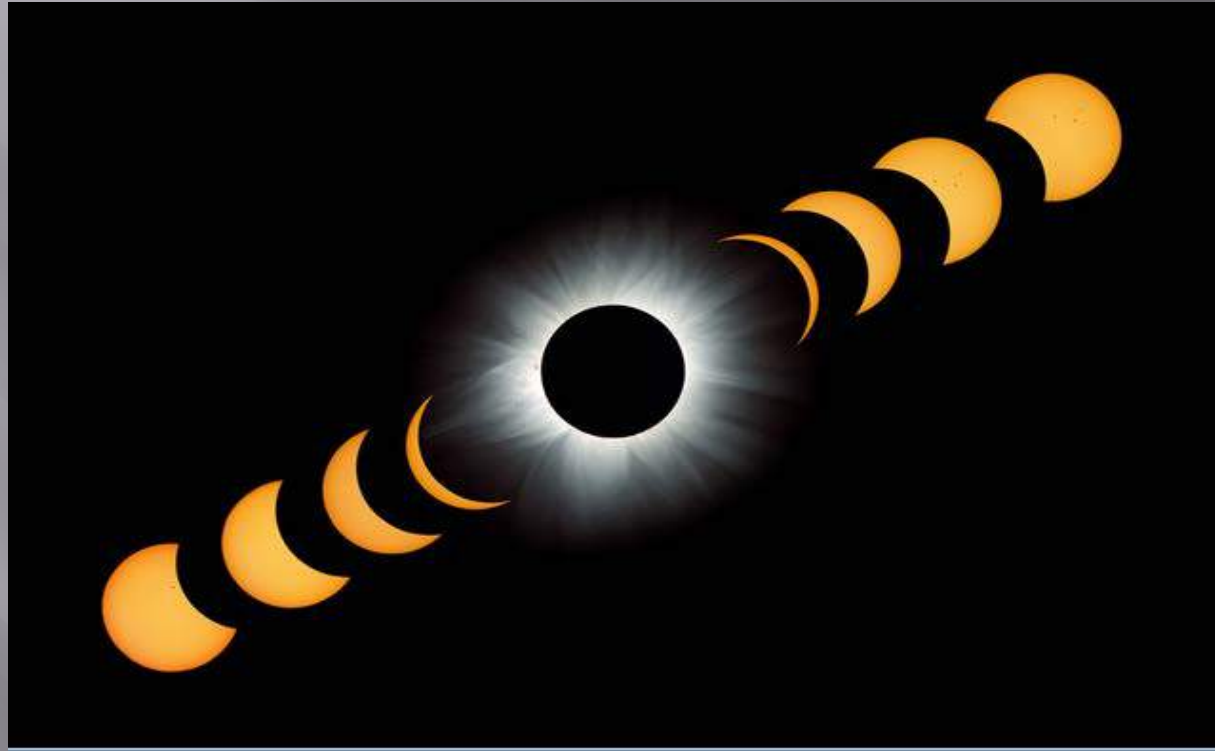


CELESTIAL ECLIPSES



Dr. Owen Bateson
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What is an Eclipse?

- ▣ An eclipse occurs when the light from one celestial body is obscured by another celestial body.



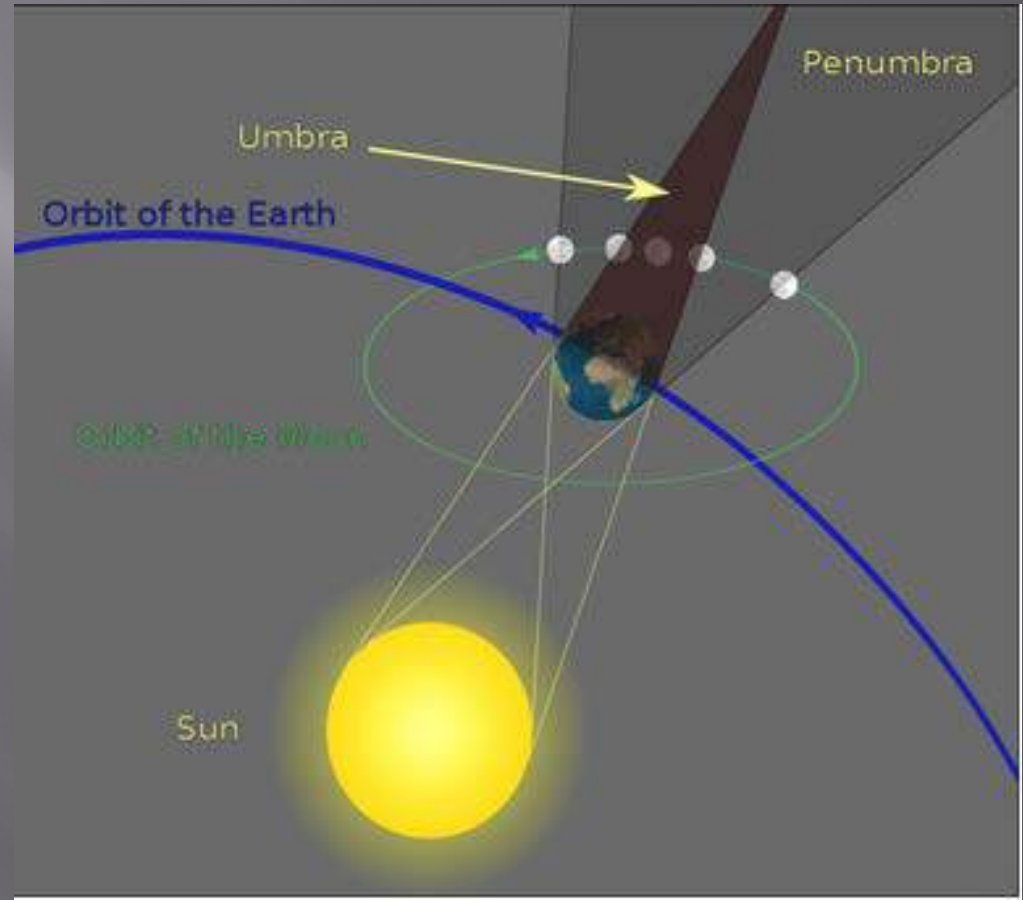
What is a Lunar Eclipse?

- ▣ It occurs when the Earth passes between the Sun and the Moon. The Moon passes into the Earth's shadow



Lunar Eclipse

- ▣ There are 2 types of Lunar Eclipses
- ▣ A Partial when the Moon is in the Penumbra.
- ▣ A Total when in the darker Umbra. (but not completely dark)



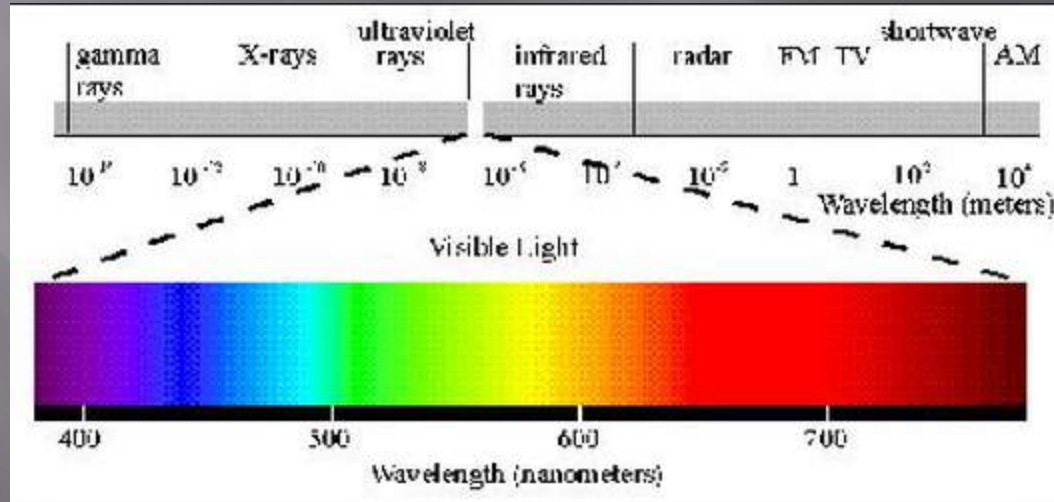
Total Lunar Eclipse

- ▣ Some of the red light from the Sun is bent by the Earth's atmosphere causing the famous "Blood Moon" during a total Lunar Eclipse



Wavelengths of Light

- Red has the longest wavelength of visible light & is bent by the Earth's Atmosphere. Causing the "Blood Moon" phenomenon.



RED SUNSETS

- ▣ This bending of the red light wave also causes the red clouds at sunrises and sunsets.



Phases of the Moon



A lunar Eclipse can only occur during a Full Moon!

- ▣ When the Earth is directly between the Sun and the Moon



Total Lunar Eclipses

- ▣ While certainly not ubiquitous, Total Lunar Eclipses are not rare.
- ▣ UPCOMING TOTAL LUNAR ECLIPSES
 - ▣ 1-31-18
 - ▣ 1-21-19
 - ▣ 5-16-22
 - ▣ 11-8-22

Crescent Moon's

- ▣ A new “waxing” crescent moon will ALWAYS be on the right side of the moon, and in the early evening hours.



Waning Crescent

- ▣ An old Waning Crescent Moon will ALWAYS be on the left side of the moon and in the early morning hours



The Moon

- ▣ The Moon is 2,160 miles in Diameter and is in Synchronous Rotation with the Earth. Its synodic period (full moon to full moon) is 29.5 days. It always presents the same side towards Earth.



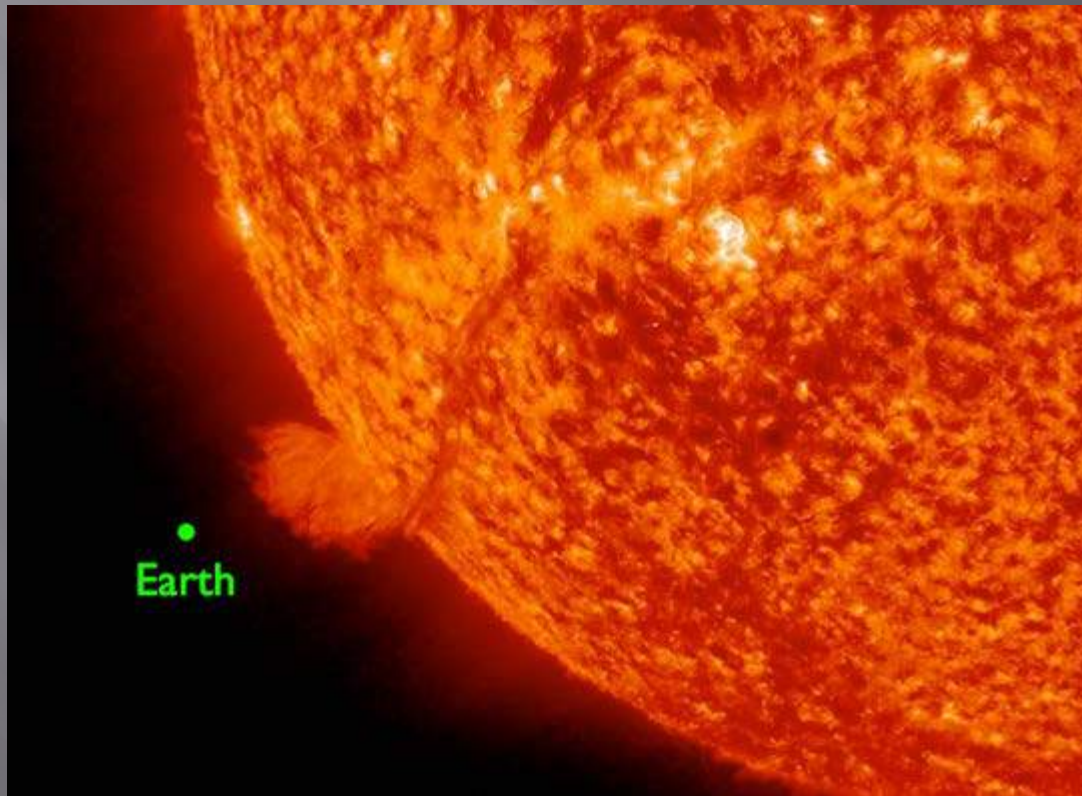
Distance to the Moon

- ▣ The Moon's average distance from the Earth is roughly 238,000 miles. At Perigee, (closest) it is 225,309 miles. At Apogee (farthest) it is 251,903 miles.



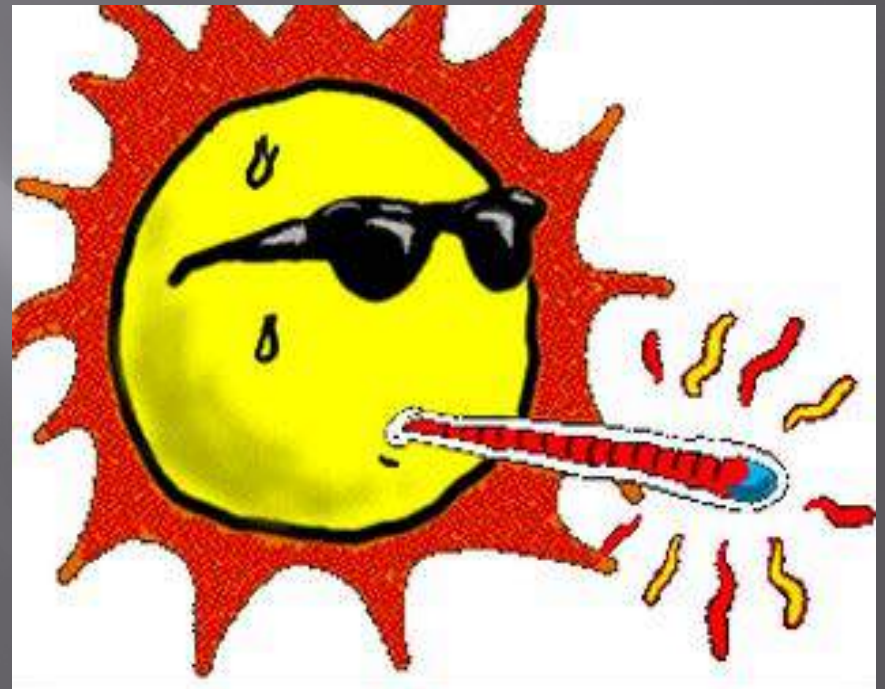
Solar Facts

- ▣ The Sun is 93 million miles from Earth, it is 864,400 miles in Diameter, 109 times larger than Earths diameter. 1,300,000 Earths could fit in it.



The Sun's Temperature

- ▣ The surface is 27,000,000° F at its core. Only 10,000° F at its surface, but up to 1,800,000 ° in its atmosphere (Corona)



The Sun's Magnetism

- ▣ The Sun has a rotational period of 25.05 days at the equator but 34.4 days at the poles
- ▣ This causes tremendous magnetic disturbances which creates Sunspots, Solar Flares and Coronal Mass Ejections



What are Sunspots?

- ▣ A Sunspot is a temporary area of intense magnetic disturbance on the surface of the Sun that appears dark due to a lower temperature than the photosphere. Only 7,300 ° F rather than 10,000°F
- ▣ They produce Flares and Coronal Mass Ejections



October 28th, 2003