**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