**Ch. 15 Weathering, Erosion & Deposition**

Essential Question – How do weathering, erosion and deposition change Earth’s surface?

1. Weathering – process that breaks down rock and other substances of Earth’s surface
	1. Factors that determine how fast weathering happens
		1. Climate - average weather conditions in an area
		2. Type of rock – some rocks dissolve faster than others
	2. Types of Weathering
		1. Mechanical weathering – rock is physically broken into smaller pieces
			1. Process
				1. Freezing and thawing – cycle of water freezing, expanding, melting acts as wedge expanding cracks in rocks until pieces break off
				2. Release of pressure
				3. Plant growth
				4. Animal actions
				5. Abrasion – grinding away of rock by rock particles (sand) by water, ice, wind or gravity.
		2. Chemical Weathering – rock breaks because of chemical changes
			1. Processes
				1. Water – rock dissolves over time \*\*\* most important
				2. Oxygen – oxygen combines with water and iron in rock (oxidation, aka rust)
				3. Carbon Dioxide – dissolves in rain water and forms carbonic acid – easily weathers rocks like marble and limestone
				4. Plants – roots produce acids slowly dissolve rock around roots
				5. Acid rain – gases from burning fossil fuels react with water vapor in clouds forming acid (rapid chemical weathering)
2. Erosion – removal or rock particles by water, wind, ice, or gravity
	1. Water erosion and deposition
		1. Stream – active water channel that erodes land and transports sediment
		2. River – form on steep mountain slopes as it flows it forms
			1. Tributary – smaller river or stream that flow
			2. Waterfalls – river meets rock erodes slowly
			3. Flood plains – flat wide area of land along a river that is often covered with water when the river overflows during a flood
			4. Meanders – loop-like bends in the course of a river (becomes more curved over time)
			5. Oxbow lakes – formed when a meander has been cut off by sediment deposits that dam up the ends
			6. Delta – sediment deposited where a river flows into an ocean or lake and forms a triangular landform
			7. V-shaped valley – narrow valley formed by fast rivers coming down mountains
		3. Groundwater – underground water that can cause erosion through chemical weathering
			1. Caves – underground caverns
				1. Stalactite – formed from dripping groundwater hangs off the top of a cave
				2. Stalagmites – form from dripping groundwater that build up a cone shape on the cave floor
		4. Waves – shape coastlines by erosion (abrasion)
			1. Coastline – shape of border between water and land
			2. Beach – deposited sediment carried by waves
			3. Sea arch – formed when waves erode a layer of softer rock that is under a layer of harder rock
			4. Sea stack- formation left standing when a sea arch collapses
	2. Wind Erosion and Deposition –
		1. Deflation – process by which wind removes surface materials and abrasion
		2. Landforms
			1. Dunes – piles of wind-blown sand
			2. Sandbar – deposition of sand along a coastline where the speed of the waves slows down
	3. Mass movement due to Erosion
		1. Mass wasting – downhill movement of a large mass of rocks or soil because of gravity
			1. Landslides, mudslides, slump, creep
		2. Glaciers – large mass of ice that formed on land and moves slowly across Earth’s surface (form in areas where snowfall is greater than snow melt)
			1. Erosion
				1. Plucking – glacier picks up rocks and boulders and drags them across the land causing abrasions, gouges and scratches in the bedrock
			2. Deposition
				1. Till – mixture of sediment deposited directly on the surface
				2. Moraine – ridge formed from till deposited at edge of glacier
				3. Kettle – small depression that forms when a chunk of ice is left in till that eventually melts

When ice melts becomes kettle lake