Analyzing our Topic

- Look at the opening slide. Does anything there (words, pictures) make you want to change your thoughts from the smarties and chalk activities?
  - *IF SO, MAKE THE CHANGES AND BE READY TO REPORT OUT!*

Weathering, Erosion , & Deposition

The Wearing Down and Building Up of Earth

SMARTIES

OBSERVATIONS: WHAT happened?	THOUGHTS: WHY did it happen?

CHALK

OBSERVATIONS: WHAT happened?	THOUGHTS: WHY did it happen?

Weathering

- The process that breaks down rock and other substances at the Earth's surface
- Caused by: heat, cold, water, ice, oxygen, and carbon dioxide on the Earth's surface!

Add to your notes!

DESCRIPTION:

- The process that breaks down rock and other substances at the Earth's surface

WEATHERING

Add to your notes!

Two kinds of weathering

Both types of weathering act slowly, but over time they break down even the biggest, hardest rocks.

- Physical, or mechanical, weathering
- Chemical weathering

Mechanical Weathering

- A rock is physically broken into smaller pieces
  - Affects all the rock on the Earth's surface
  - Works very slowly, yet over time can eventually wear away a whole mountain

Add to your notes!

MECHANICAL

A rock is physically broken into smaller pieces!

Mechanical Weathering

Refer to pages 240-241 to complete the information on your web for the following causes of mechanical weathering!

- Freezing and thawing
- Release of pressure
- Plant growth
- Actions of animals
- Abrasion

Mechanical Weathering

- Freezing and thawing

When water freezes, it expands. When water freezes in cracks, it expands the crack making the rock break more!

- Release of pressure

When materials are removed from the surface of the crust (like during a wind storm), the rock beneath it can expand and break!

- Plant growth

When plants grow, their roots seek out nutrients in the soil. As roots grow, they sometimes go through rocks and sidewalks breaking them!

- Actions of animals

Any animal that burrows (owls, moles, groundhogs, even worms) dig through the rock and break it!

- Abrasion

When pieces of rock are moved by wind or water, they crash into each other and other objects breaking pieces off as they go!

Talk With Your Group!

Which form of mechanical weathering did we demonstrate through our opening activities?

How do you know?

Chemical Weathering

- The composition, or make up, of a rock is changed
  - New minerals can be formed in a rock as it is broken down
  - Holes or soft spots can be created in a rock so it breaks apart easier

Add to your notes!

CHEMICAL

The composition, or make up, of a rock is changed

Chemical Weathering

Refer to page 243 to complete the information on your web for the following causes of chemical weathering!

- Water
- Oxygen
- Carbon dioxide
- Living organisms
- Acid Rain

Chemical Weathering

- Water

Weathers rock by dissolving it. It is the most important cause of Chemical Weathering

- Oxygen

The oxygen gas in air is an important cause of chemical weathering it causes oxidation, or rusting.

- Carbon dioxide

Dissolves in rain water, goes into the soil and creates carbonic acid that weathers the rock.

- Living organisms

As plants grow, they produce weak acids that change the rock.

- Acid Rain

Polluted air causes acid rain that rapidly weathers the rock.

Talk With Your Group!

Which form of chemical weathering did we demonstrate through our opening activities?

How do you know?

With your table, create a Venn Diagram to compare & contrast the two types of weathering.

Rate your learning….

- Where are you on the generic learning scale (0-4) with:
  - Understanding mechanical weathering?
  - Understanding chemical weathering?
  - The difference between the two types of weathering?

END - Weathering

Analyzing our Topic

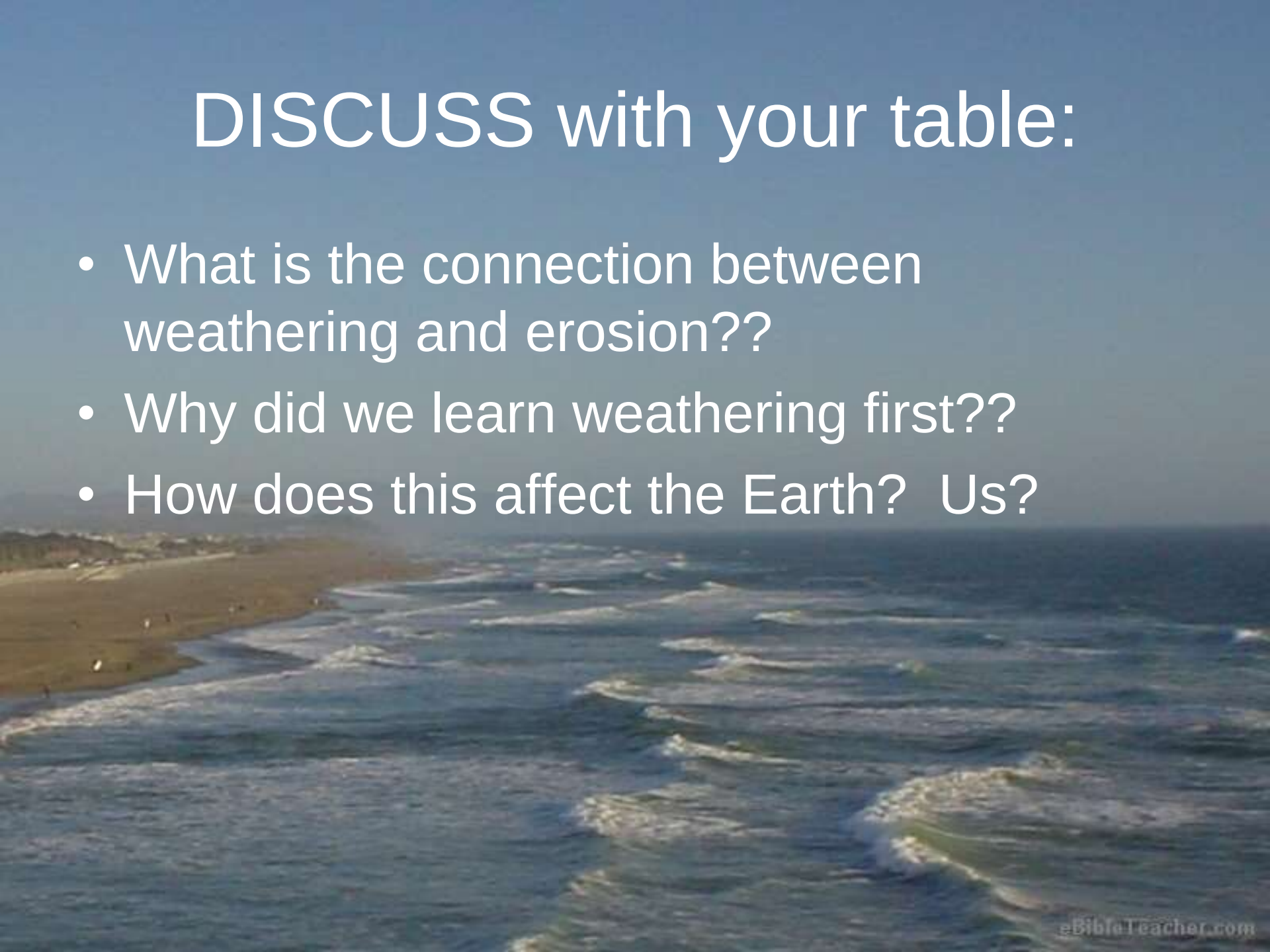
- Think about your opening activity….
  - *What does it tell you about erosion?*
  - *How is it different from the opening activities from weathering?*

Erosion

- Erosion is the removal of rock particles from a location.
- Caused by water, wind, ice, or gravity.

DISCUSS with your table:

- What is the connection between weathering and erosion??
- Why did we learn weathering first??
- How does this affect the Earth? Us?



Add to your notes!

DESCRIPTION:

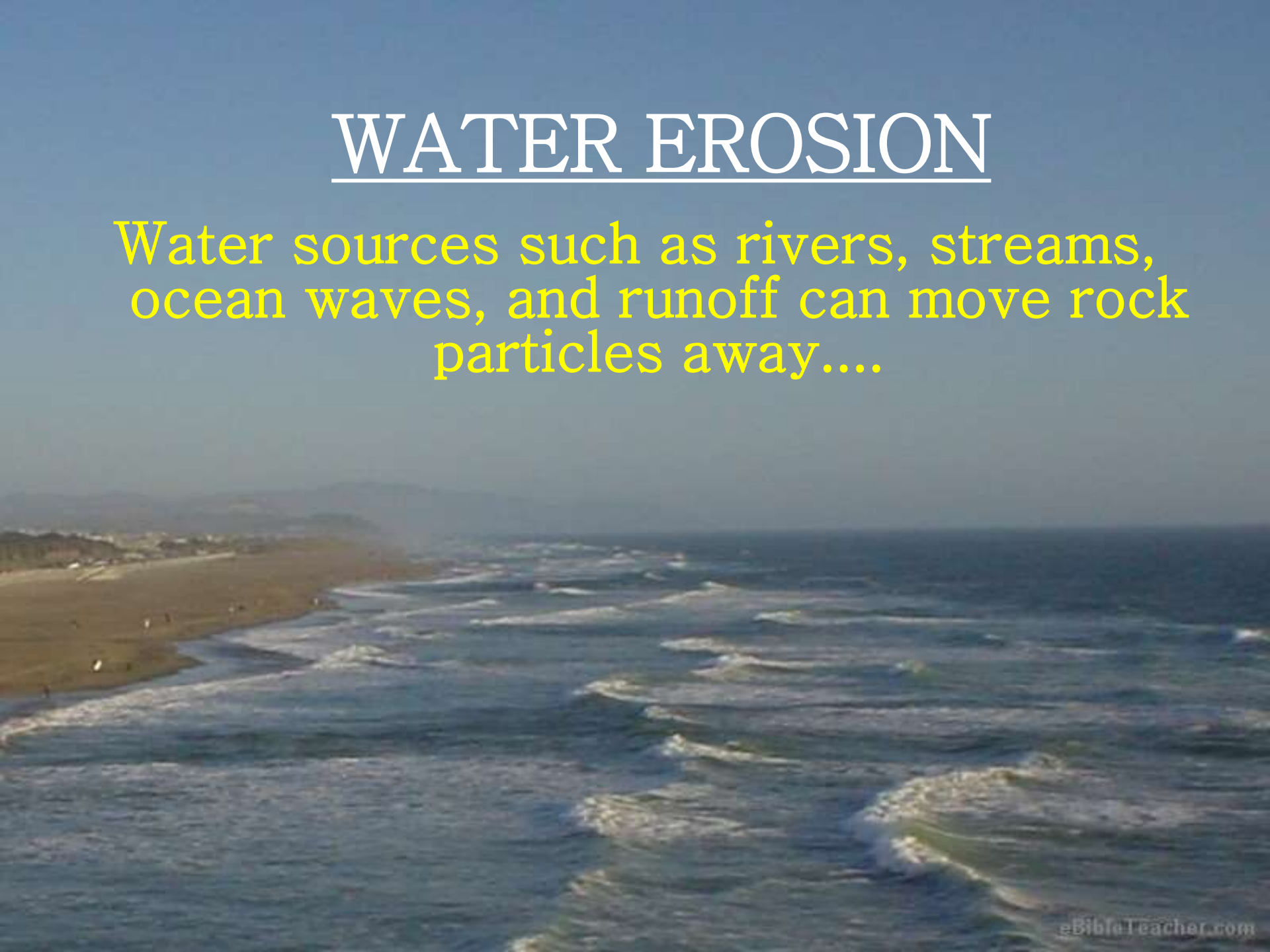
•The movement of rock particles from a specific location

EROSION:

Add to your notes!

WATER EROSION

Water sources such as rivers, streams, ocean waves, and runoff can move rock particles away....

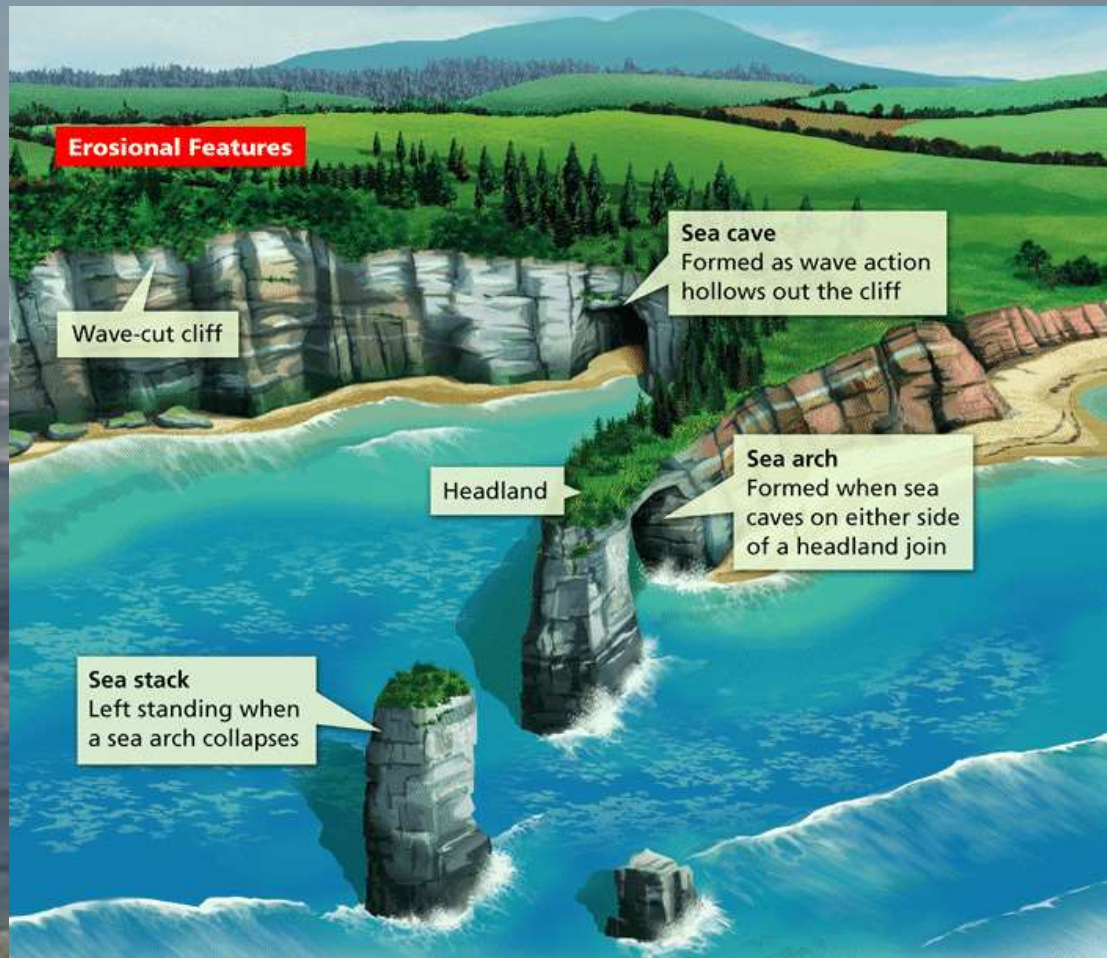


Water Erosion-Rivers

- Rivers and streams carry sediment. As the sediment moves mechanical weathering occurs.
- Through water erosion, rivers create waterfalls, flood plains, and valleys.

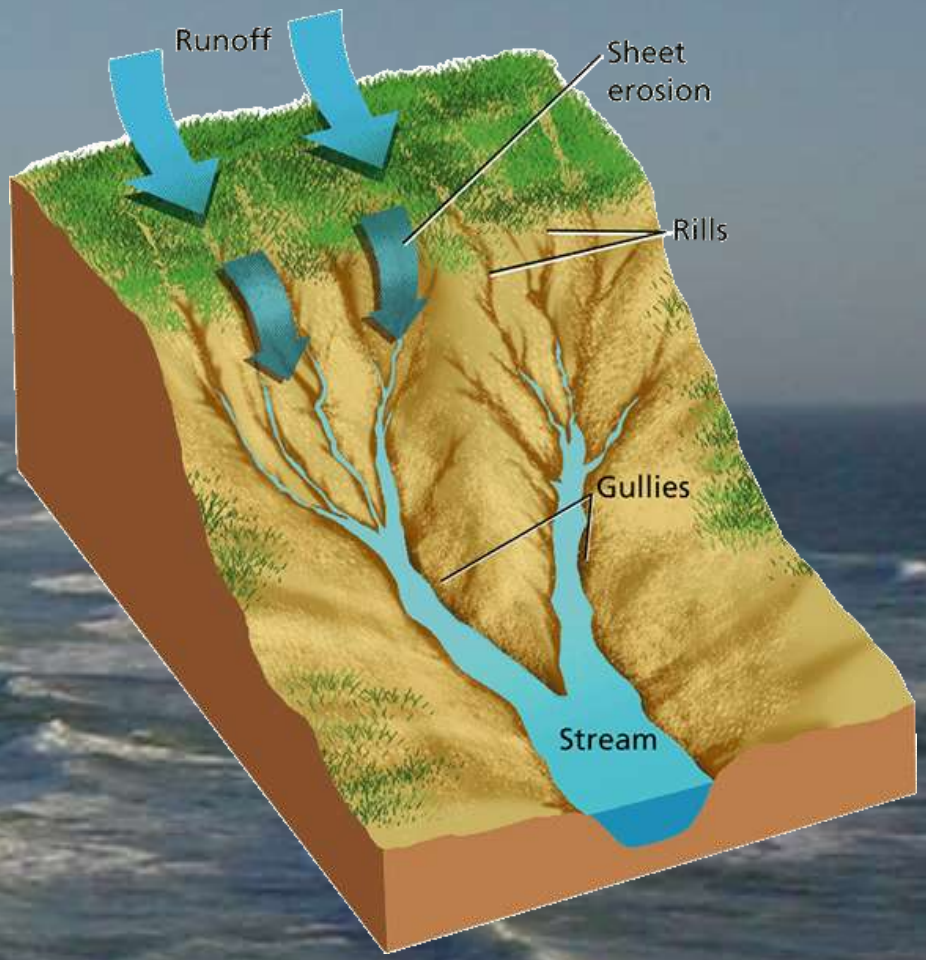
Water Erosion-Waves

- Waves- waves shape the coasts by transporting sand. While the sand is moved, mechanical weathering occurs.
- Waves create sea stacks, caves, arch, and wave-cut cliffs.



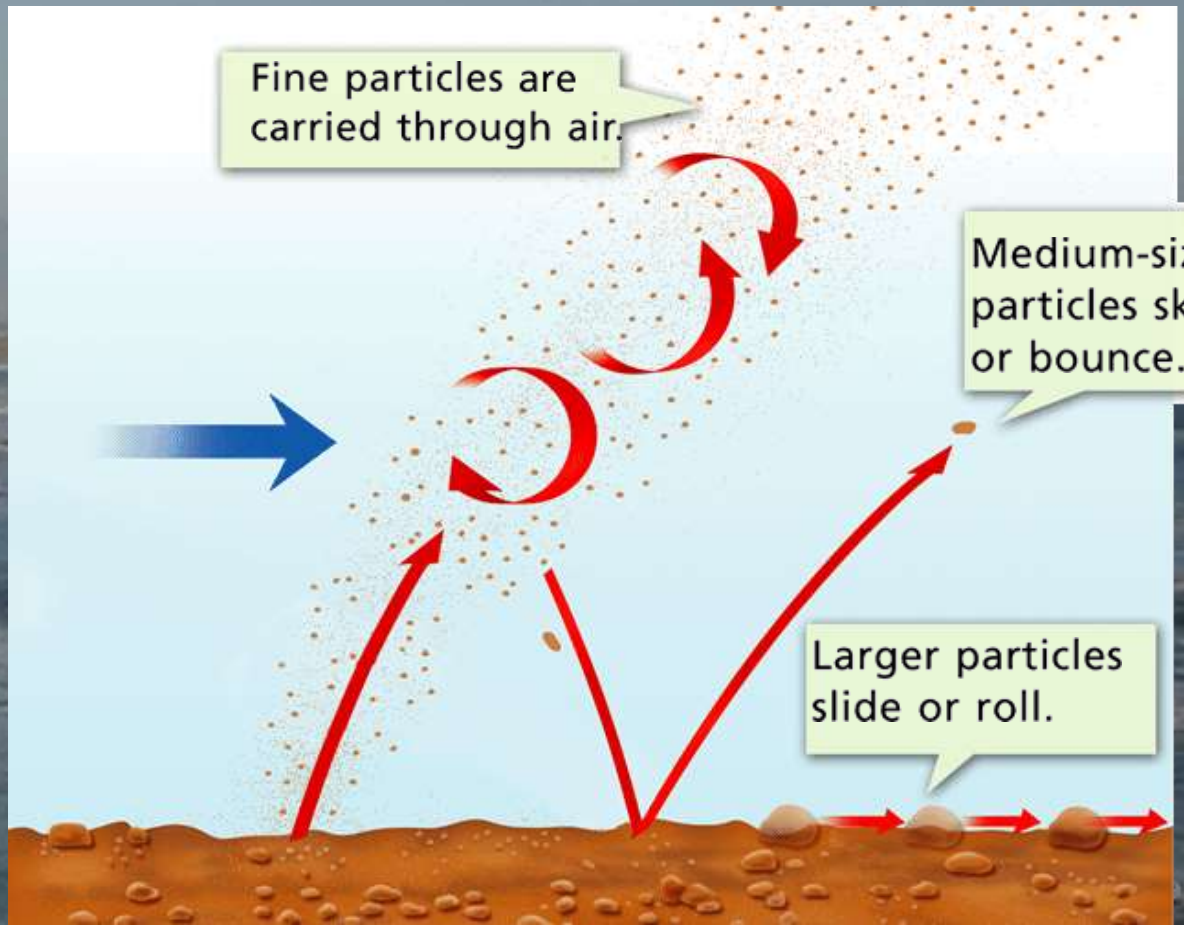
Erosion by Runoff

- As water from precipitation (rain, snow, etc.) moves over the land, it carries particles with it. The moving water is called runoff.
- Runoff creates rills and gullies.



WIND EROSION

Sometimes the wind can move rock particles away: this can lead to dust storms!

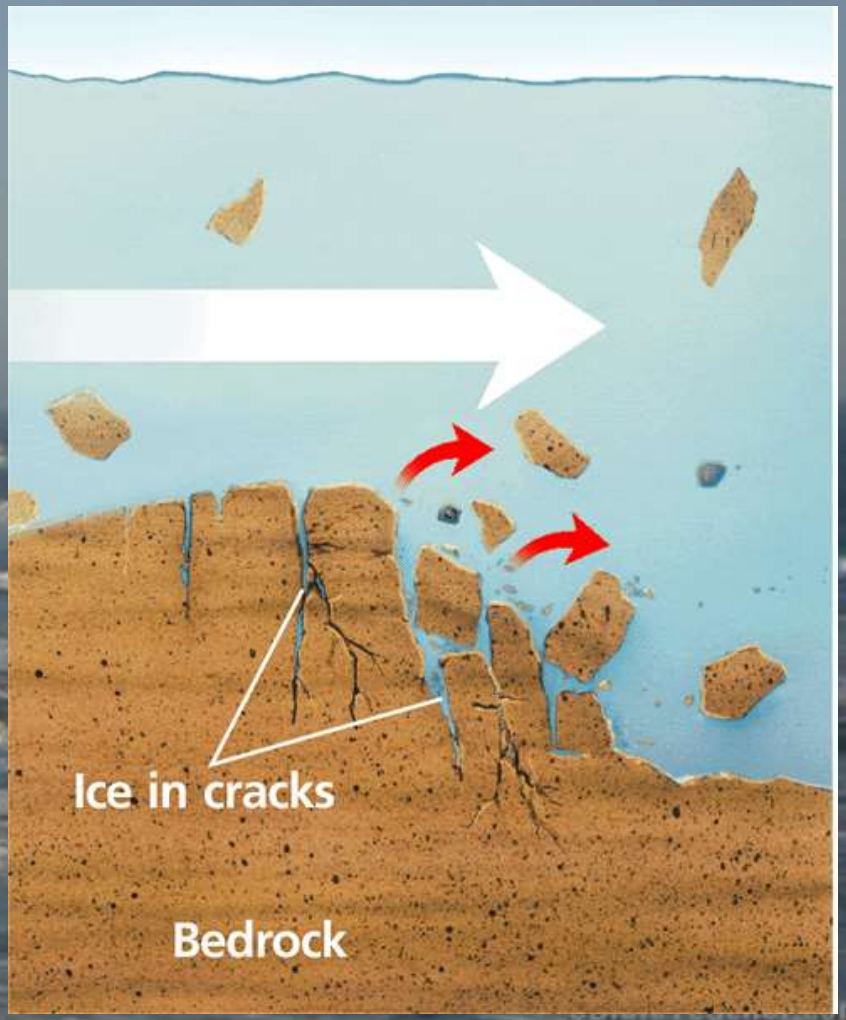


WIND EROSION

- Wind Erosion creates dust storms, hoodoos, and arches.

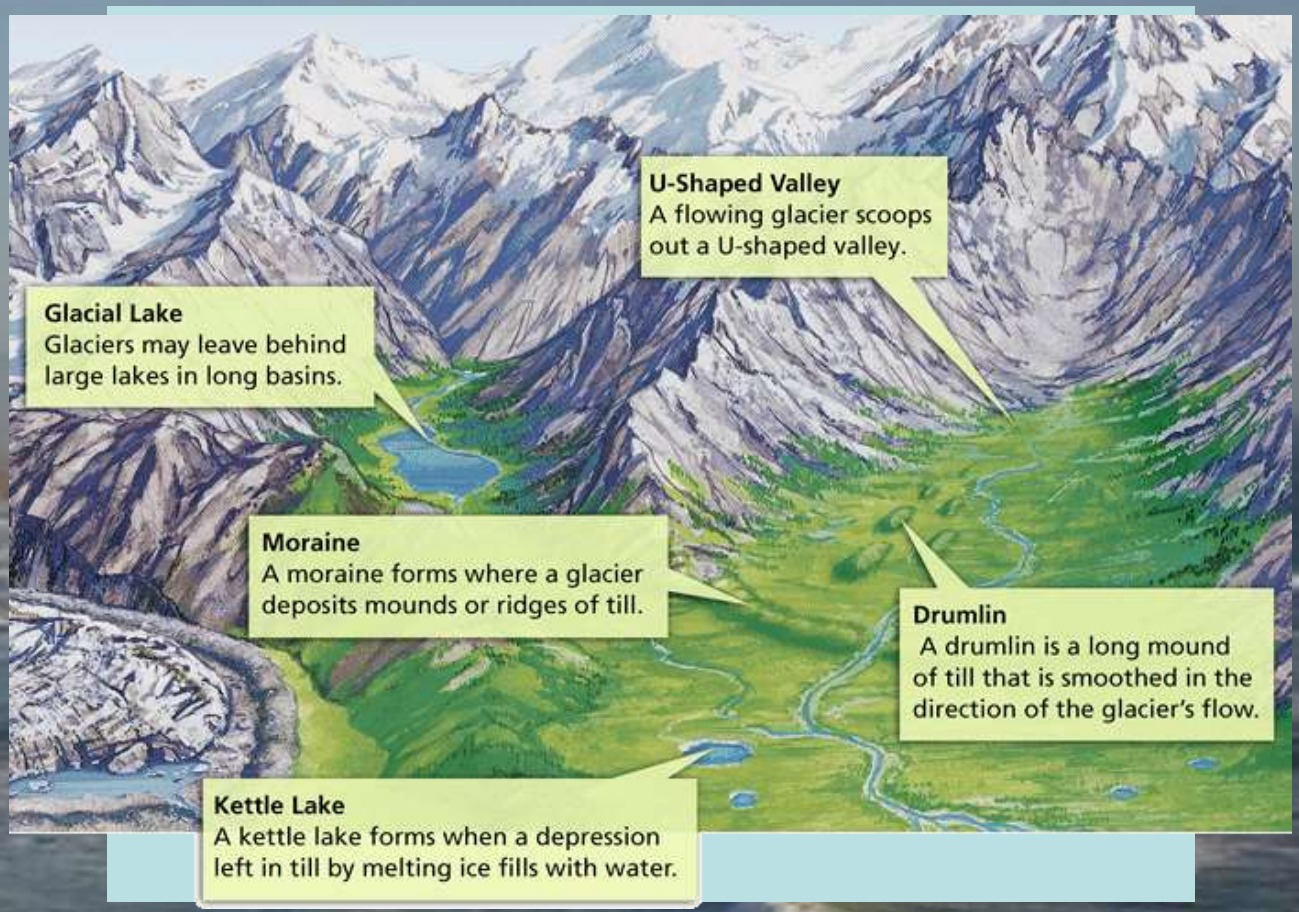
Ice Erosion

As a glacier flows over the land, it picks up rocks in a process called plucking.



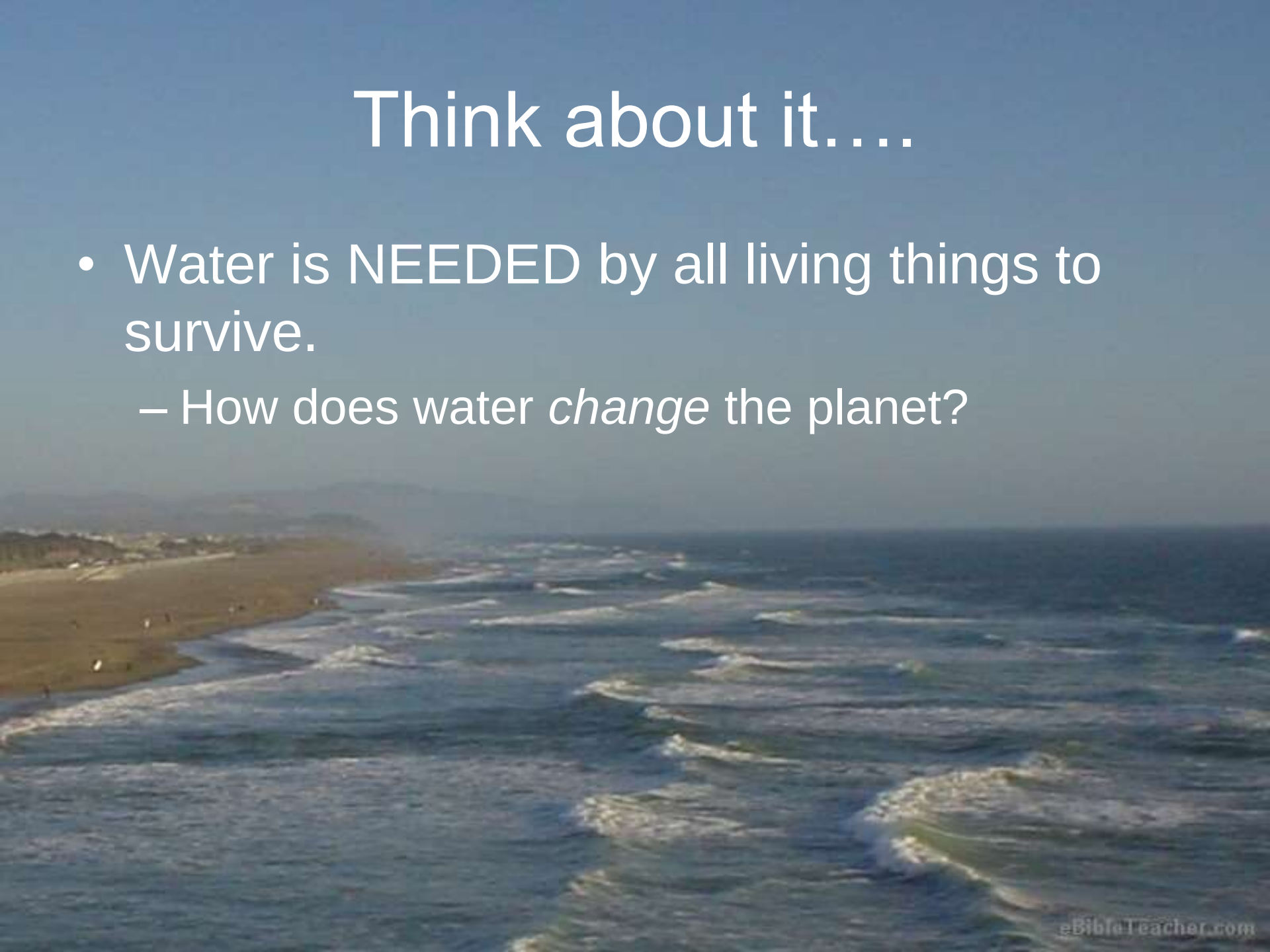
Ice Erosion

Ice erosion creates: U-shaped valleys, glacial lakes, moraines, drumlins, and kettle lakes.



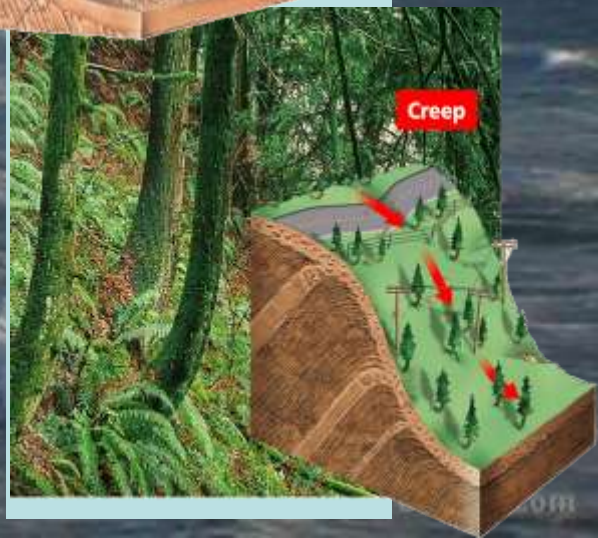
Think about it….

- Water is NEEDED by all living things to survive.
  - How does water *change* the planet?



Erosion by Gravity

- Gravity causes sediment to move downhill.
- It creates: landslides, mudflows, and creeps.



Analyze your learning…

Compare the relationship between weathering and erosion to the relationship between convergent and divergent boundaries.

Rate your learning….

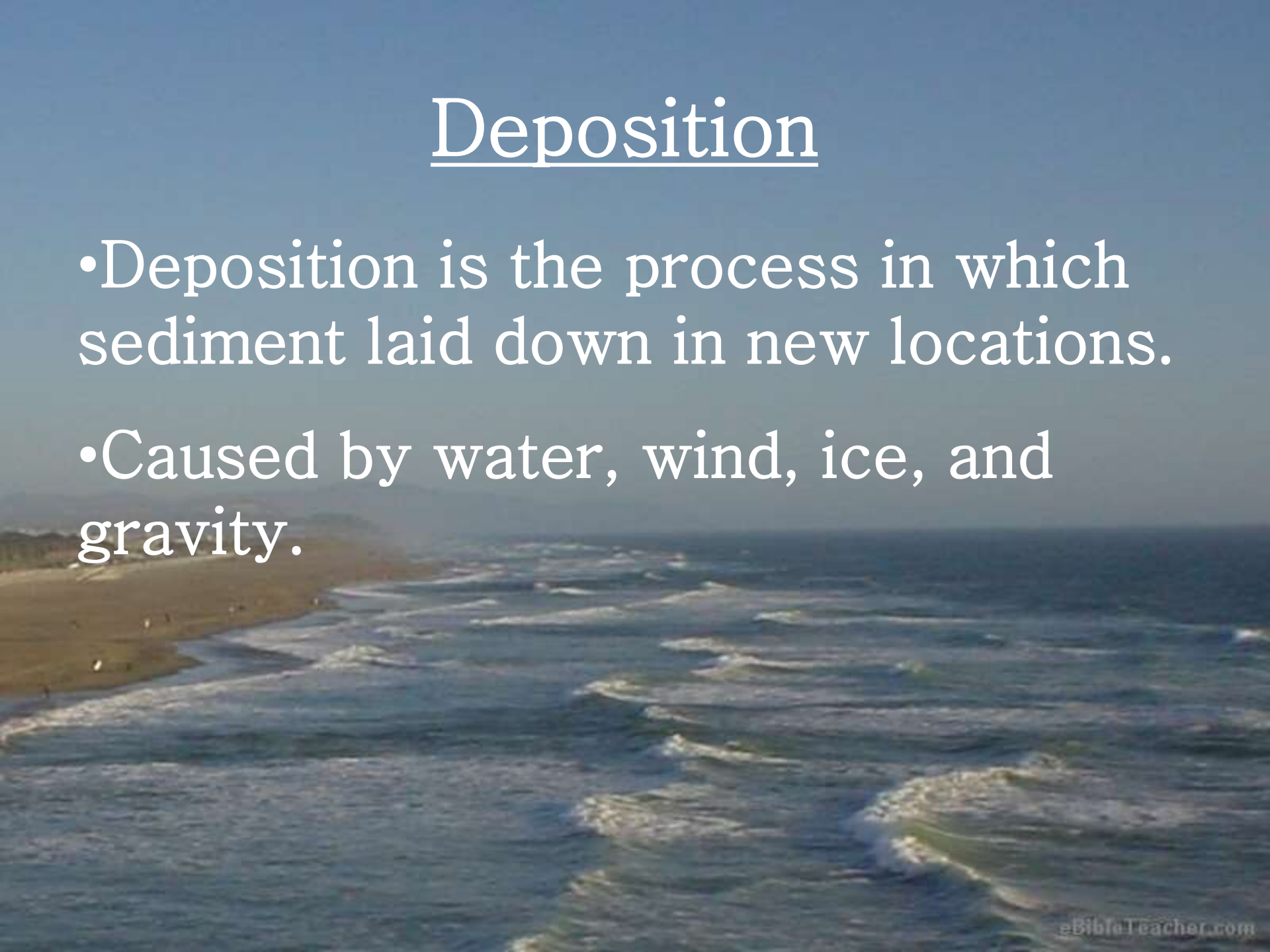
- Where are you on the generic learning scale (0-4) with:
  - Understanding erosion?
  - The difference between weathering and erosion?
  - Understanding how weathering and erosion work together?

Weathering and Erosion work together continuously to wear down and carry away the rocks at the Earth's surface!!!!!

END - Erosion

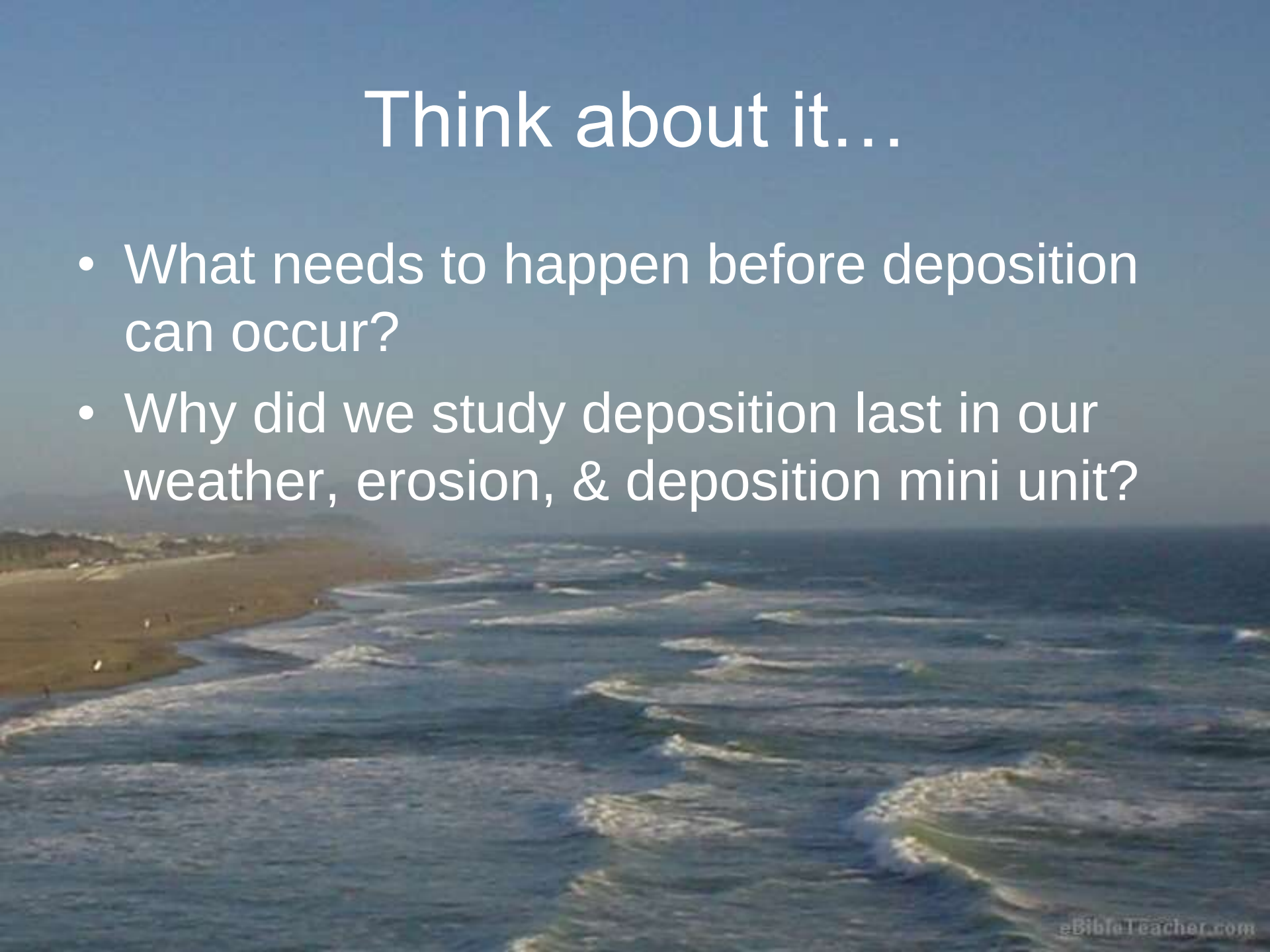
Deposition

- Deposition is the process in which sediment laid down in new locations.
- Caused by water, wind, ice, and gravity.



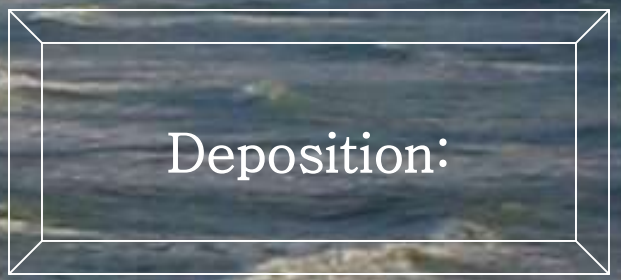
Think about it…

- What needs to happen before deposition can occur?
- Why did we study deposition last in our weather, erosion, & deposition mini unit?



Add to your notes!

Deposition:
Deposition is the process in which sediment is put down in new locations.



Add to your notes!

Deposition

Type of Deposition	Creates	Picture
Wind	Sand Dune	
Water *Waves *River	*Beaches *Delta	 
Ice	Moraine	
Gravity	Landslide, Slump, Creep	

Rate your learning….

- Where are you on the generic learning scale (0-4) with:
  - Understanding deposition?
  - The connection between weathering, erosion, and deposition?
  - Understanding why deposition was studied AFTER weathering and erosion?