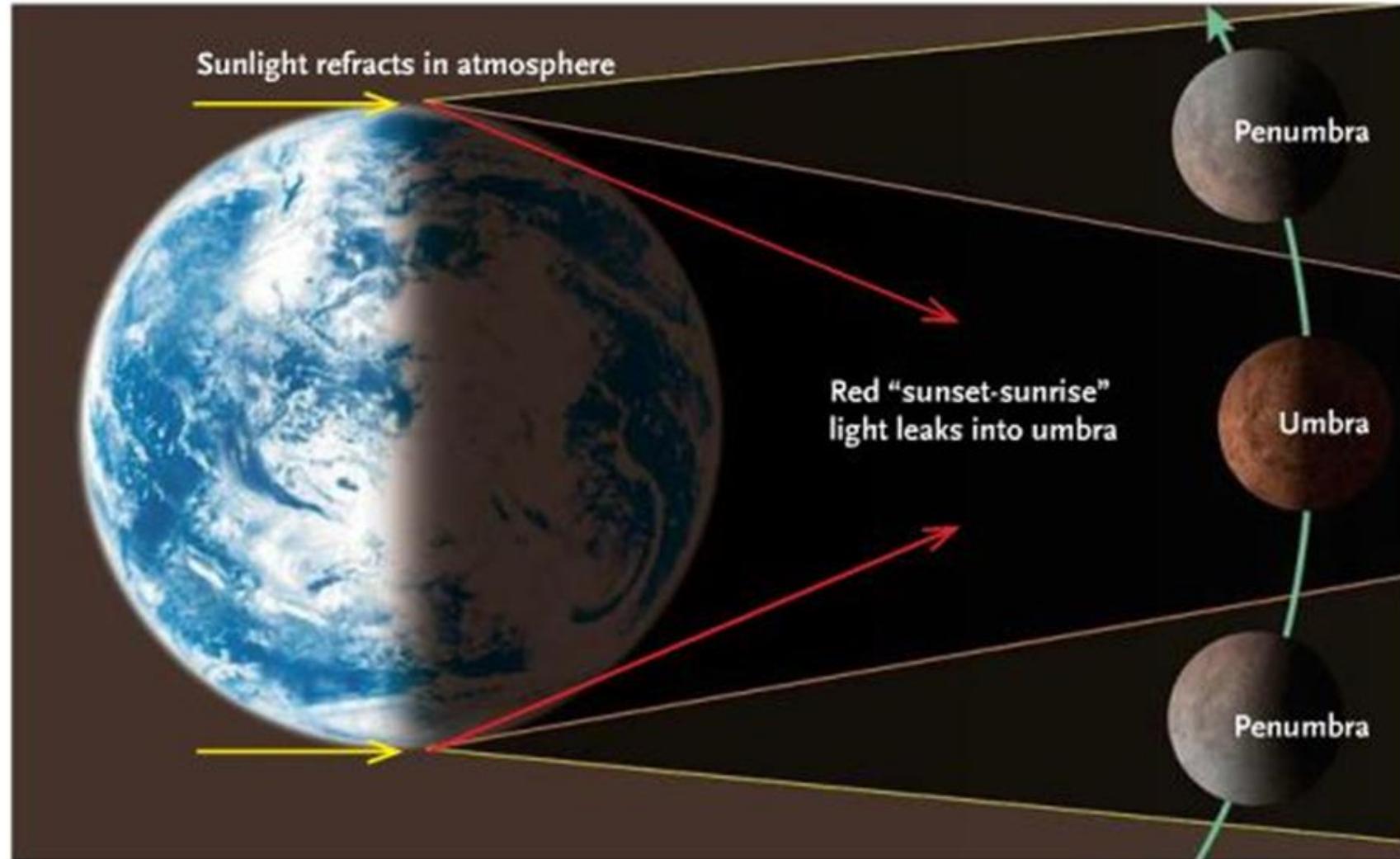
Sunrise is 11:59 UT or 6:59 ET

A total lunar eclipse is visible to a hemisphere



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The orange-red color of the eclipsed Moon is caused by sunlight passing through the Earth's atmosphere at all the sunrise and sunset points on our rotating planet.



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The view at mid-eclipse, about 5:59 a.m local time on Nov. 8th, from the Asheville, NC area, looking about 12° above the W-NW horizon.

The moon is positioned in the zodiac constellation Aries – the Ram.



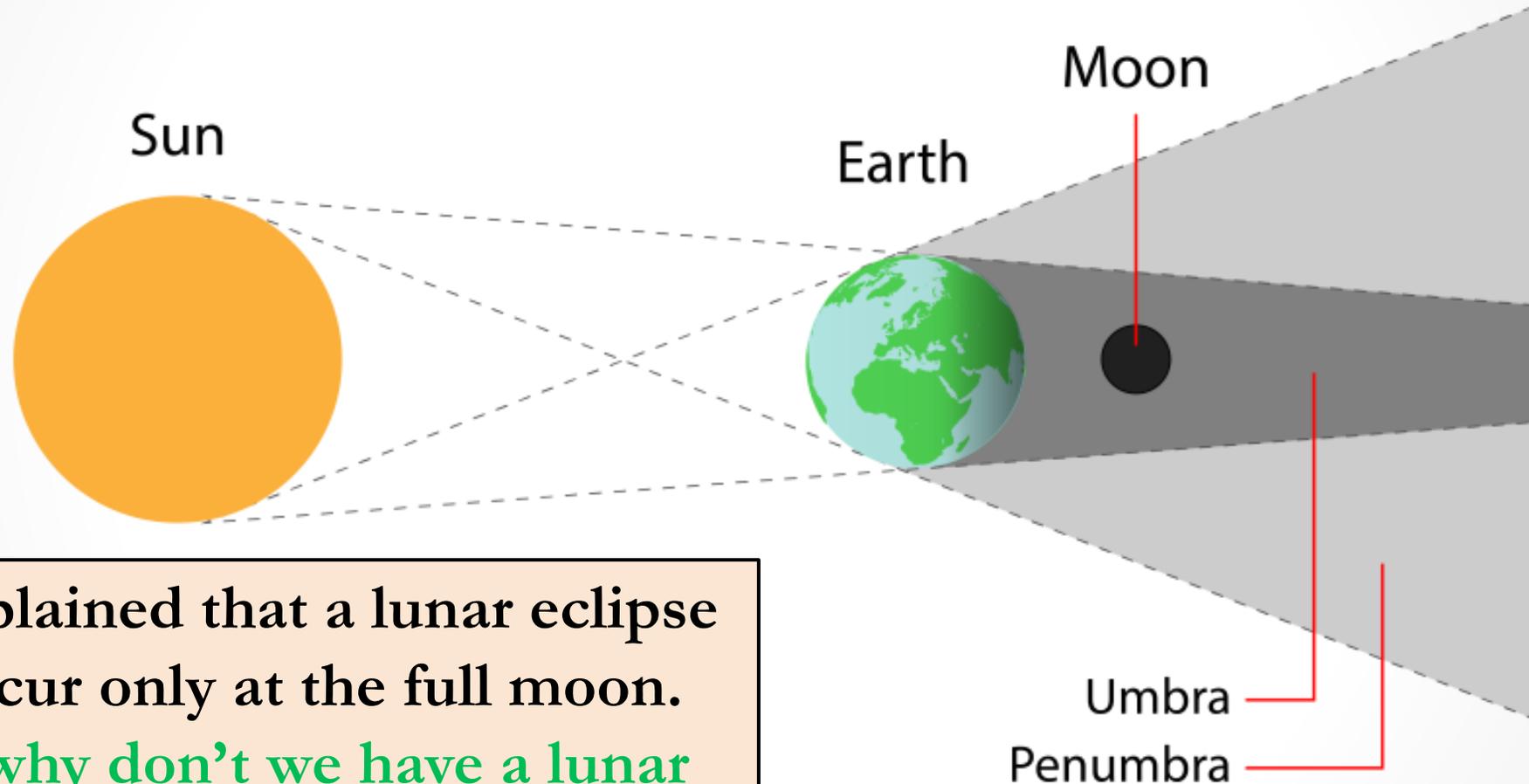
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Best ways to see this lunar eclipse:

- ✓ Dress warmly.
- ✓ Find an unobstructed view low toward the west and northwest horizon.
- ✓ Position yourself away from outdoor lighting.
- ✓ View the event with your unaided eyes, binoculars, and/or a telescope.
- ✓ Bring a family member and/or friend and enjoy this celestial wonder.
- ✓ A reclining chair will make the viewing more comfortable!

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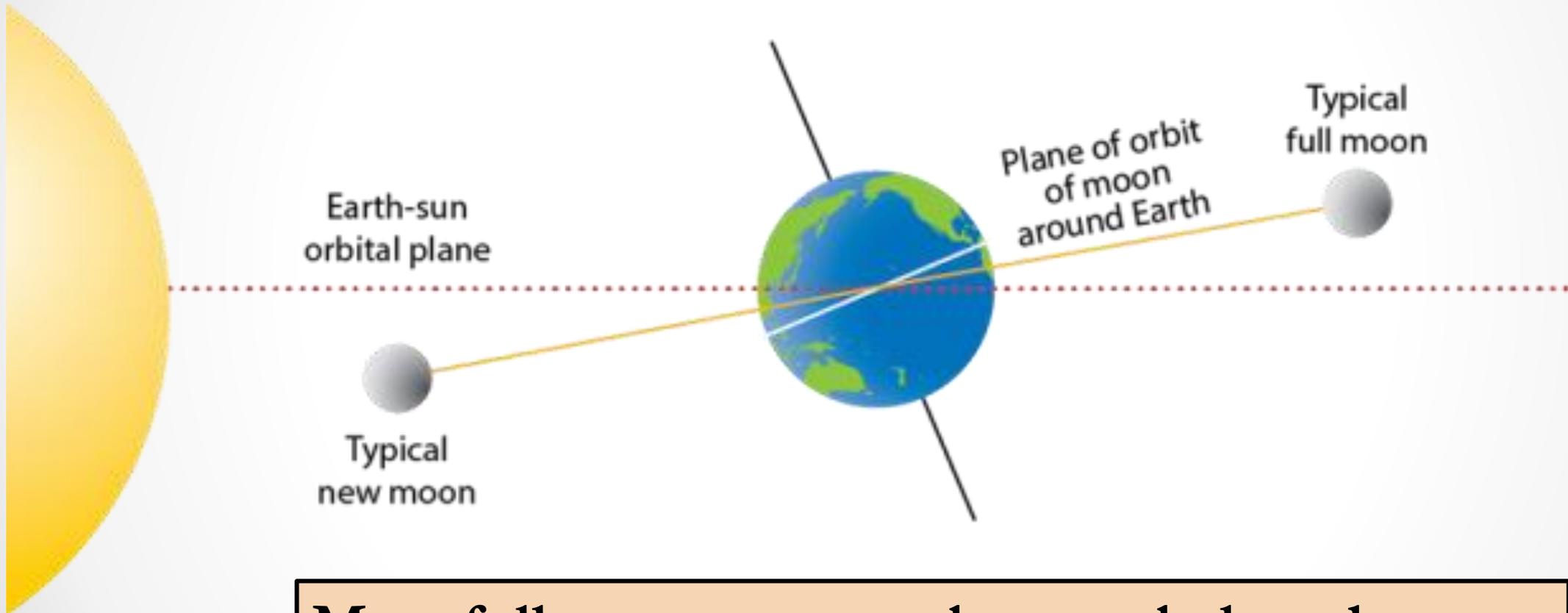
What's occurring from an outside view:



We explained that a lunar eclipse can occur only at the full moon. **Then why don't we have a lunar eclipse at every full Moon?**

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The Moon's orbit is tilted (inclined) in relation to the Earth-Sun orbital (ecliptic) plane by about 5° .



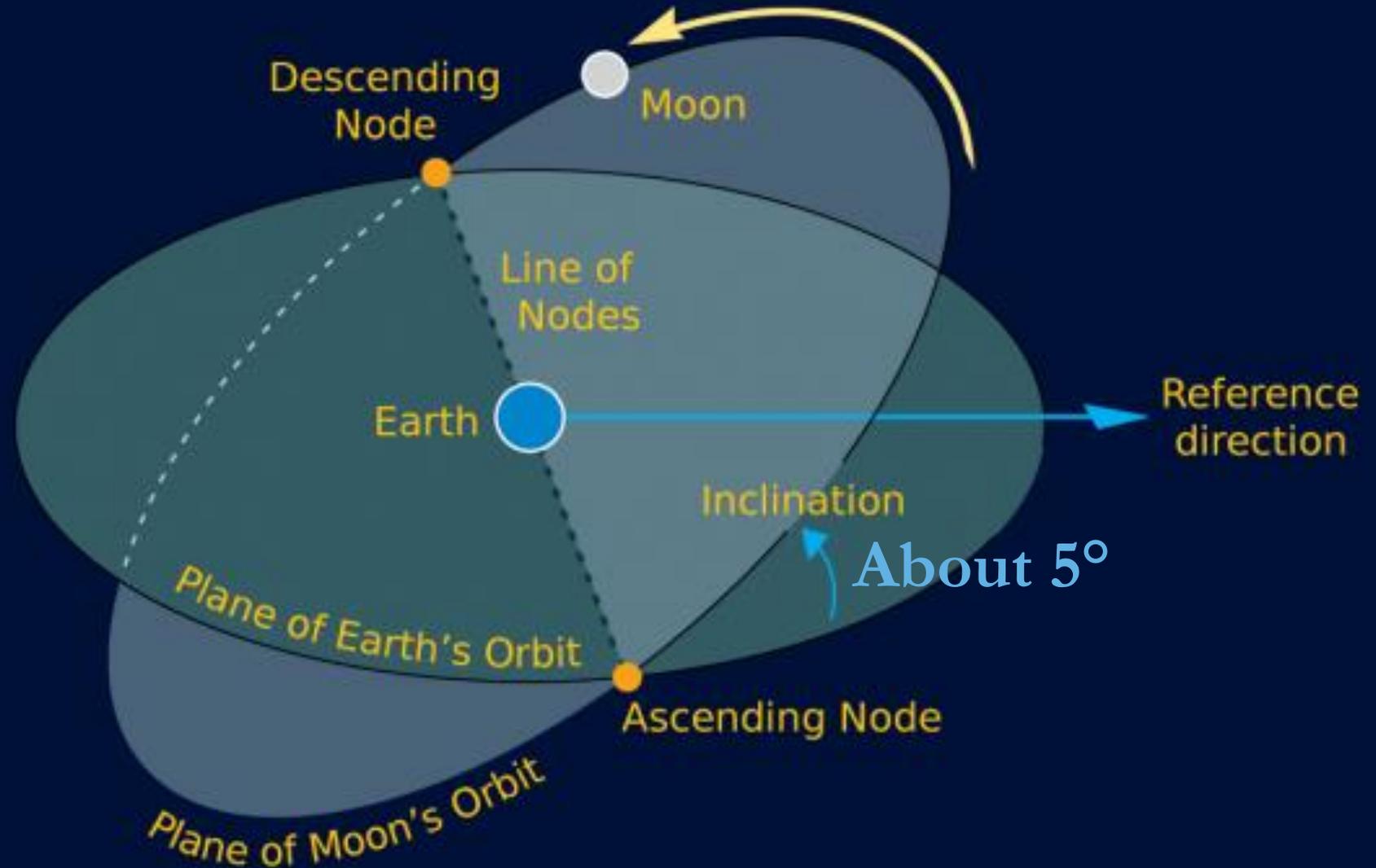
Most full moons occur above or below the Earth-sun orbital plane, and no eclipse occurs.

Eclipses can only occur when the Moon crosses the Earth-Sun orbital plane during a New or Full Moon.

This occurs at one of the two node points – the Moon's **ascending** or **descending** node.

Line of Nodes

(Not to scale)



The Full Moon will be at the ascending node on Nov. 8th

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To further complicate things, the alignment of the 2 node points actually shifts westward along the ecliptic by about 19.34° each year!

Astronomers call this “shifting” the “**regression of the lunar nodes**”.

This “regression” completes its lunar cycle when the nodes return to their starting point along the Moon’s orbit – some 18.61 years later.

The “regression” of the lunar nodes is caused by tidal effects on the Moon’s orbit created by the Earth and the Sun.



**Brief YouTube presentation on
the Regression of the Nodes**

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So, how often do total lunar eclipses occur?

On average, a total lunar eclipse will happen a bit more frequently than twice every three years.

Every three and a half years, two total lunar eclipses will happen within the same year. This year 2022 is one of them!

Every 200 years, three total lunar eclipses happen in the same year.

The next total lunar eclipse occurs on March 14, 2025.

Find out more about regional happenings in astronomy and the night sky at the [Astronomy Club of Asheville](#) website.

You will also find nighttime observing opportunities at [Grassland Mountain Observatory](#) and [Lookout Observatory](#) on this same website.

www.AstroAsheville.org