How Change Shapes Our Planet

By Marika Livingston

The nitrogen cycle is one example of how the four Earth systems interact. In the nitrogen cycle, organisms in the biosphere use nitrogen to build proteins. When the organisms die, nitrogen compounds are returned to the soil, which is part of the geosphere. This also happens to organisms in the hydrosphere. Nitrogen is also present in the atmosphere where it can be changed by lightning for use by plants.

One way this cycle changes the planet is by causing more plants to grow taller where the soil has more usable nitrogen. Usable nitrogen is nitrogen that has been fixed by organisms on land and in water. After it is fixed it can then be used by plants. If many plant eating animals migrate to one area and then die the nitrogen compound will go into the soil. New plants can then use these nitrogen compounds to grow. Many new plants can be seen as evidence of a change in the biosphere.

Humans can cause changes by disrupting the nitrogen cycle. One way this can be done is by adding fertilizers, rich with nitrogen, to new areas and increasing the amount of plant growth. The fertilizers then get washed from the geosphere into the water ways causing plants to grow uncontrollably in the hydrosphere. When it reaches the ocean, algae grows and eventually dies. The excess amount of dead algae effects the biosphere by causing dead zones where animals cannot live because of the amount of oxygen. An increase in the amount of dead animals in a certain area can provide evidence of these dead zones.

All four of the Earth systems interact in different ways and in turn change the planet. These changes can be observed as they affect our lives.

Citations

Russell, Randy. "Fertilizing the Earth With Nitrogen." Windows2universe.org. Verizon, 19 Jan. 2010. Web. 19 Sept. 2011.