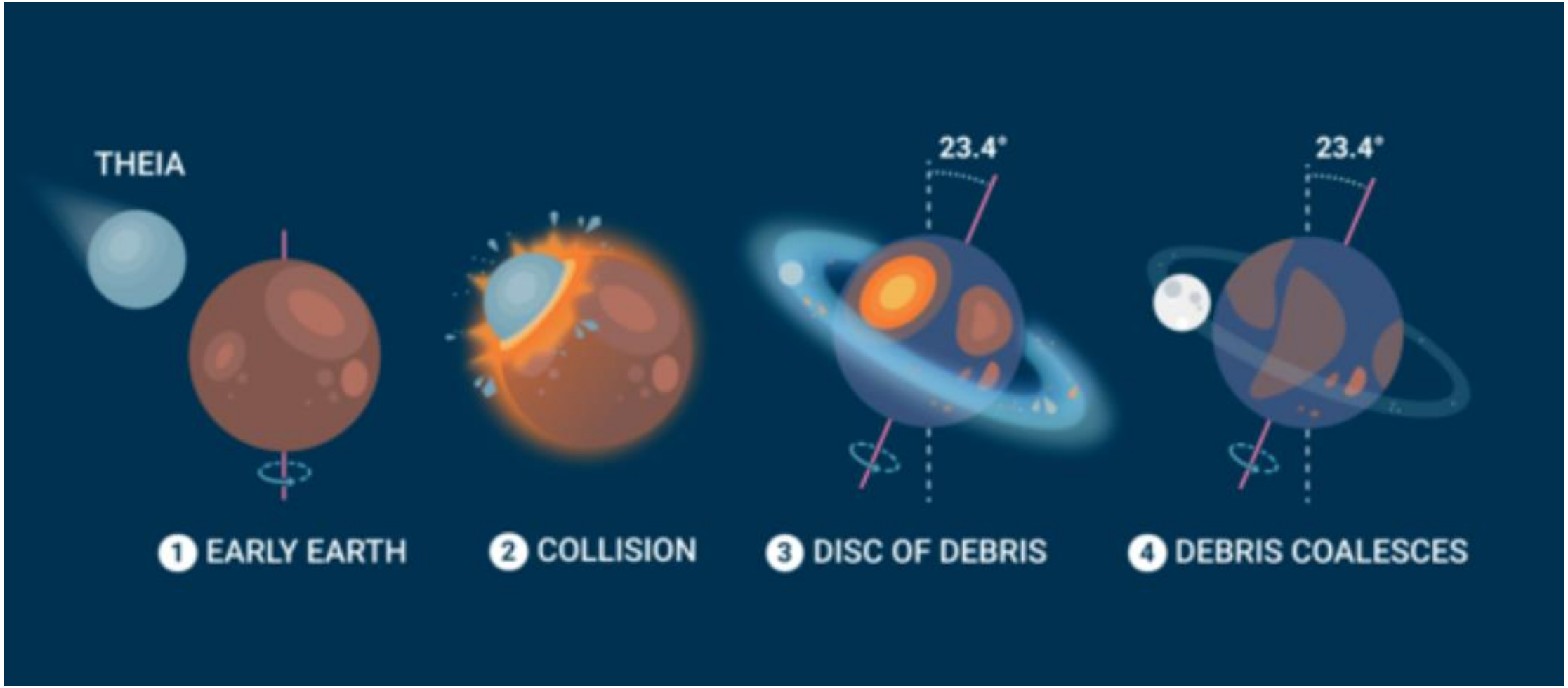
Topic 2: The Lunar Disc



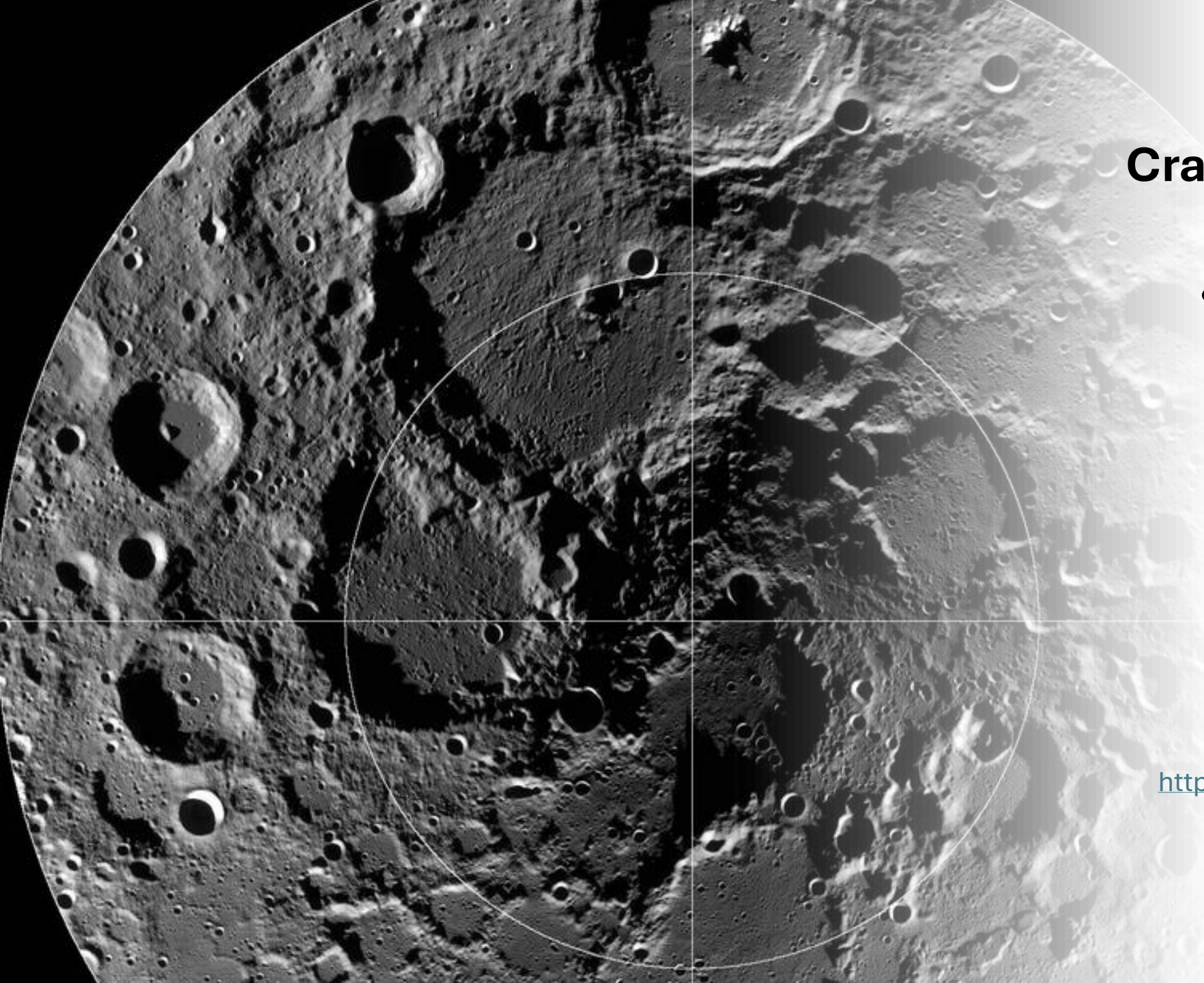
Formation of the Moon

https://science.nasa.gov/moon/formation/

The Moon

- **Oblate Spheroid**
- It is approximately **380,000 km** from the Earth.
- The Moon has a mean diameter of **3,500 km.**
- This is about **27% the diameter of Earth**.

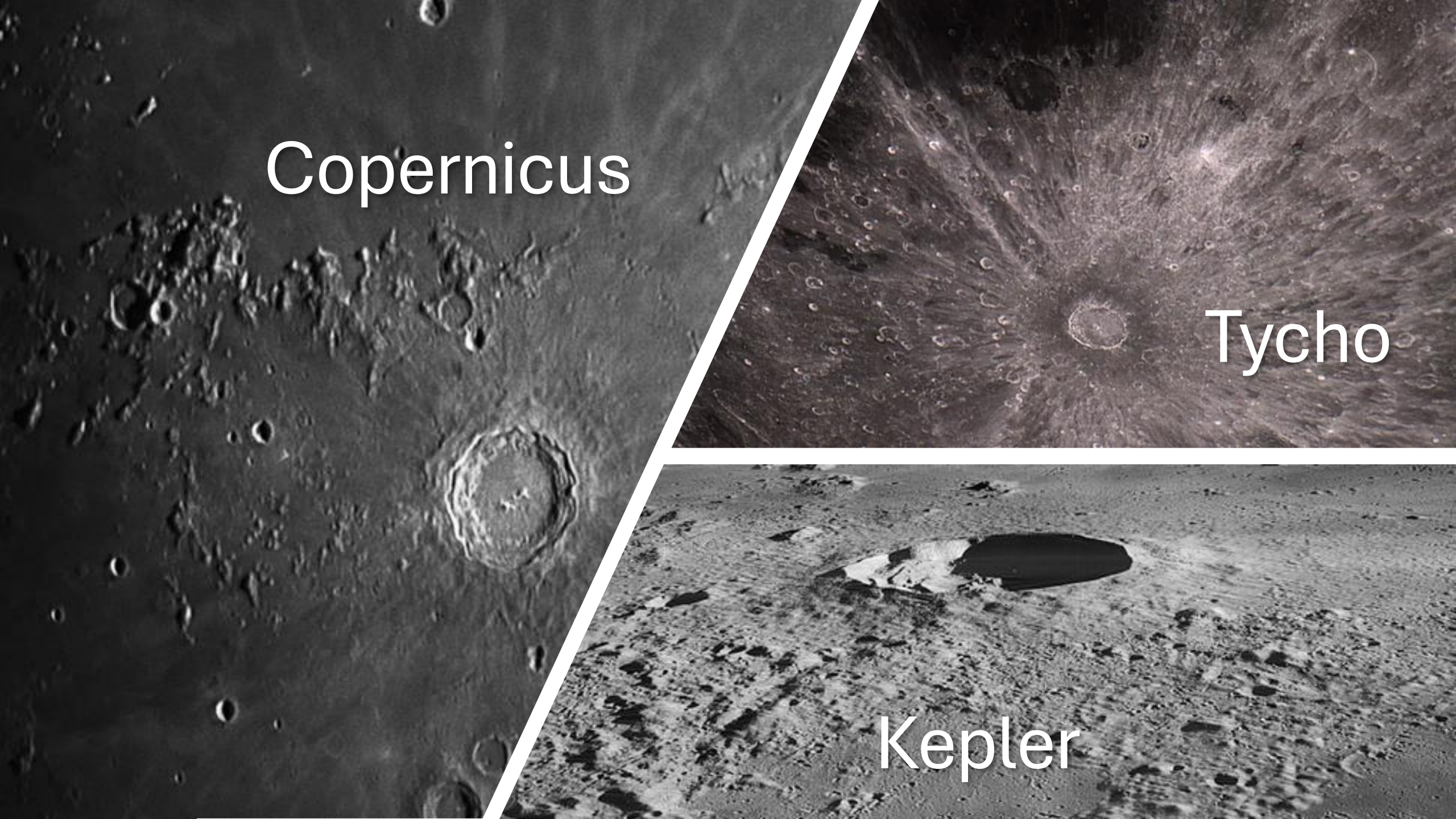

Lunar Landscape

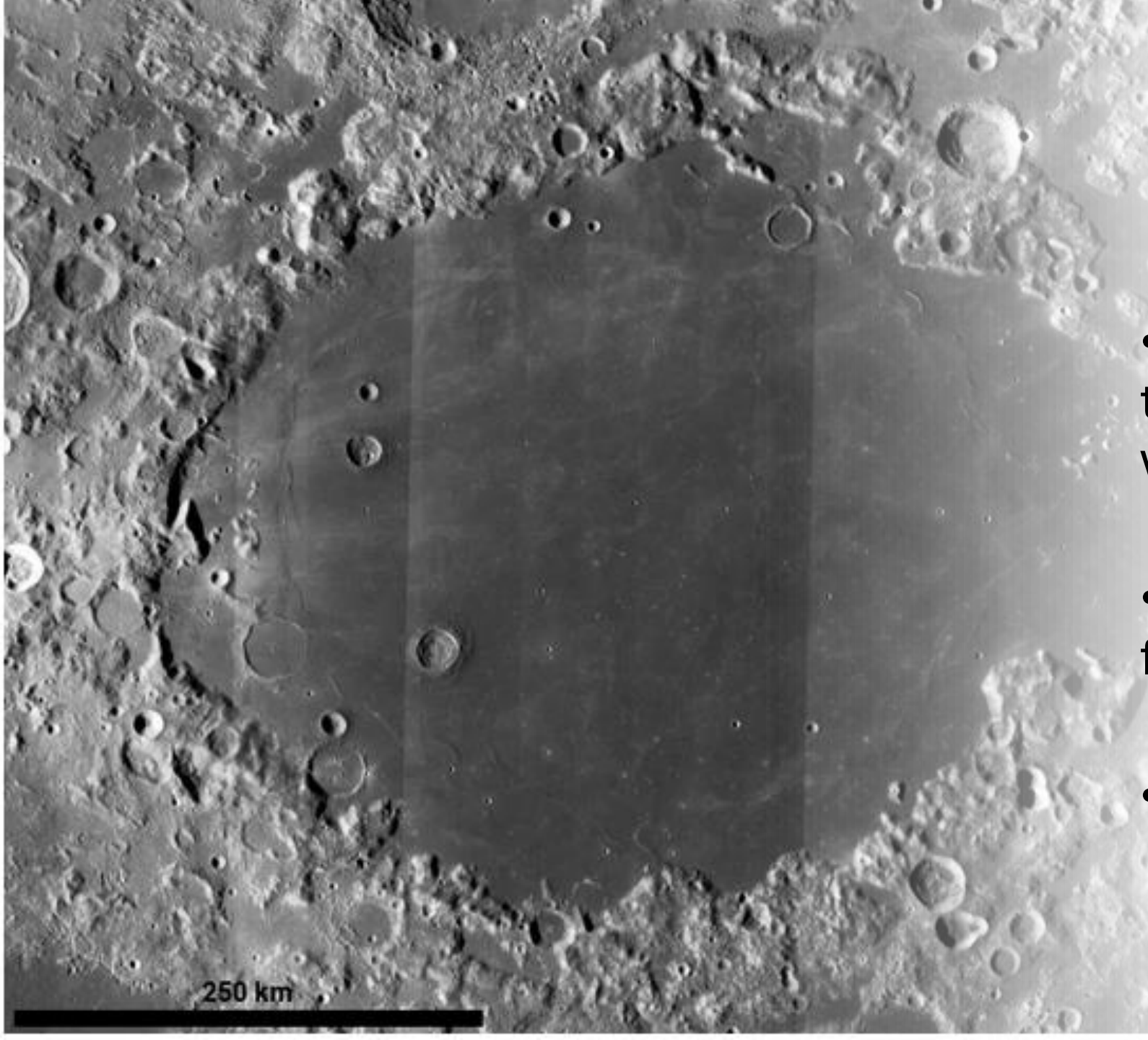


Craters:

- Formed from collisions on the lunar surface

https://science.nasa.gov/moon/lunar-craters/


Copernicus
Tycho
Kepler

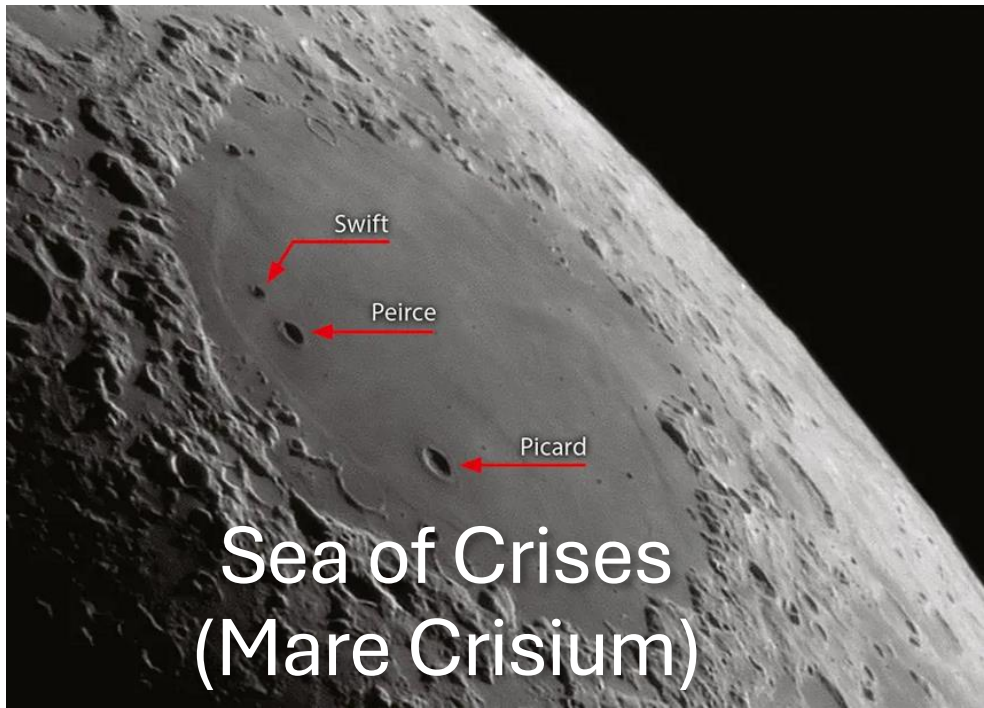


Mare (Maria)

- Bombardment pierced the crust when the Moon was relatively young
- Molten rock cooled to form flat maria
- Basaltic iron-rich rock

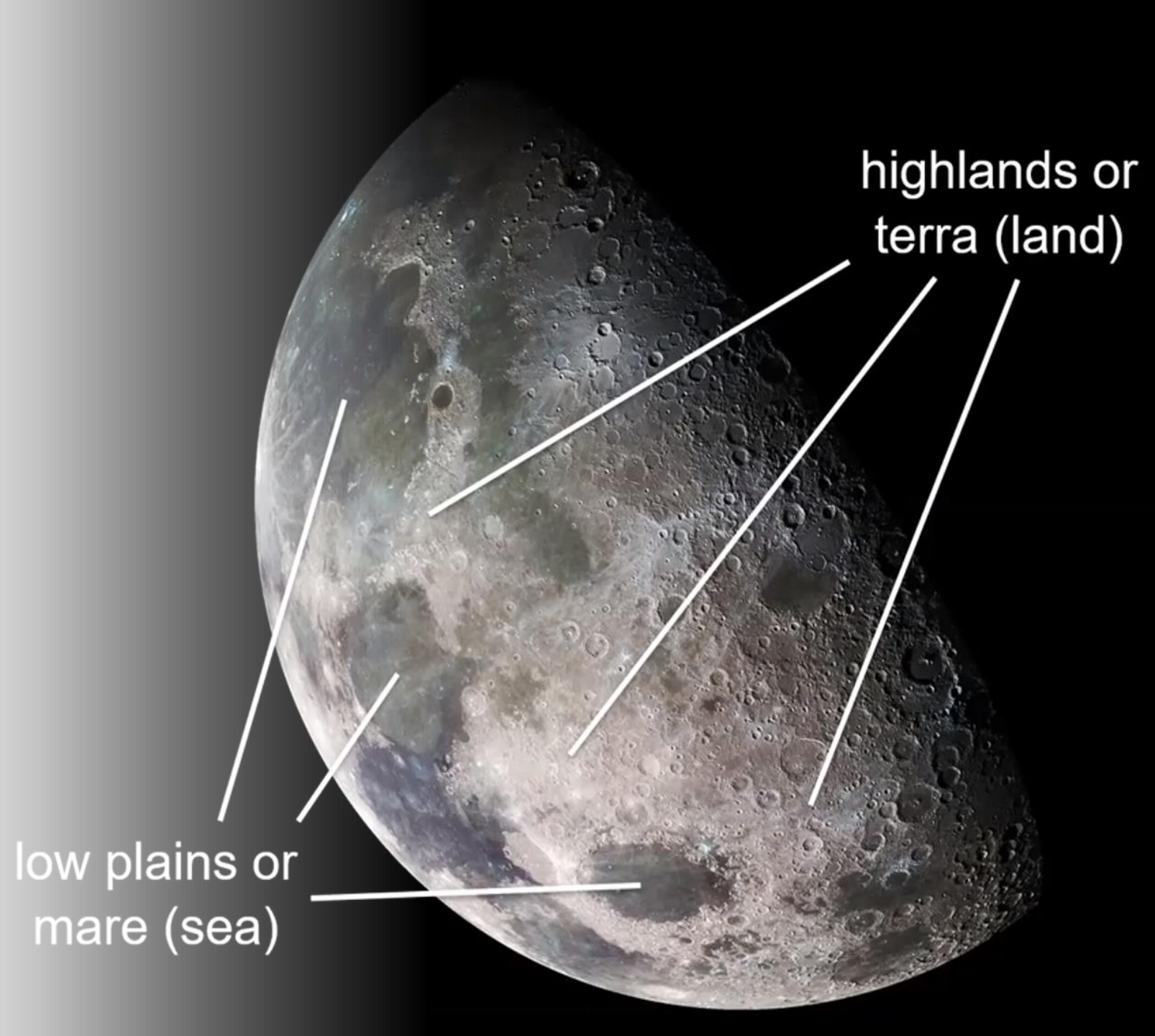

Ocean of Storms
(Oceanus Procellarum)


Sea of Tranquility
(Mare Tranquillitatis)


Swift
Peirce
Picard
Sea of Crises
(Mare Crisium)

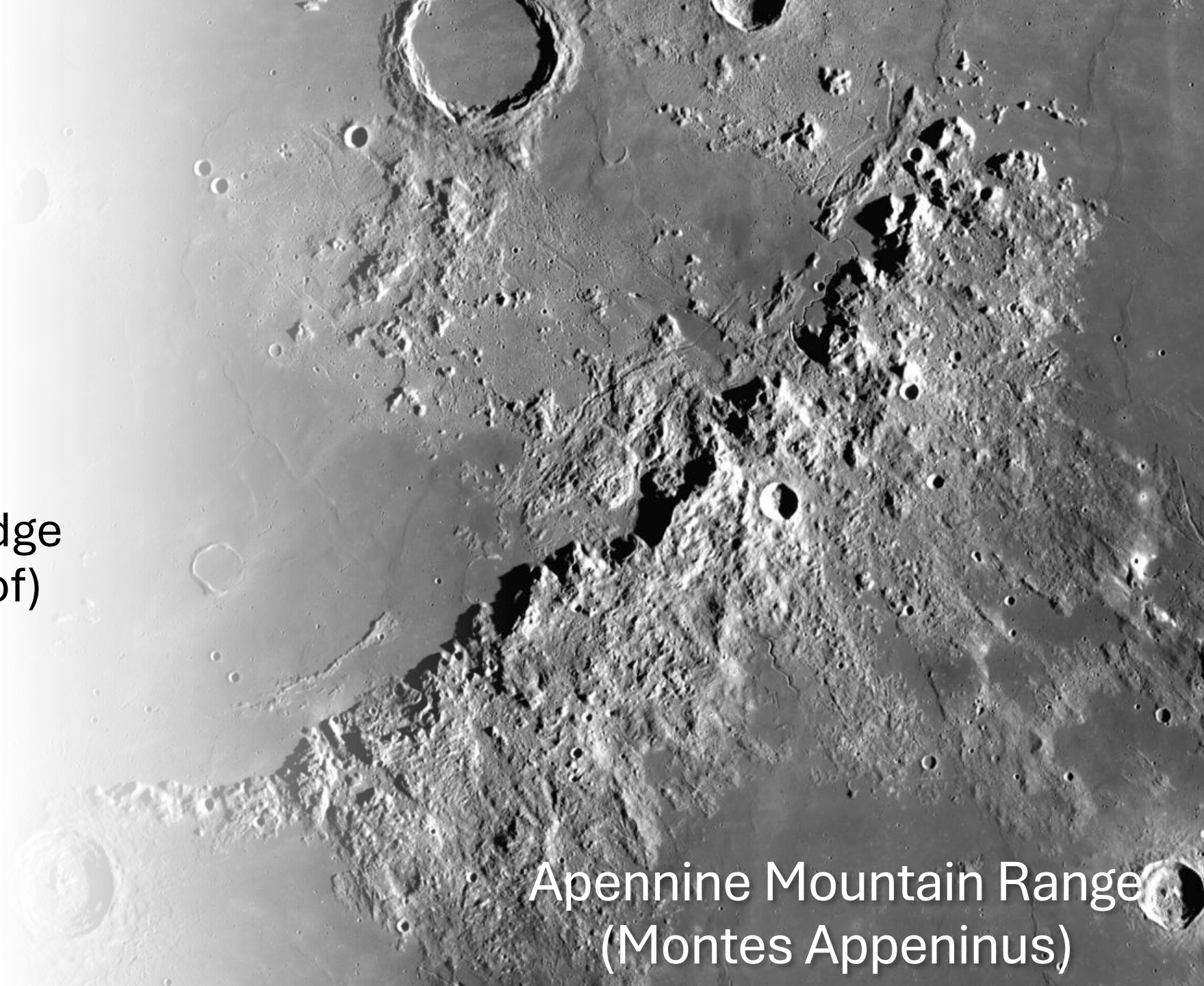
Terrae (Highlands)

- Highly cratered mountainous regions
- Formed as the molten surface of the moon cooled

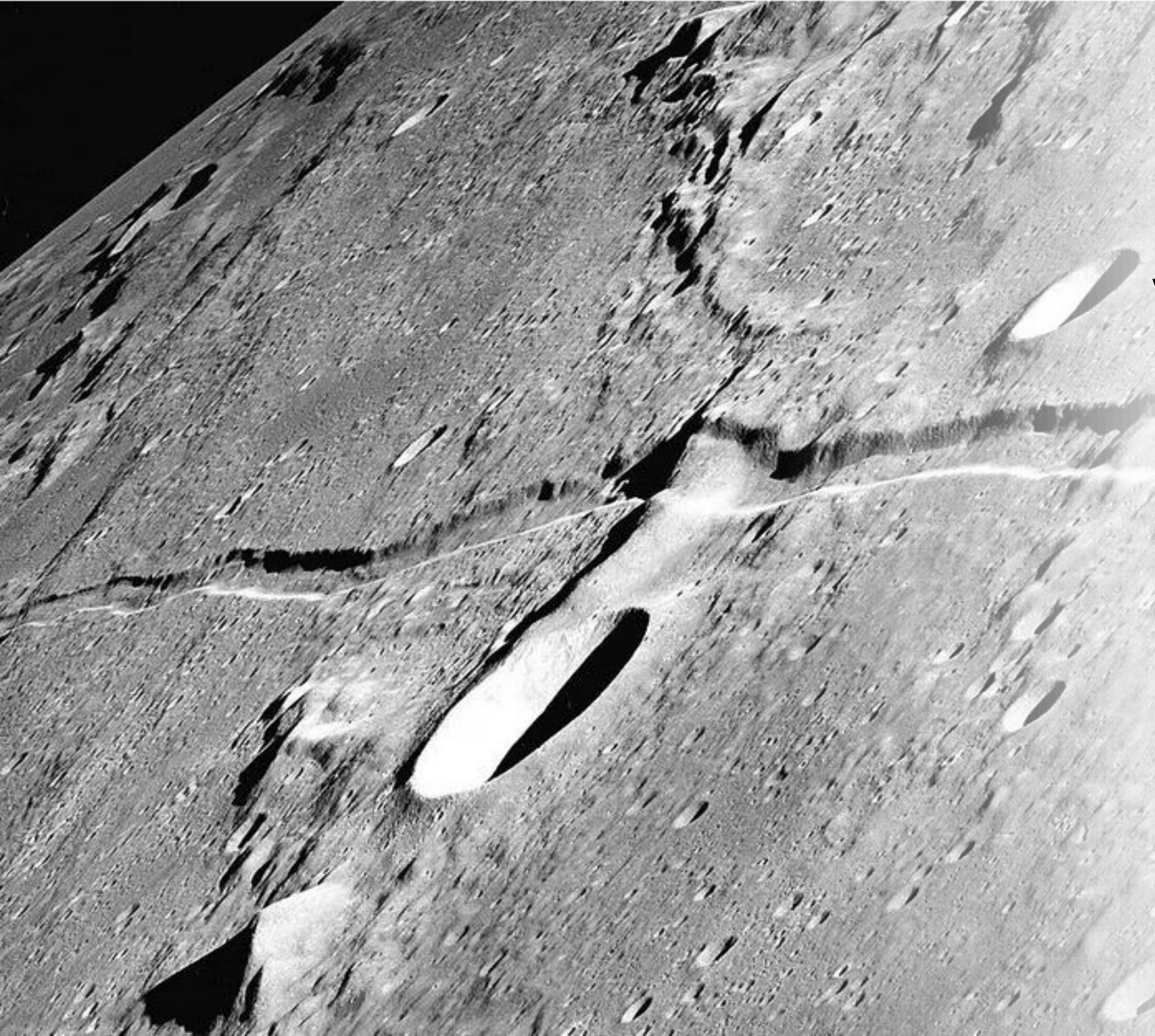


Mountains

- Formed on the edge or (in the centre of) massive craters

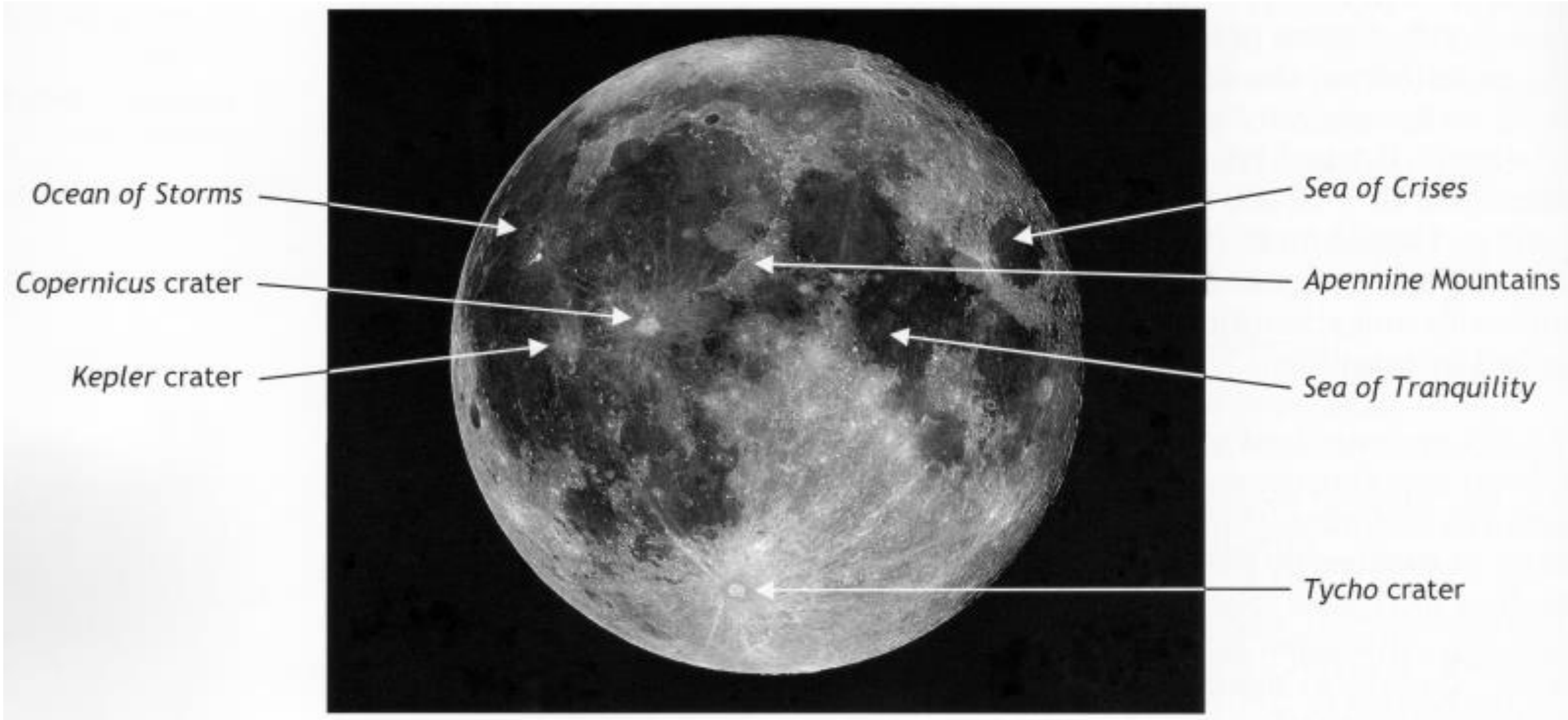


Apennine Mountain Range (Montes Appeninus)

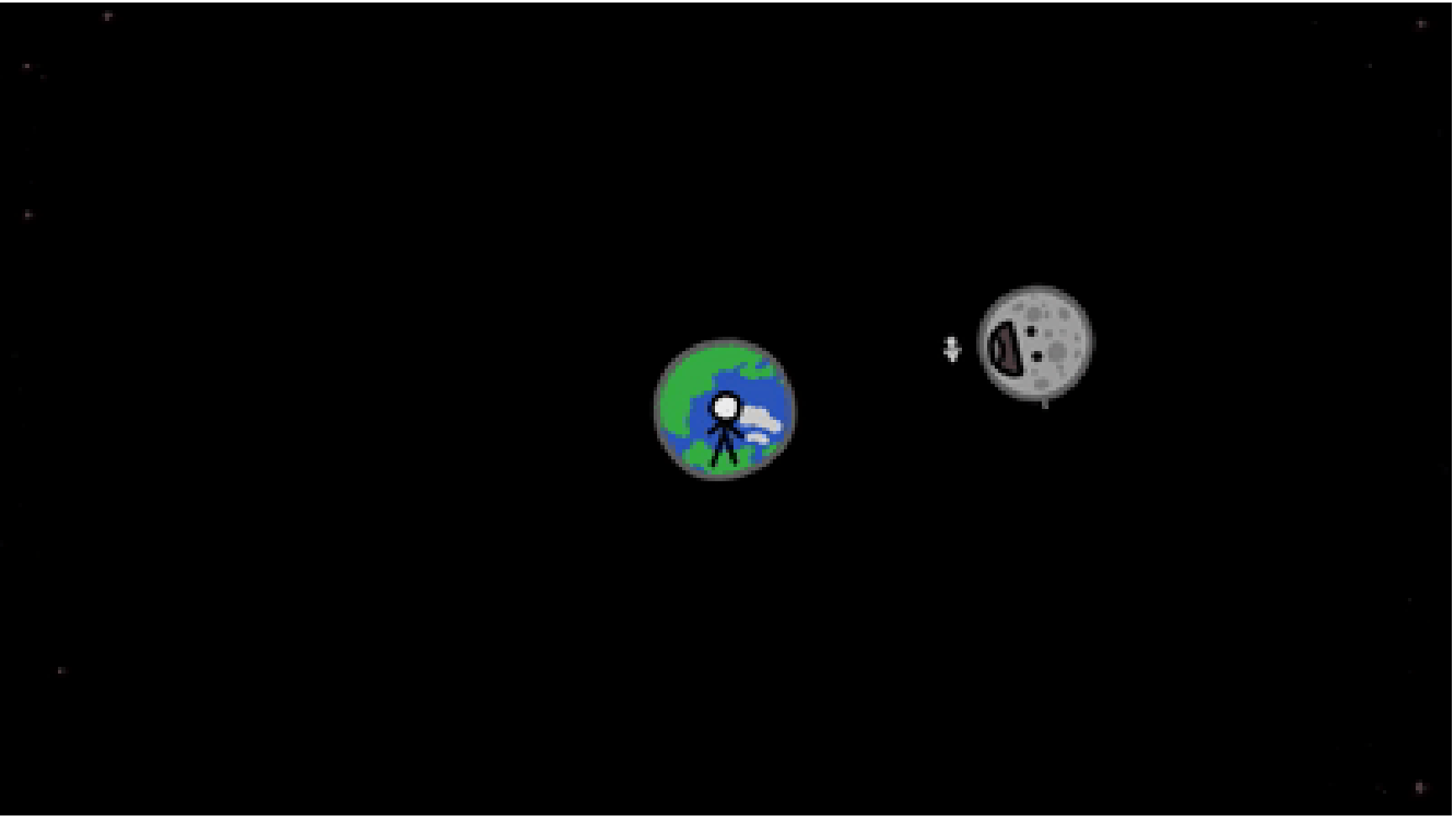


Valleys and Rilles

- Formed by ancient collapsed lava tubes


Ocean of Storms
Copernicus crater
Kepler crater
Sea of Crises
Apennine Mountains
Sea of Tranquility
Tycho crater

Rotation and Revolution



Orbital period: 27.3 days (time taken to orbit Earth).

Rotation period: 27.3 days (time taken to spin once on its axis).

The moon is **tidally locked** to Earth.

https://science.nasa.gov/moon/tidal-locking/

https://science.nasa.gov/resource/shadows-near-the-moons-south-pole/

Lunar Libration

We actually see **59%** of the moon’s surface due to:

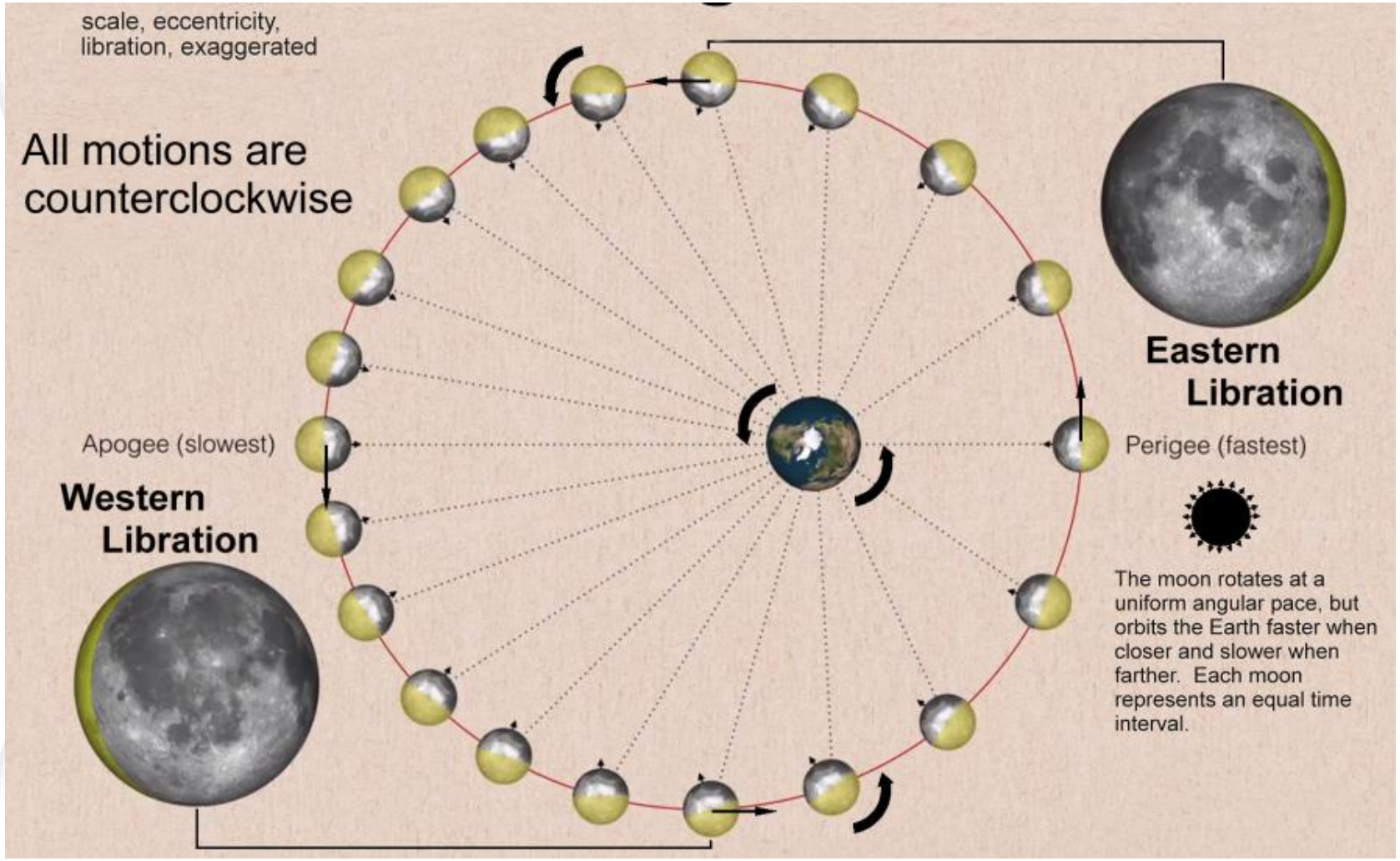
1. The elliptical orbit of the Moon around the Earth.
2. The plane of the Moon's orbit.
3. Our own observing position.
4. The Moon also has a precession effect so that it wobbles slightly.

Libration in Longitude

The Moon’s orbit Is elliptical, so its speed changes.

However, its rotation on its axis is steady.

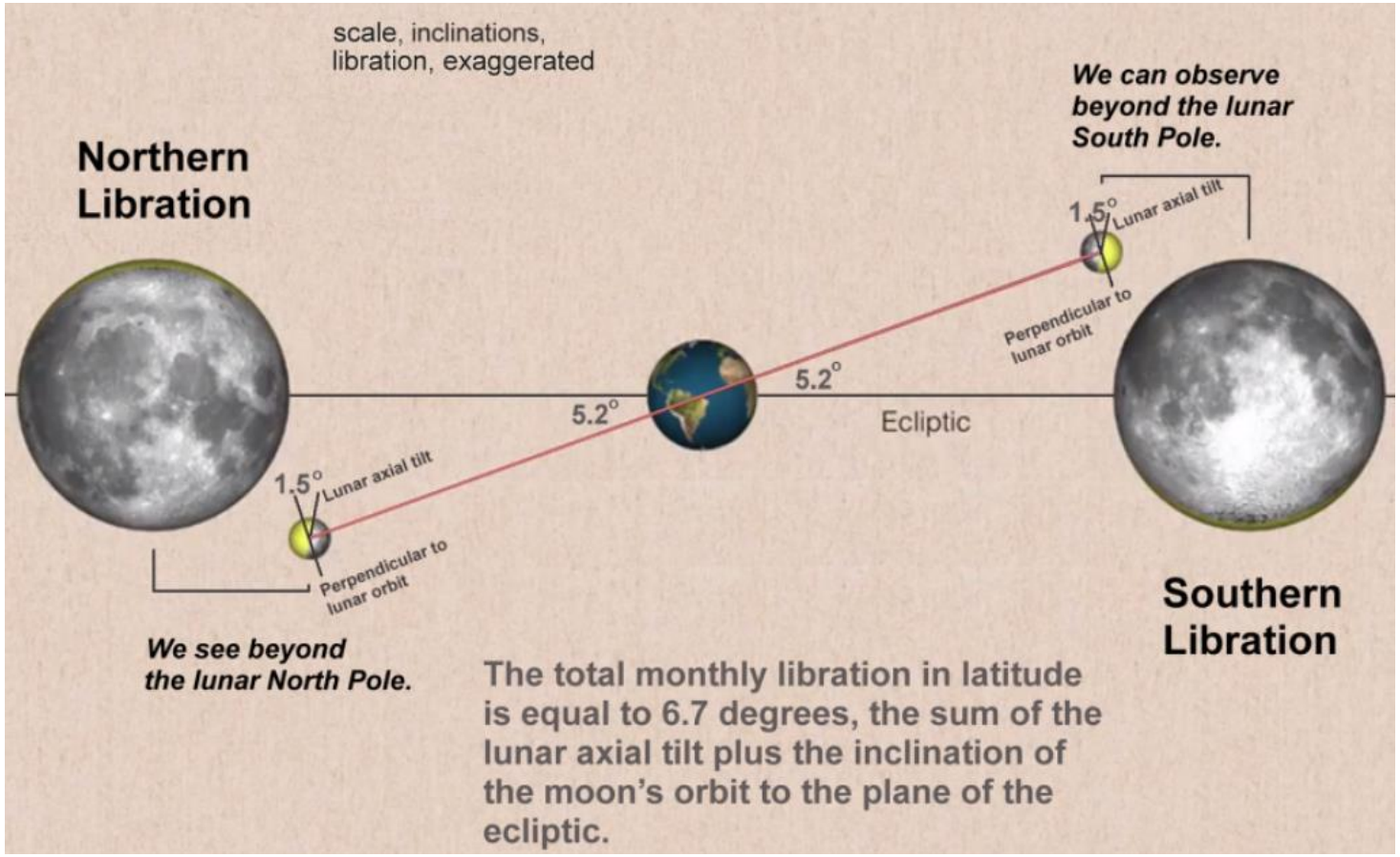
This results in us seeing slightly more of one side and then the other.

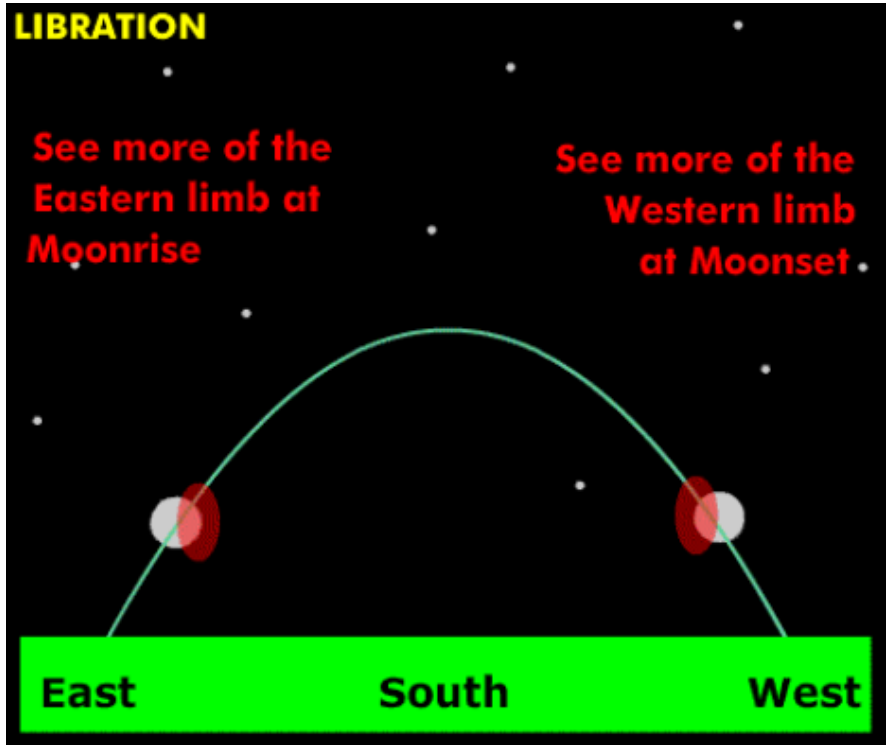


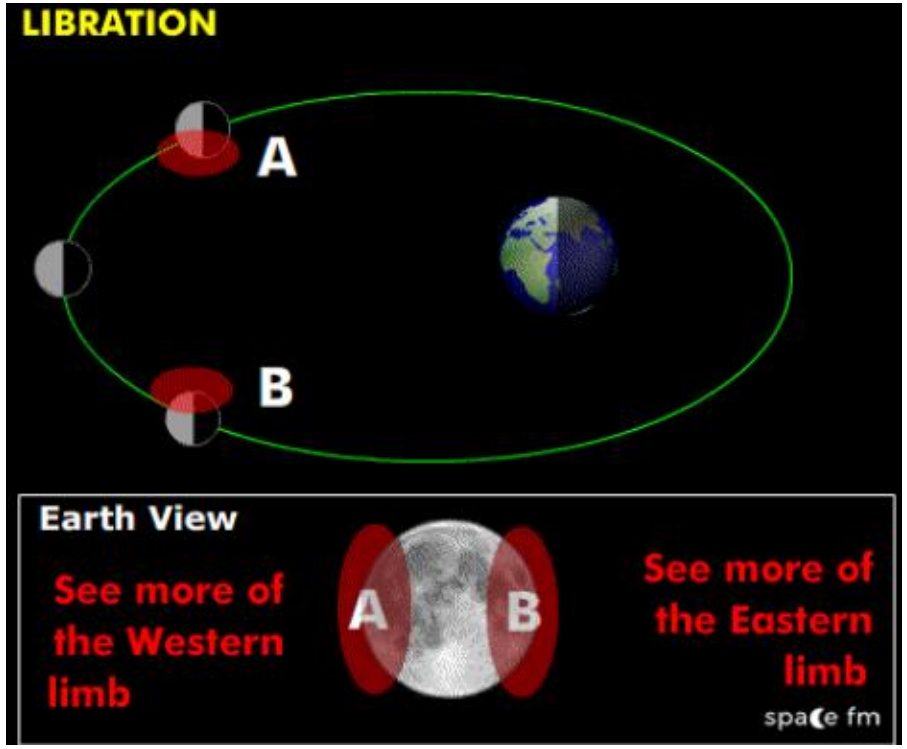
Libration in Latitude

- The Moon's axis is tilted slightly (around 7 degrees), and its orbit has a small inclination (around 5 degrees).

- This lets us 'peek' over the top and underneath slightly.







Diurnal Libration

- The Moon's axis is tilted slightly (around 7 degrees), and its orbit has a small inclination (around 5 degrees).

- This lets us 'peek' over the top and underneath slightly.