

Tides

The bottom of the slide features a decorative graphic consisting of several overlapping, wavy lines in various shades of light blue, creating a sense of movement and depth.

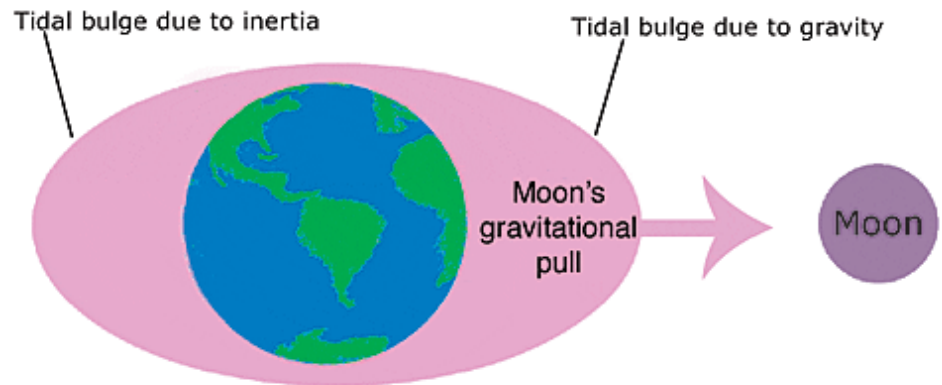
Tides

- Tides: the daily rise and fall of the ocean's water.
- Produced by the gravitational pull of the moon (some pull from the sun).
- Happens in ALL bodies of water, but noticed most in oceans.

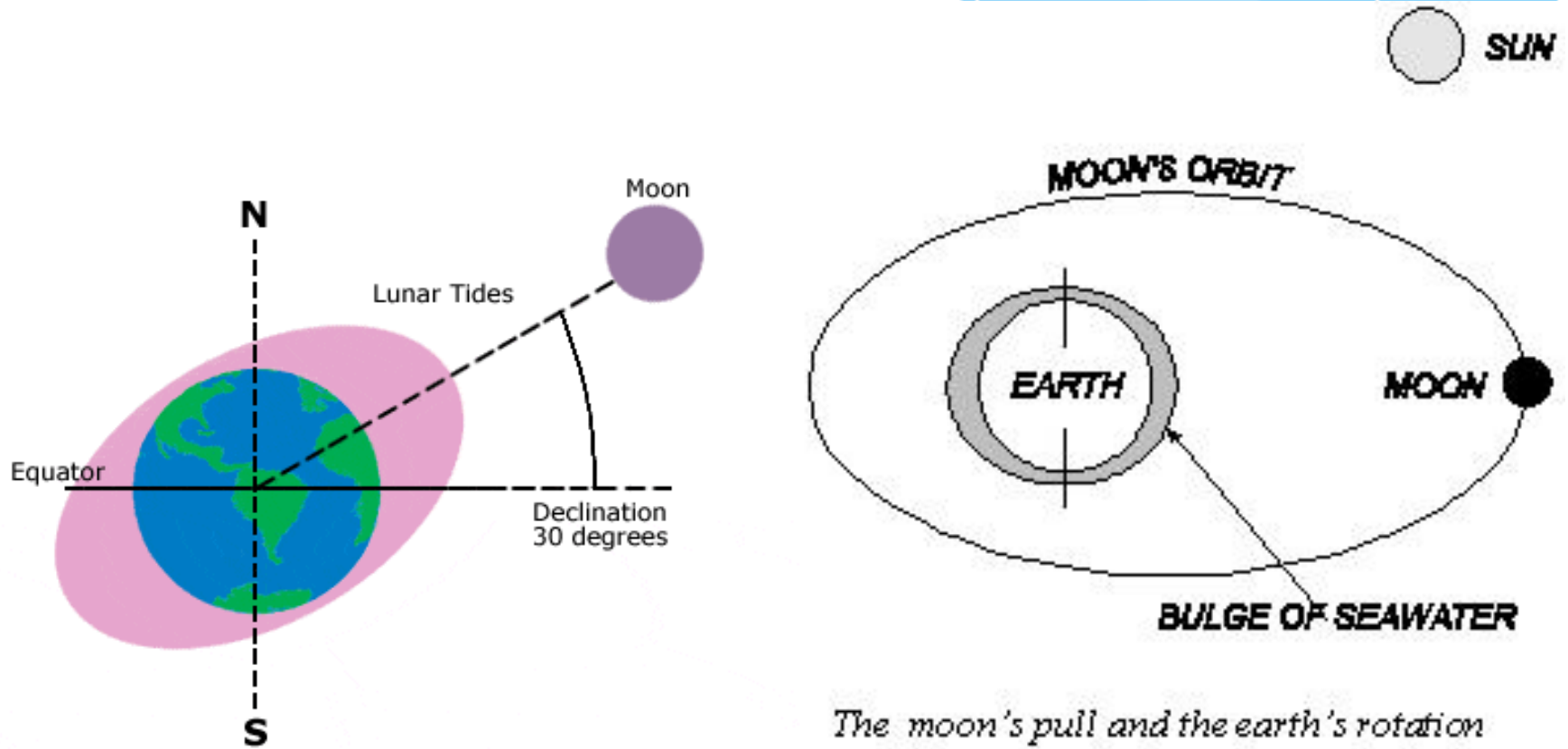


What Causes Tides?

- Tides are caused by the gravitational pull of sun & moon on Earth.
- Water on the side facing the moon is pulled toward the moon; inertia tries to pull in the opposite direction, but gravity is stronger.
- Tidal bulge results from the gravitational pull toward moon.



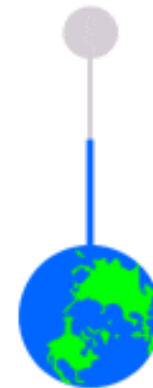
What Causes Tides?



The moon's pull and the earth's rotation create the moving bulges of seawater that we call tides. The continually varying positions of the moon, sun and earth cause the tidal range to have monthly, yearly or longer cycles.

Tides

- Tides are very long, slow waves
- Lunar day is 24 hours 50 min (solar day is 24 hours)
 - Takes this much time for the moon to complete one rotation around Earth.
- They have a wave period of 12 hours 25 min
- MA has 2 high and 2 low tides a day.

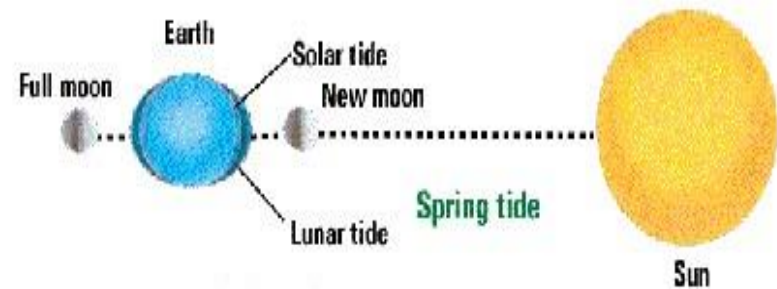


0 hrs

Tidal Variations

- Spring Tides:

- Occur during full moon and new moon – 2x per month
- Very strong tides; higher and lower than other tides.
- Happen when sun, moon and Earth are in line with each other.



Tidal Variations

• Neap Tides

- Occur during first-quarter and third-quarter moons
 - 2x per month
- Happen when sun and moon are at right angles
- Pulls cancel each other out
 - causes a weak pull
- unusually low tidal range



Types of Tides

1. Diurnal Tides

- 1 high & 1 low per day
- Parts of Gulf of Mexico and Asia

2. Semi-Diurnal Tides

- 2 high & 2 low per day
- Atlantic coasts of North America and Europe

3. Mixed

- 2 high & 2 low per day (height varies)
- Pacific coast

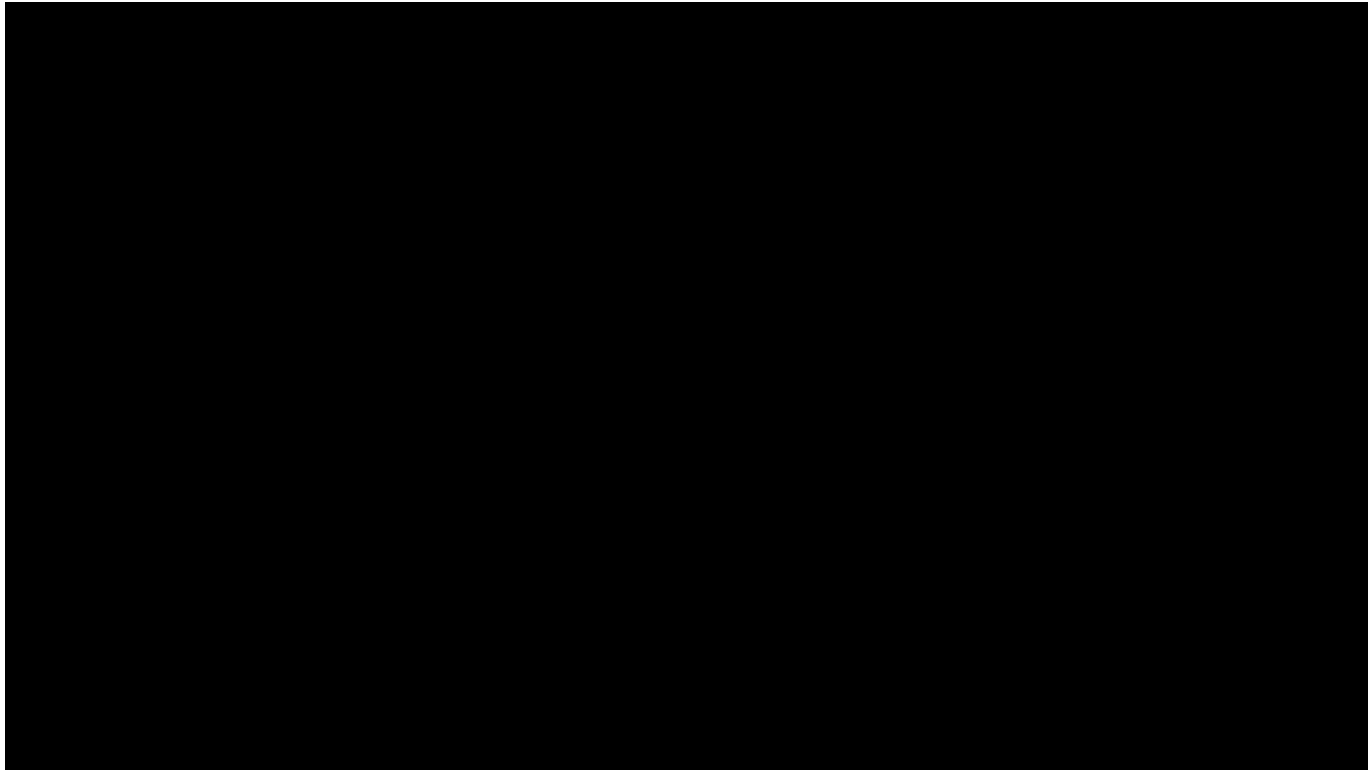
Tides

- High tide = rising, incoming tide, flow
- Low tide = receding, outgoing tide, ebb
- Tidal Range – difference between high and low tide.



Tides

- Tidal Current = a horizontal movement of water that happens with the rise and fall of the tide.
- Flood Current = the incoming tide along the coast and into bays and estuaries.



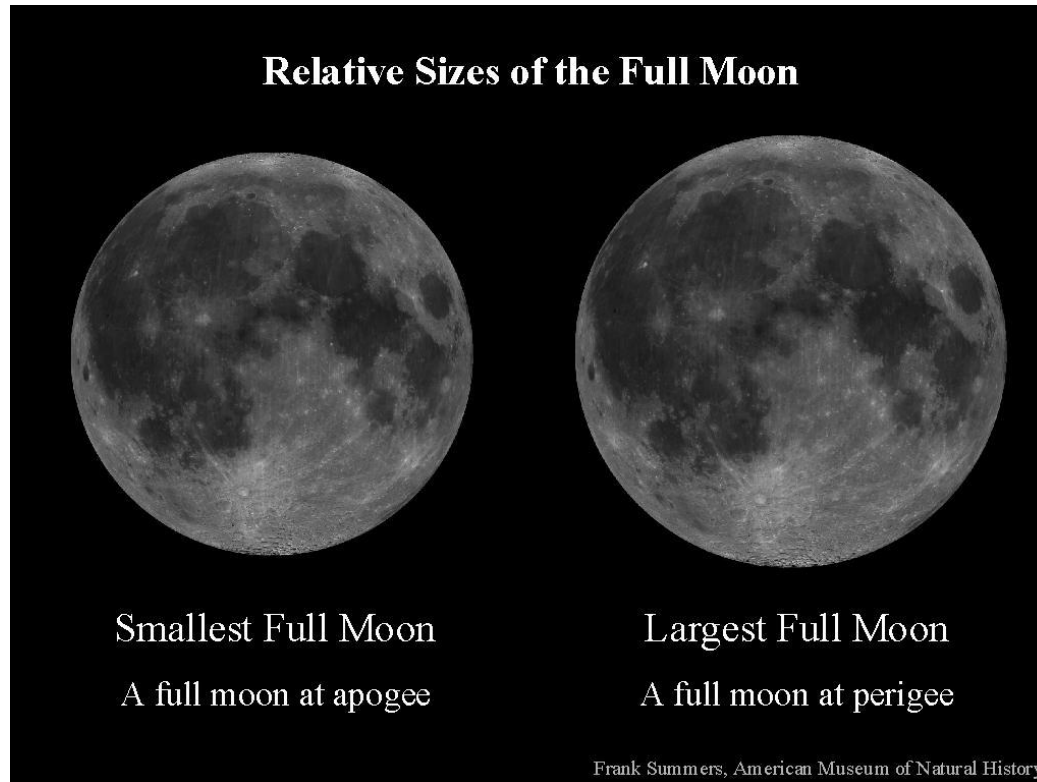
Tidal Variations

- Perigee Tides

- Moon closest to earth, very high tides (causes flooding)

- Apogee Tides

- Moon farthest away from earth, very low tides



Importance of Tides

- Expose & submerge organisms
- Circulate water in bays & estuaries; circulate food, wastes
- Trigger spawning (ex. Grunion runs, horseshoe crabs)

