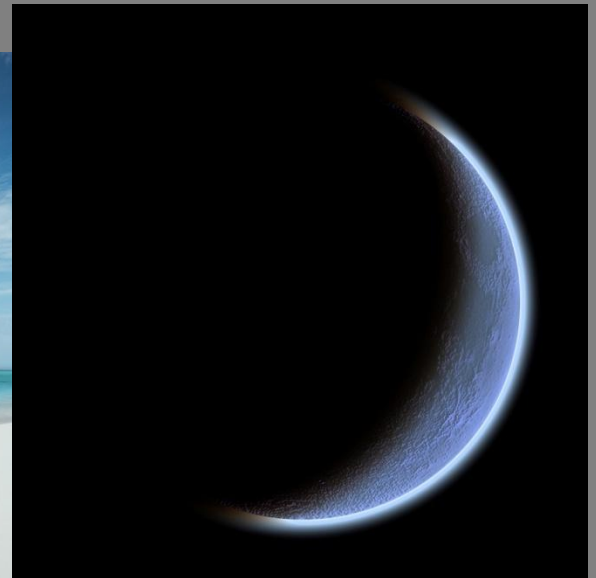
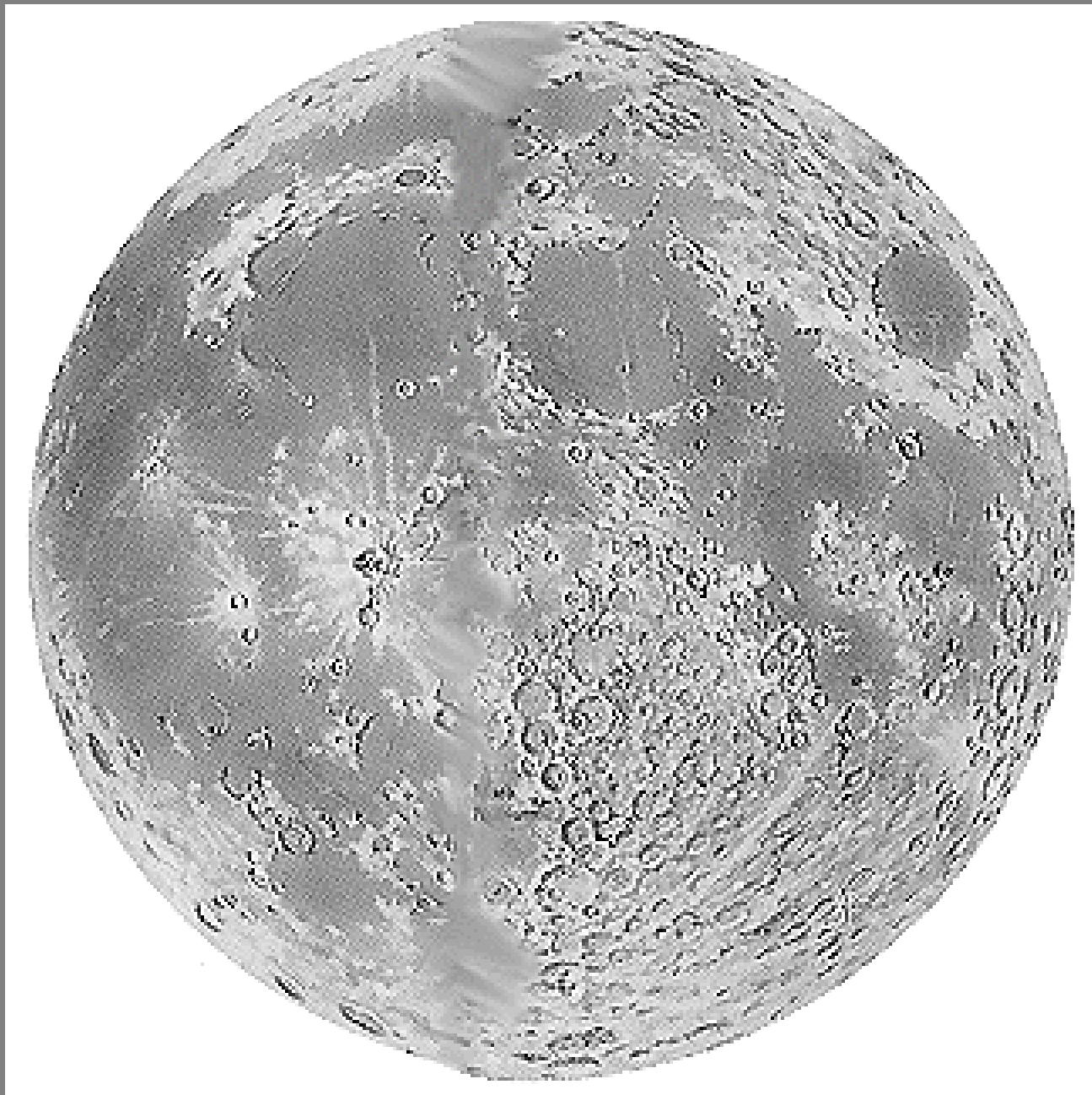


Phases and Tides



THE MOON

Natural satellite orbiting the Earth

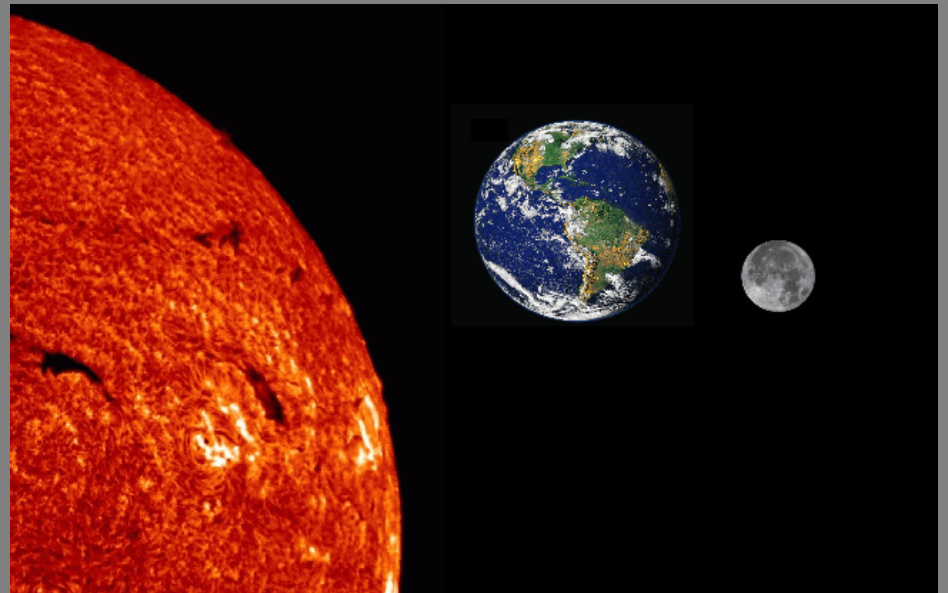


Motions of the Moon

- Rotation: 29.5 Earth Days

- Revolution: 27.3 Earth Days
but because the Earth has moved too it takes 29.5 Earth Days to get back to the same spot in relation to Earth.

- The changing relative positions of the moon, sun and Earth causes:
 - Phases of the moon
 - Eclipses
 - Tides



Phases of the Moon



Phases of the Moon

- Phases—the different shapes of the moon you see from Earth
- What you see depends on how much of the sunlit side of the moon faces Earth.

First Quarter

Waxing Crescent

Waxing Gibbous

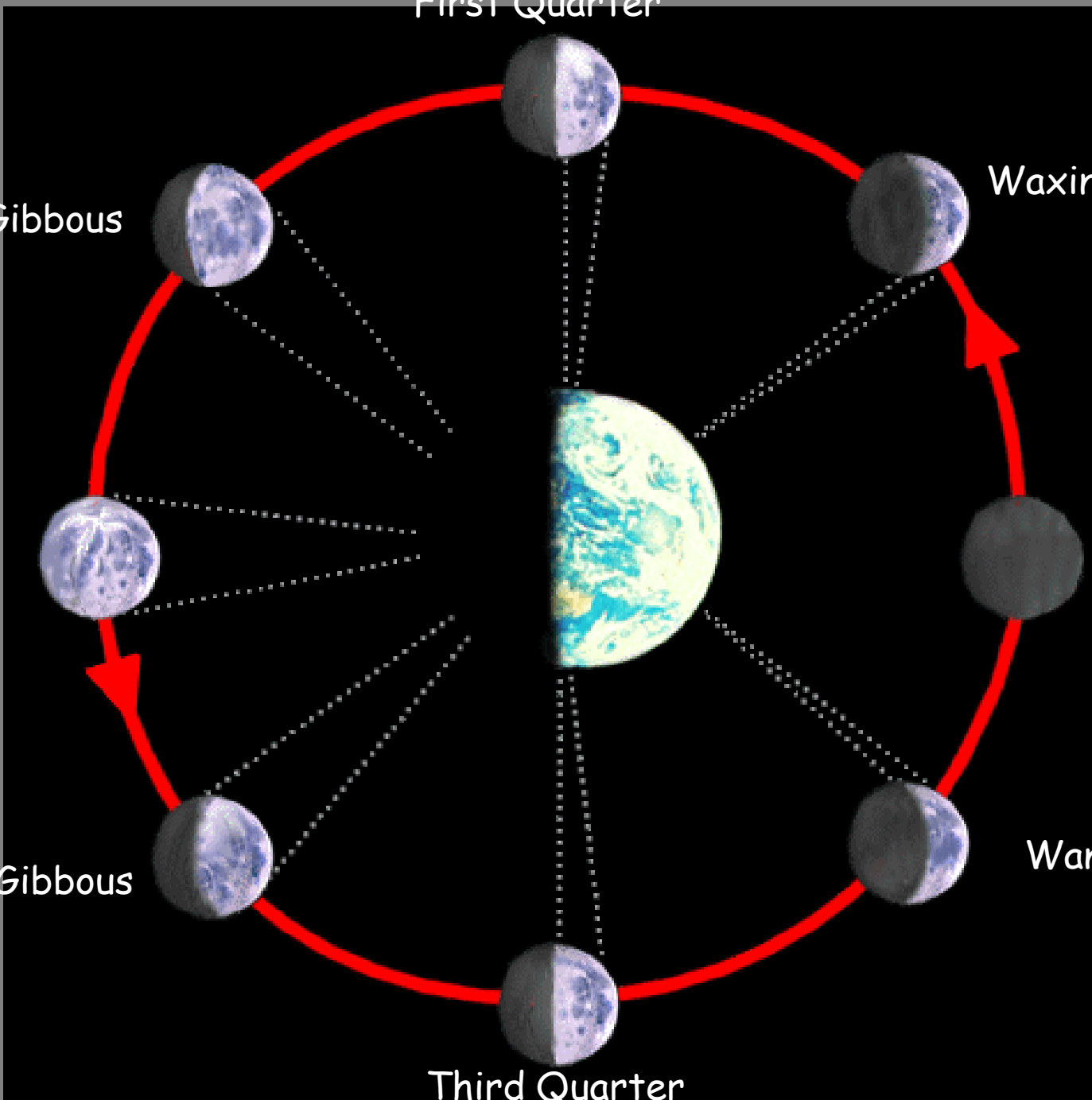
New moon

Full Moon

Waning Crescent

Waning Gibbous

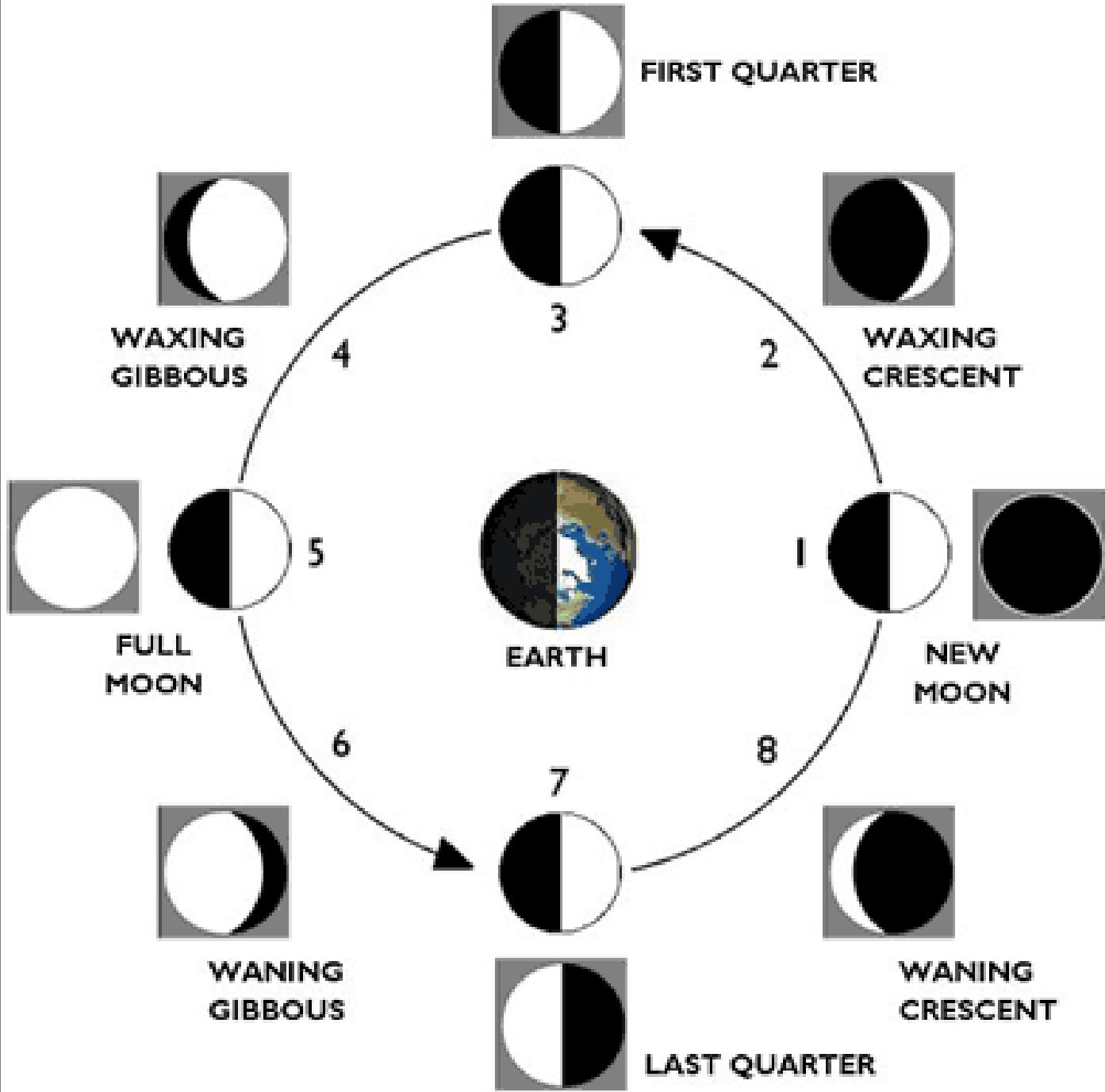
Third Quarter



1. New Moon—the sunlit side faces away from Earth
2. Waxing Crescent—growing into a crescent shape
3. 1st Quarter—see half of the sunlit moon
4. Waxing Gibbous—moon waxes (larger), see 3/4th of the sunlight moon



5. Full Moon—entire sunlit side faces Earth
6. Waning Gibbous—moon wanes or shrinks, see $3/4^{\text{th}}$ of the moon's lighted side
7. Third Quarter—see half the moon's lit side
8. Waning Crescent—visible small crescent



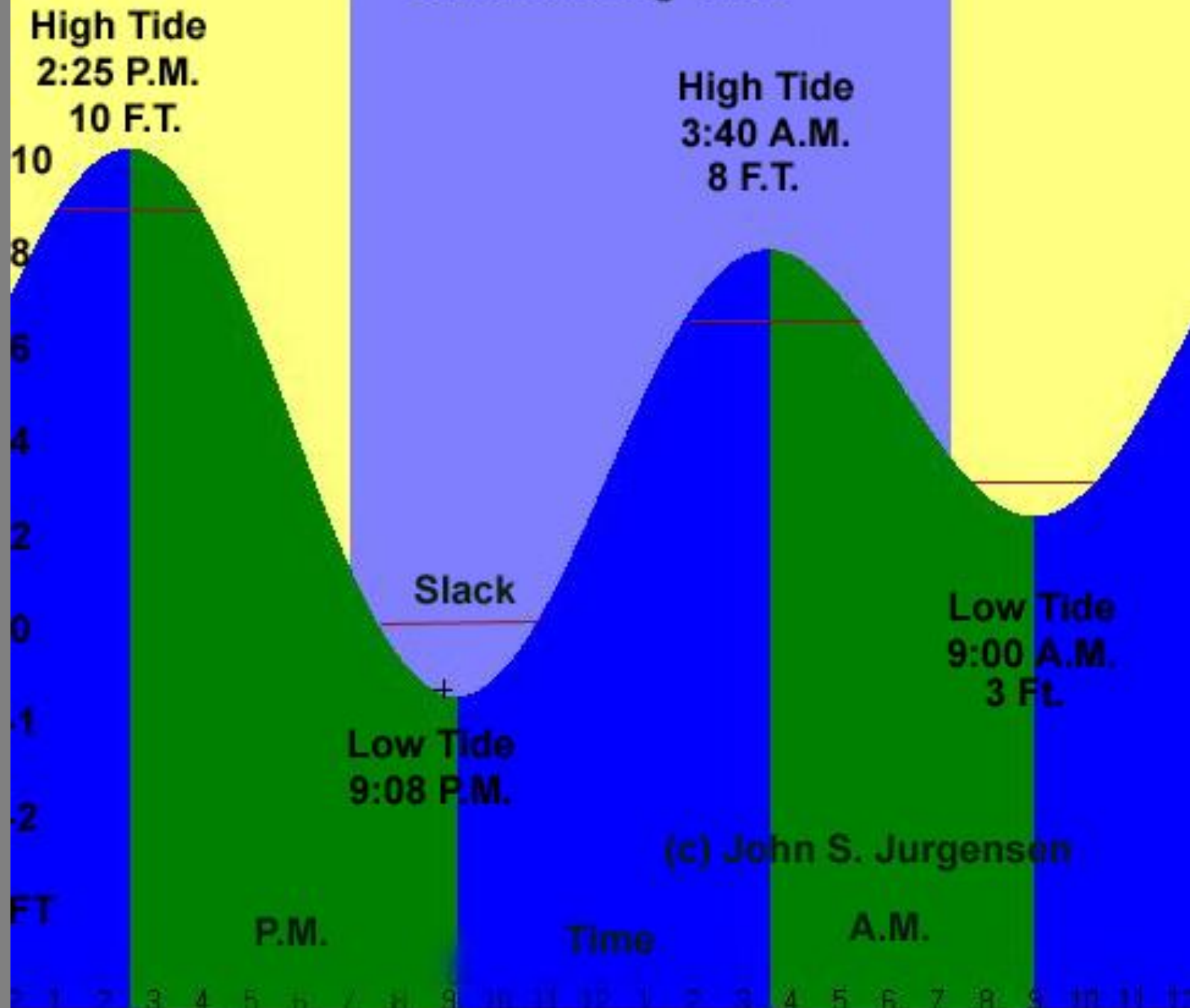


Tides

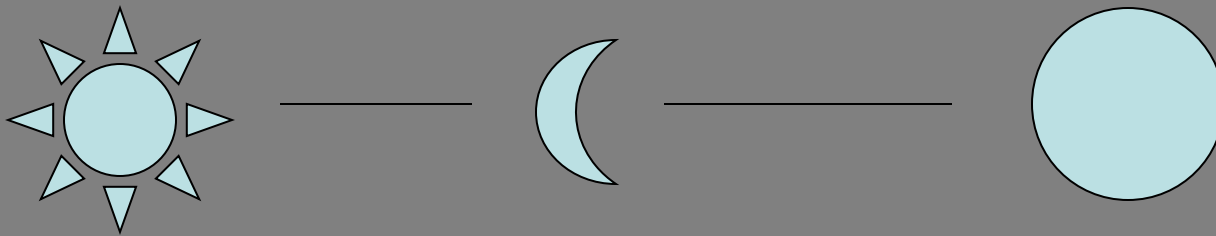


- Tide—the rise and fall of the ocean
- Caused by the gravity of the moon pulling on different parts of the Earth's oceans
- Occur in cycles every 12.5 hours

Understanding Tides

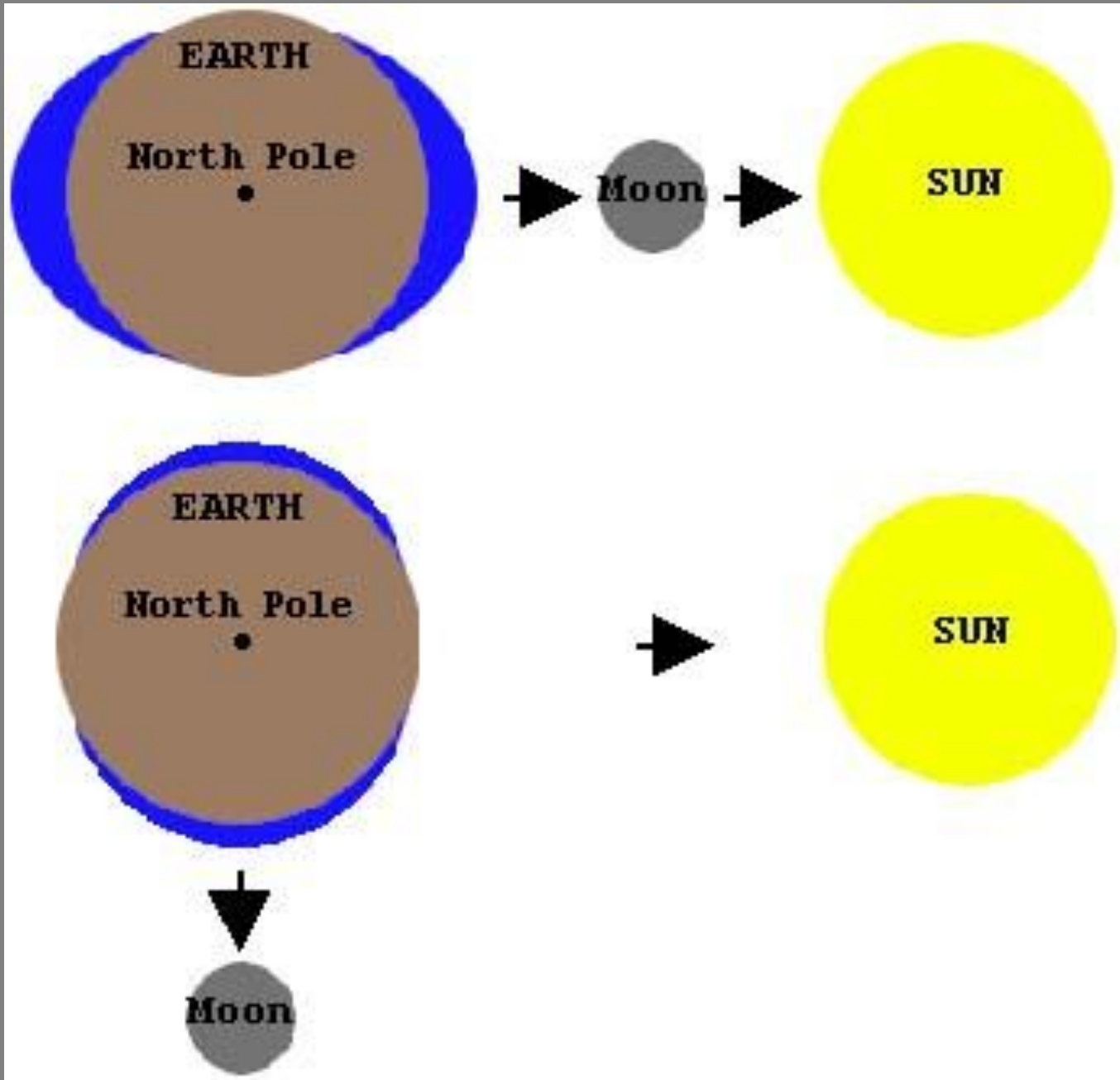


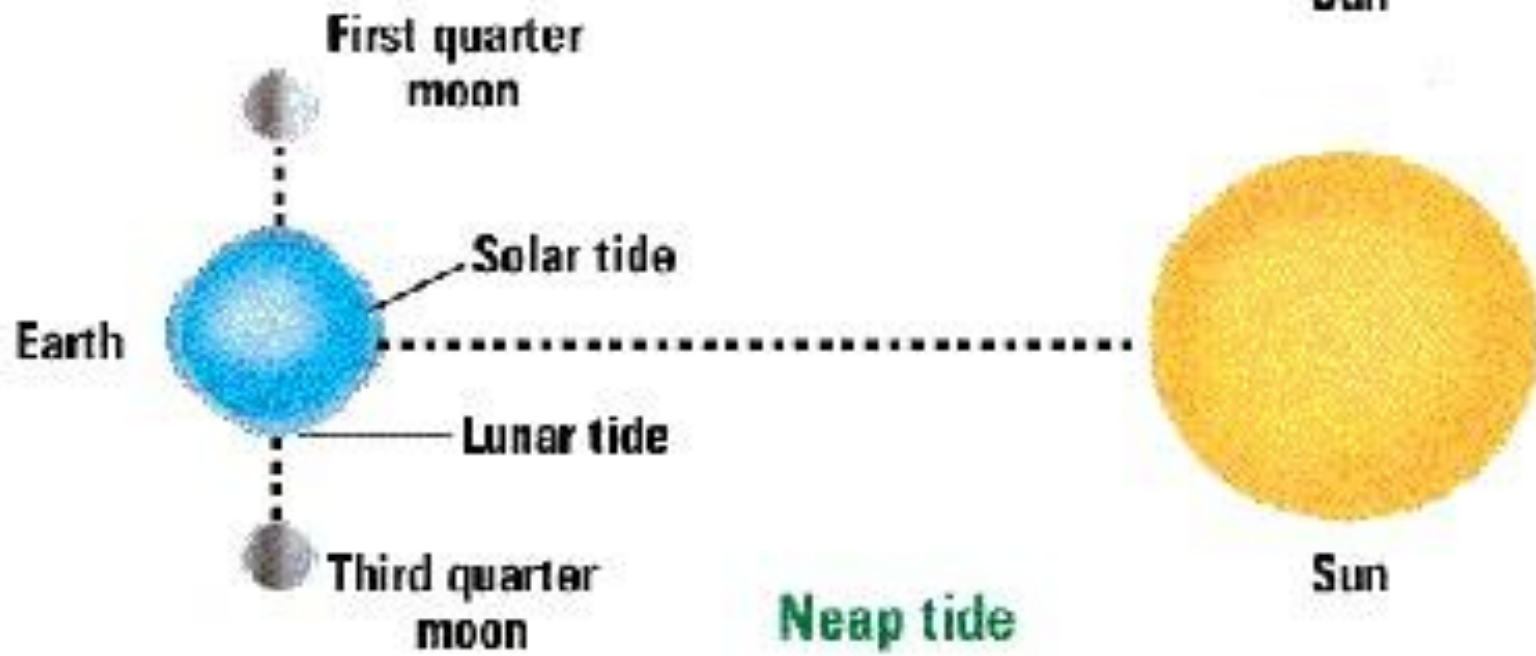
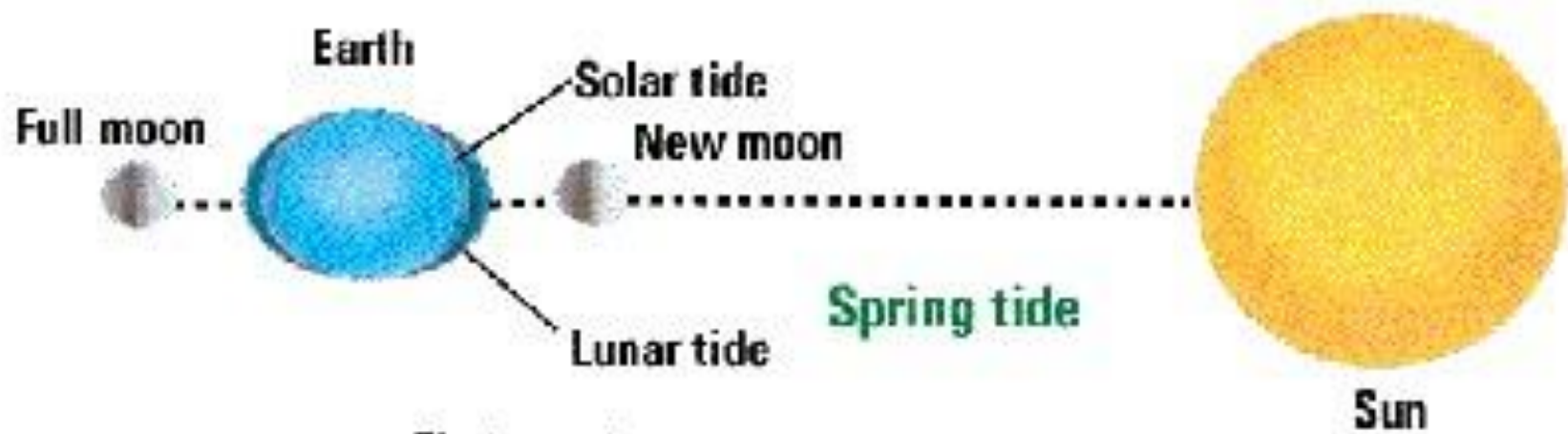
Spring Tides—occur when the Earth, sun, moon are in a straight line; greatest difference between consecutive low and high tides



Neap Tides—occur when the moon is at a right angle to the sun; least difference between consecutive low and high tides



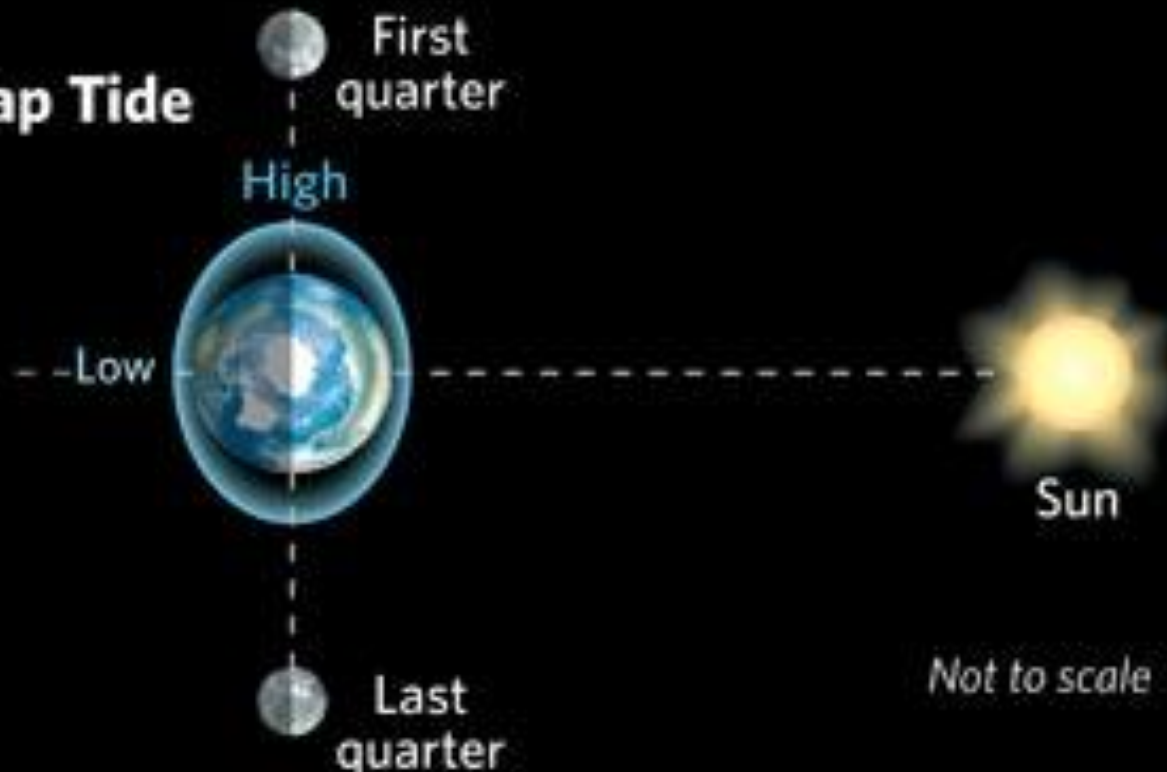




Spring Tide



Neap Tide



Not to scale

Neap Tide

