Chapter 3 Lesson 1: The Erosion-Deposition Process

Vocabulary

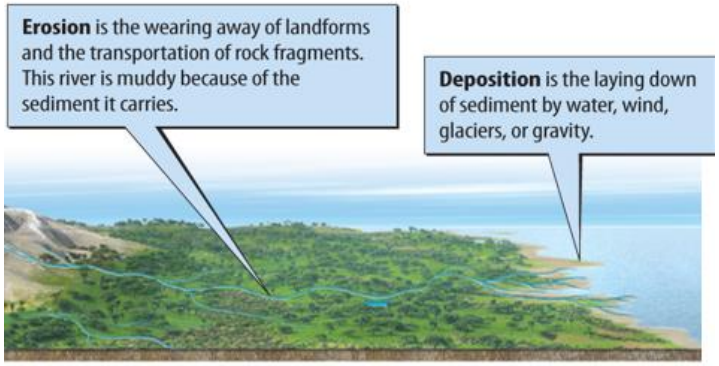
Erosion	Deposition

Reshaping Earth's Surface

- A combination of constructive processes and destructive processes produce landforms.
- Constructive processes build up features on Earth's surface.
- Destructive processes tear down features on Earth's surface.
    - The breakdown of rock – weathering – is one type of destructive process.
        - Weathering is the breakdown of rock.

A Continual Process of Change

- chemical weathering – changes mineral composition of rock.
- physical weathering – breaks rock to smaller pieces- called sediment, without changing chemical composition.
- Water, wind, and ice are agents, or causes, of weathering.
- The mineral composition of some rocks makes them less resistant than others are to weathering.
- The difference in the rate of weathering can produce unusual landforms



Erosion

- **Erosion** is the removal of weathered material from one location to another.
- Agents of erosion include water, wind, glaciers, and gravity.
- Factors that affect the rate of erosion include weather, climate, shape of the land, and type of rock.
- The presence of plants and the way humans use the land affect the rate of erosion.
- The rate of erosion sometimes depends on the rock cycle.
- Weathering rocks breaks some types of rock into larger pieces. Other rock types easily break into smaller pieces that are more easily transported.
- As rock fragments bump against each other during erosion, the shapes of the fragments can change.
- Erosion also affects the level of sorting – separating of items into groups according to one or more of its properties – of sediment.
- Sediment is often well-sorted when it has been moved by a lot of wind or waves.
- Poorly sorted sediment often results from rapid transportation, perhaps by a storm, a flash flood, or a volcanic eruption.

Deposition

- **Deposition** is the laying down or settling of eroded material.
- As water or wind slows down, it has less energy and can hold less sediment, which can result in some of the sediment being deposited.
- Sediment is deposited in locations called depositional environments, such as swamps, deltas, beaches, and the ocean floor.
- High-energy environments, like rushing rivers and ocean shores with large waves, are those where sediment is transported and deposited quickly.
- Small grains of sediment are often deposited in low-energy environments, like deep lakes, areas of slow-moving air, and swamps.
- Sediment deposited in water typically forms layers called beds.

Interpreting Landforms

- Landforms can have features that are clearly produced by erosion.
- Different rates of erosion can create unusual landforms like tall, protruding landforms called hoodoos.
- Glacial erosion can produce ice-carved features in mountains.
- Landforms created by deposition are often flat and low-lying.
- An apron of sediment, called an alluvial fan, often forms where a stream flows from a steep, narrow canyon onto a flat plain at the foot of a mountain.
- Deposition along a riverbed occurs where the speed of the water slows down and can result in a sandbar.

Chapter 3 Lesson 2: Landforms Shaped by Water and Wind

Vocabulary

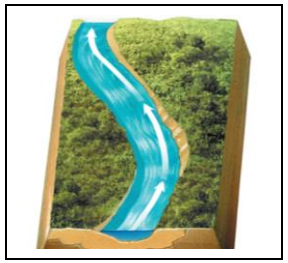
-Meander	-Delta	-Dune
-Longshore current	-Abrasion	-Loess

Shaping the Land with Water and Wind

- Water and wind are two important agents of weathering, erosion, and deposition.
- Erosion by water and wind can change the shape of landforms.

Water Erosion and Deposition

- Streams are active systems that erode land and transport sediment.
- The erosion produced by a stream depends on the stream's energy. This energy is usually greatest in steep, mountainous areas where young streams flow rapidly downhill.
- Water from a young stream slows down at it reaches gentler slopes and is then called a mature stream.
- A **meander** is a broad, C-shaped curve in a stream.
- A stream moves slowly when it reaches flat land and is then called an old stream.



- As time passes, erosion of the outside bend of a meander, where water flowing more quickly, occurs. Deposition occurs on the inside bend, where water flows more slowly.
- Over time, meanders change shape due to erosion and deposition.
- Waves crashing into shore erode loose sand, gravel, and rock along coastlines.
- A **longshore current** is a current that flows parallel to the shoreline.
- This current moves sediment and continually changes the size and shape of beaches.
- Water erosion can also form caves, stacks, and arches.
- Flowing water deposits sediment as the water slows down.
- Slower-moving water deposits sediment on the inside curves of meanders.
- A **delta** is a large deposit of sediment that forms where a stream enters a large body of water.
- Much of the sand on most ocean beaches was originally deposited by rivers.
- Longshore currents transport the sand along ocean coasts and deposit it where the currents have less energy.
- Water deposition forms many structures within caves.
- Ocean waves can erode beaches by removing sediment.
- To reduce erosion, people sometimes build structures such as retaining walls or groins.
- Reducing or removing vegetation from the land surface is one of the most common ways that surface erosion is increased.

Wind Erosion and Deposition

- **Abrasion** is the grinding away of rock or other surfaces as particles carried by wind, water, or ice scrape against them.
- A **dune** is a pile of wind-blown sand.
- **Loess** is a crumbly, windblown deposit of silt and clay.
- Plowed fields and dry, overgrazed pastures are two ways in which people contribute to wind erosion.

Chapter 3 Lesson 3: Mass Wasting and Glaciers

Vocabulary

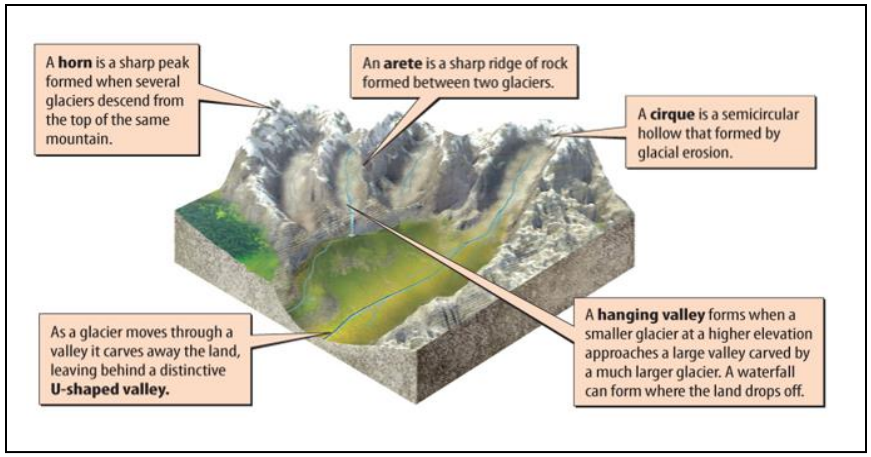
-Mass wasting	-Glacier	-Outwash
-Landslide	-Till	
-Talus	-Moraine	

Mass Wasting

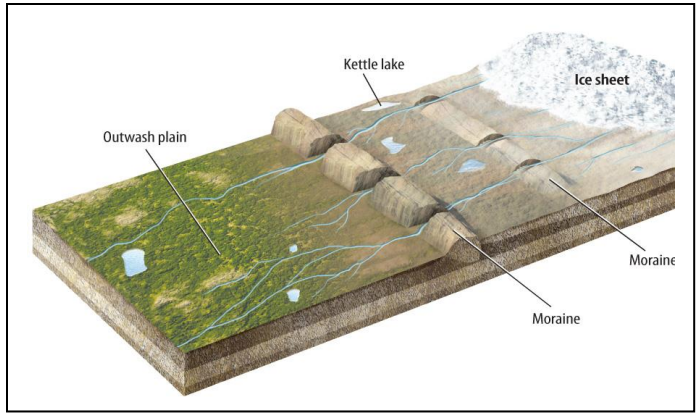
- **Mass wasting** is the downhill movement of a large mass of rocks or soil because of the pull of gravity.
- Commonly occurs when soil on a hillside is soaked with rainwater.
- A **landslide** is the rapid downhill movement of soil, loose rocks, and boulders.
- Two types of landslides are a rockfall and a mudslide.
- Slump is a type of mass wasting where the material moves slowly, in a large mass.
- If the material moves too slowly to be noticeable, causing trees and other objects to lean over, the event is called creep.
- When material reaches a stable location, such as the base of a mountain, the material is deposited.
- **Talus** is a pile of angular rocks and sediment from a rockfall.
- Human activity, such as removing vegetation, can affect both the severity of the mass wasting and the tendency for it to occur.
- Landscaping or building on a slope can make the slope steeper and more likely to undergo mass wasting.

Glacial Erosion and Deposition

- A **glacier** is a large mass of ice that formed on land and moves slowly across Earth's surface.
- The two main types of glaciers are alpine glaciers and ice sheets.
- Glaciers erode Earth's surface as they slide over it, carving the land as they move.



- Sediment that was frozen in a glacier's ice is eventually deposited in various forms.



- **Till** is a mixture of various sizes of sediment deposited by a glacier.
- A **moraine** is a mound or ridge of unsorted sediment deposited by a glacier.
- **Outwash** is layered sediment deposited by streams or water that flow from a melting glacier.
- A small change in Earth's average temperature causes considerable melting of glaciers.
- As glaciers melt, sea level rises around the world.