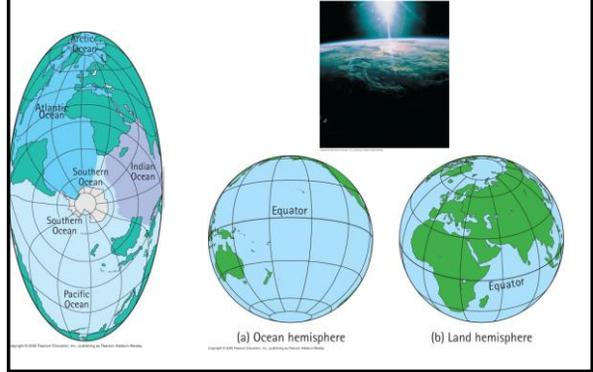


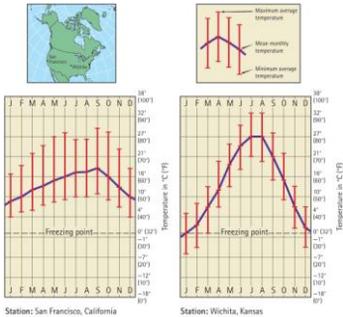
Oceans

GS 106

Welcome to the Blue Planet



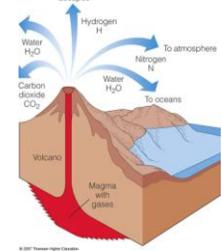
Atmosphere and oceans



Work with your neighbor and come up with an explanation for why Wichita's temperature ranges are greater than SF

Atmosphere formation

Early atmosphere CO₂ and H₂O vapor

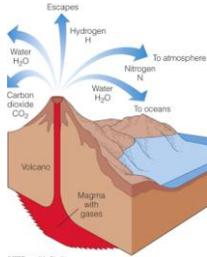


O₂ introduced through photosynthesis



Present-day stromatolites, Western Australia

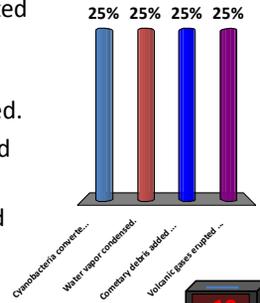
Ocean formation



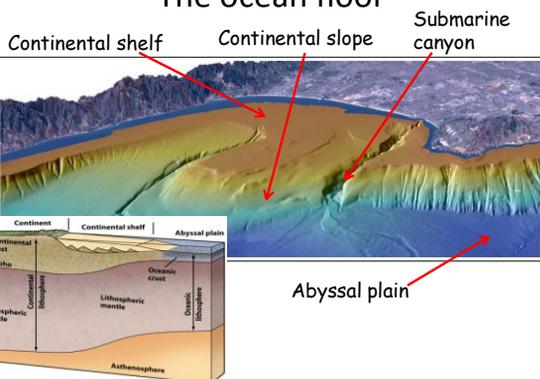
Some of the oldest marine sedimentary rocks from Greenland, 3.8 byr old

Which of the following occurred **first** in the development of Earth's atmosphere?

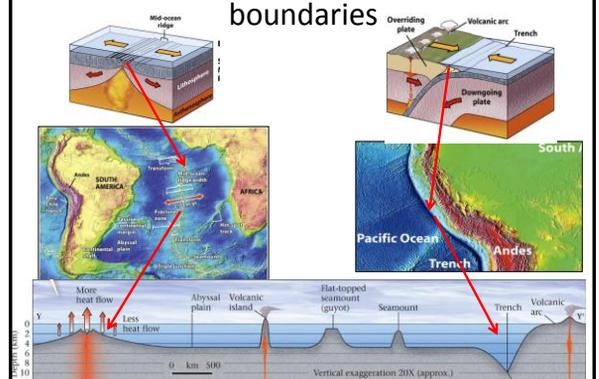
1. Cyanobacteria converted carbon dioxide to oxygen.
2. Water vapor condensed.
3. Cometary debris added water to Earth.
4. Volcanic gases erupted from Earth's interior.



The ocean floor

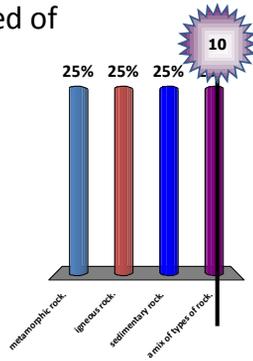


Seafloor features reveal plate boundaries



The midocean ridge system is composed of

1. metamorphic rock.
- ✓ 2. igneous rock.
3. sedimentary rock.
4. a mix of types of rock.

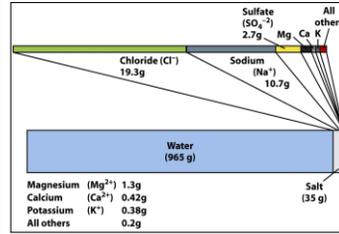


Seawater composition

Salinity is the concentration of salt in water.

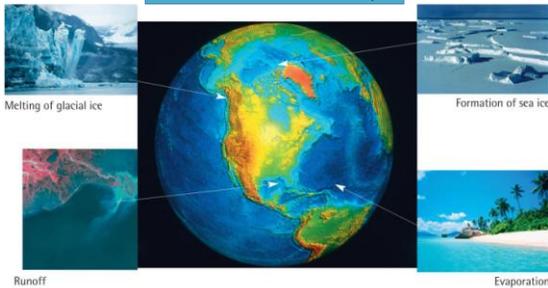
Salinity averages 3.5% in the oceans

Working with your neighbor, discuss how the oceans get salty....

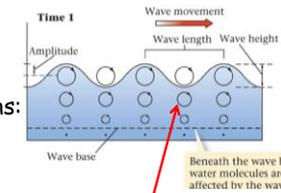


Increasing/decreasing salinity

Work with your neighbor to determine which processes will increase and decrease salinity



Waves



Important definitions:

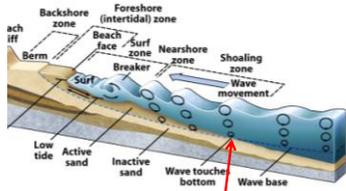
- Crest
- Trough
- Wavelength
- Wave base

Note how water moves in a circle

Waves in the surf zone



(a)

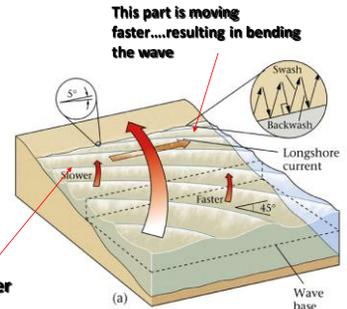


As waves approach the shore wave base hits bottom

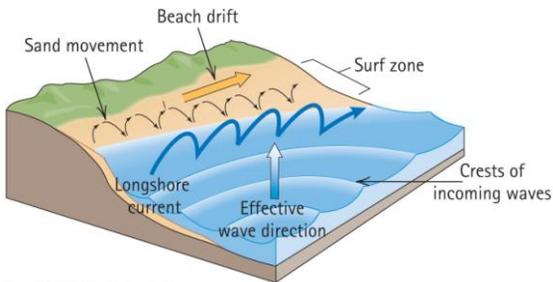
Wave refraction: waves bend as they approach the shore



This part is moving slower



Longshore current transports sediment along a coast

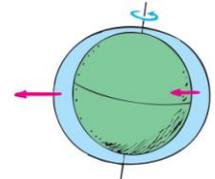


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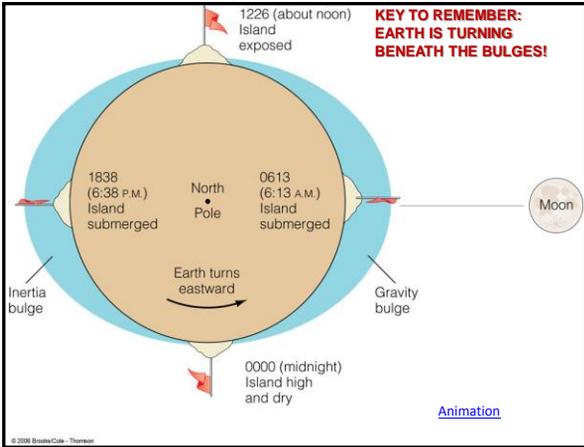
Tides

But first, a word about gravitational force.

- 1) Anything with mass exerts a gravitational force on anything else with mass.
- 2) Gravitational force weakens with distance.



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Spring tides

Work with your neighbor to determine what moon phase occurs during spring tides.

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The slide features a blue text box with the instruction 'Work with your neighbor to determine what moon phase occurs during spring tides.' Below this, a diagram shows the Sun, Earth, and Moon in a straight line, with Earth in the center. To the right is a simple yellow sun icon with rays.

Neap tides

Work with your neighbor to determine what moon phase occurs during neap tides.

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The slide features a blue text box with the instruction 'Work with your neighbor to determine what moon phase occurs during neap tides.' Below this, a diagram shows the Sun, Earth, and Moon in a right-angled configuration. To the right is a simple yellow sun icon with rays.

Other factors influence the height of tides

The Bay of Fundy has one of the world's largest tidal ranges of over 50 feet!

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The slide contains two side-by-side photographs of the Bay of Fundy. The left photo shows a boat in a dry dock at low tide, with the water level very low. The right photo shows the same boat in the water at high tide, with the water level significantly higher.

What causes tides?



1. The gravitational pull of the Sun versus that of the Moon.
2. The differences in the gravitational pull of the Moon on opposite sides of Earth.
3. Centrifugal force.
4. All of the choices.

