Cycles

When students finish working though this section:

1. They will have a basic understanding of the biogeochemical cycles occurring on Earth.
2. They will be able to identify 4 biogeochemical cycles: the carbon cycle, the nitrogen cycle, the oxygen cycle, and the water cycle.
3. They will have completed a mind map demonstrating their understanding of Earth's biogeochemical cycles.

Elements exist on Earth in fixed amounts. Nitrogen, carbon, oxygen, and other nutrients move through ecosystems in a predictable pattern or cycle. These are the biogeochemical cycles in nature.

It is likely that students at this age level have discussed, at least in part, all of these cycles. They have also likely discussed, on the surface, the affect human activity plays on these cycles. This section allows them to look closer at each of the cycles.

Possible Discussion Points/Activities:

- Ask students to do some research on a specific organism and how it participates in/depends upon each of these cycles. Be sure to ask/allow at least one student or group of students to study humans! Have students share what they have discovered.

- Invite groups of students to create games (board, card, or "video") based on the information found in their research and the cycles themselves.

- Ask students to print and complete the *Think Tank* assignment. This can be done as a whole class, in small groups, or as an individual activity. Discuss.

***Words to Know* in this Section:**

- air: the mixture of nitrogen, oxygen, argon, carbon dioxide, hydrogen, neon, helium, and other gases that surrounds the earth
- condensation: process by which a vapor (gas) changes into a liquid
- carbon: an element found in all organic (living or once living) material
- carbon dioxide: a heavy odorless colorless gas that makes up about .03% of the earth's atmosphere
- cycle: a repeated event or sequence of events over time
- element: a substance that cannot be separated into simpler elements
- evaporation: to change into or pass off into a vapor (gas)
- nitrogen: a colorless and odorless gas that makes up about 78% (4/5) of the earth's atmosphere
- nutrient: any substance that can be used by an organism to give energy or build tissue
- oxygen: a colorless and odorless gas that makes up about 21% of the earth's atmosphere
- precipitation: any form of water that falls to the earth's surface; rain, sleet, snow, or hail
- respiration: the physical process by which a living organism gets oxygen and releases waste gases (like carbon dioxide)

Link Up! **in this Section:**

- Soil Biological Communities - http://www.blm.gov/nstc/soil/index.html

Fast Facts **in this Section:**

- Growers get REAL TREE seeds by harvesting closed cones. After being removed from the tree, the cones are put into a huge dryer. Drying causes the cones to open and the seeds to spill out. After REAL TREE seeds are harvested, they are tested. They are placed in a large vat of water. Those that float are sterile and are not able to grow. Those that sink are sold to be planted.

Quick Crafts **in this Section:**

- Hard Suet Ornaments

  1 cup peanut butter
  2 cups suet
  2-4 cups cornmeal
  bird seed
  raisins

  Press dough into cookie cutter shapes. Then, press seeds and raisins on the suet shape. Poke a pipe cleaner through the ornament so you can hang it!

  These ornaments will provide birds with the seeds and fat they need!

  Thanks to Linda Franz for this cool idea!