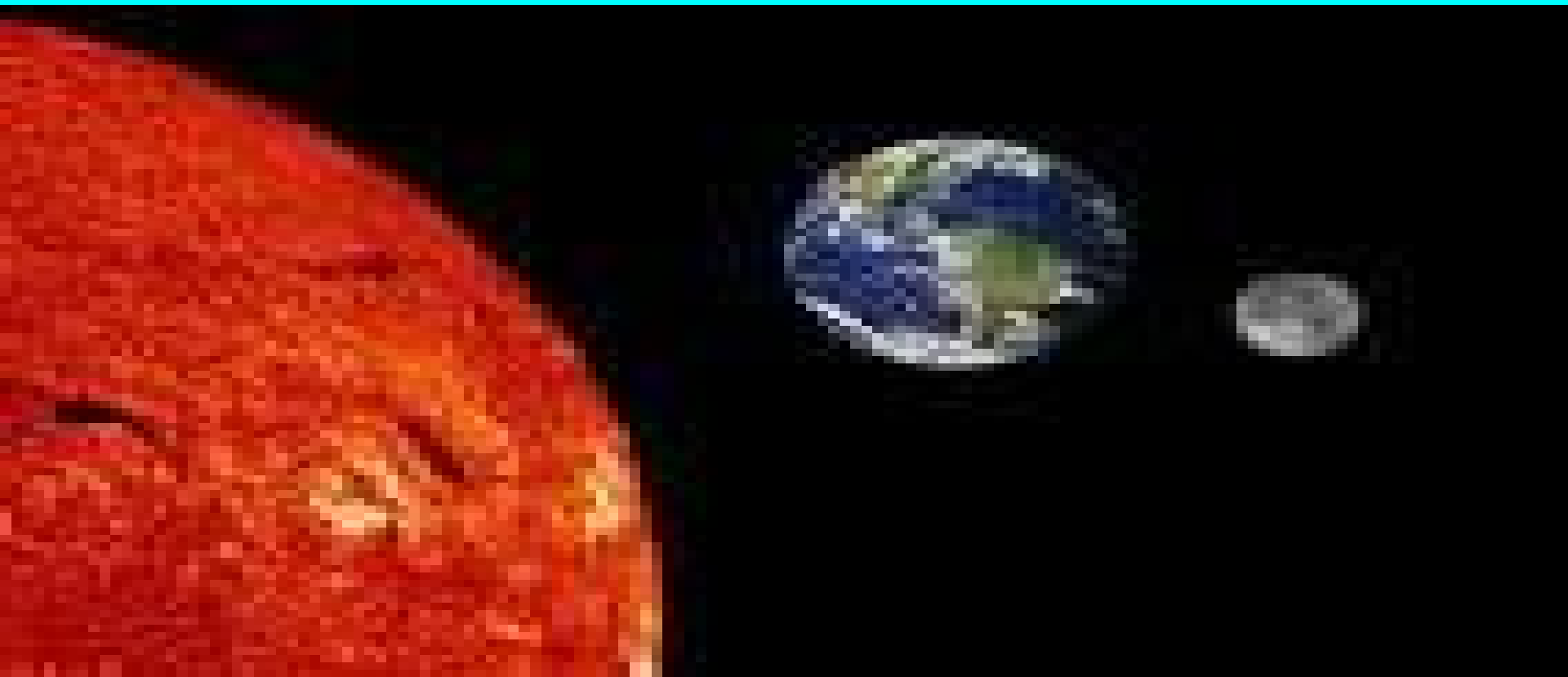


# SUN-EARTH-MOON





## Earth-Sun-Moon Relationships

### Day and Night

Earth rotates on its axis; the part  
towards the sun receives the sun's light  
and experiences "day"

The part sheltered from the sun's  
light experiences "night"

Each rotation takes approximately  
24 hours

270° Equinox



March 20

Summer solstice



June 21  
Longest Day



SUN

Winter solstice



December 21  
Shortest Day

Autumn equinox



September 22

# Earth's seasons

seasonal differences in sunlight on various places on earth are the result of Earth's orbit of the Sun

at an angle of  $23\frac{1}{2}^\circ$

from perpendicular to the plane of orbit



Axis of rotation

Plane of orbit



Earth's latitude zones  
 a result of Earth's  $23.5^\circ$  tilt

~~zones~~ zones exist at latitude  
 between  $23\frac{1}{2}$  and  $66\frac{1}{2}$  and  
 $\therefore$  experience seasons

~~zones~~ zones exist at latitudes between  
 $23\frac{1}{2}$  North and South of the equator (0)  
 and  $\therefore$  get consistent solar radiation  
 and no seasons - just warm

~~zones~~ zones exist at latitudes  
 in excess of  $66\frac{1}{2}$  they receive minimal  
 solar radiation and  $\therefore$  have no seasons - just cold



When viewed from Earth the moon appears to 'shine' with light reflected from the sun

1/2 of the moon is always dark ∴  
1/2 is always light



When viewed from the Earth the surface of the moon that appears to 'shine' varies from one (summer) to All (winter) depending on the relative positions of the Earth, moon, & sun



Spring Tides  
Higher high tides



The Moon's gravity pulls the water  
towards it

The Moon's gravitational pull  
causes the water to bulge  
towards the moon's position

The high and low tides have less  
range due to the angle of the  
Moon's pull

We usually have two types of  
High Tide.

Spring tides (the water bulges up  
at the moon) when the moon and sun  
are at opposite ends of the same side  
of the Earth and are higher

Neap tides occur when the sun  
and moon are at right angles to  
each other. MOONS



NEAP TIDES  
lower high tides



the strength of gravity and tidal forces level  
relative to land



The moon's gravitational force  
causes Earth's water to bulge  
towards the moon's position

The sun's gravitational force has less  
tidal effect because of relative  
proximity

We identify two types of  
High Tide:



SPRING TIDES (the larger spring tide  
at the moon) when the moon and sun  
are aligned on the same plane  
(new & full moon) and are higher

NEAP TIDES occur when the sun  
and moon are on opposite sides of  
planet (quarter moons)

I like the earth's seasons because it shows kind of what we live in. I also like how the moon phases shows how it shows the moon's light.

