

Biogeochemical Cycles WebQuest

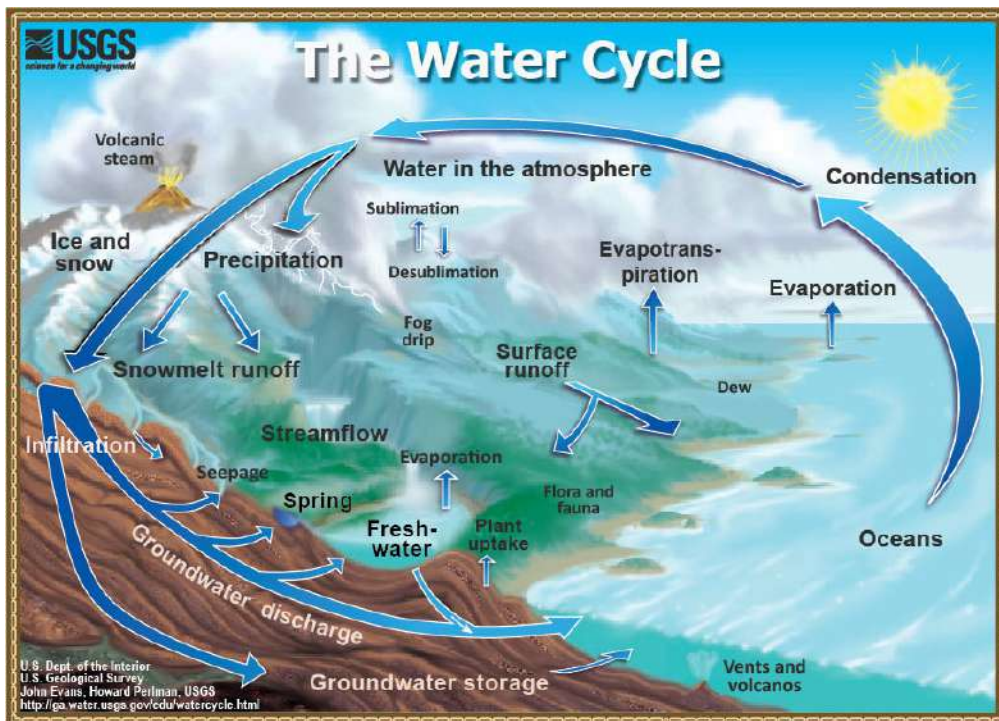
For each cycle, visit the URL address provided. At each website you will need to read the passages, answer the questions, and label the diagrams on this worksheet.

The Water Cycle (<http://ga.water.usgs.gov/edu/watercyclesummary.html>)

1. What percent of the earth's water is stored in the oceans of the world? _____
2. Explain the difference between evaporation and sublimation.

3. Click the link *evapotranspiration*. What is *evapotranspiration*?

4. How much water does an acre of corn transpire in one day? _____. How much water does a large oak tree transpire in one year? _____
5. What 5 factors affect transpiration rate? Then navigate back to the summary page.
 - a.
 - b.
 - c.
 - d.
 - e.
6. Click the link *Stored as Freshwater*. What percent of our freshwater supply is found in:
 - a. Glaciers and ice caps? _____
 - b. Ground water? _____
 - c. Surface water? _____
 - d. Other? _____
7. When it comes to surface water storage, which lake holds a majority of the earth's freshwater supply? _____ How much does it hold? _____



The Carbon Cycle (http://www.windows.ucar.edu/tour/link=/earth/Water/co2_cycle.html)

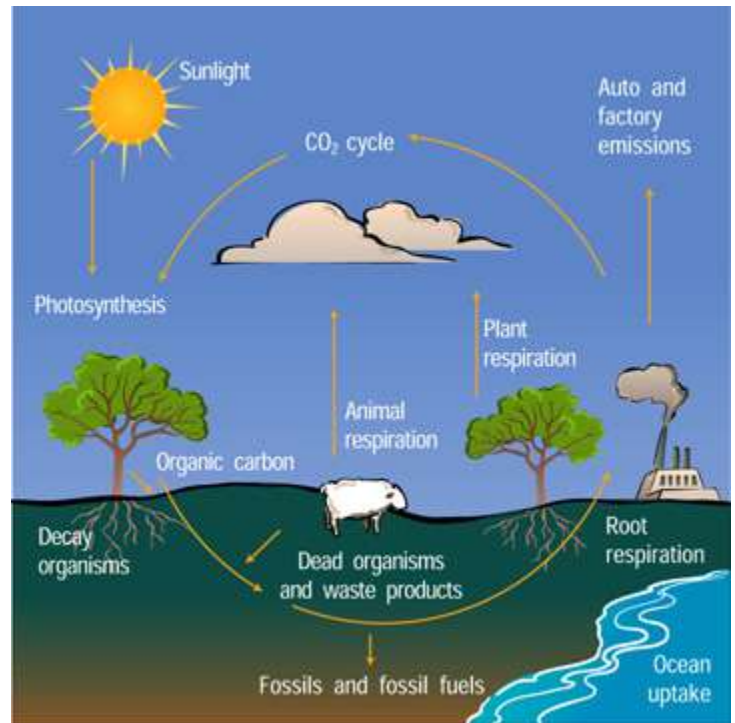
1. In what form is carbon in the atmosphere?

2. How does carbon move from the atmosphere to plants and then from plants to animals?

3. How does carbon move from plants and animals to the ground?

4. How does carbon move from living things to the atmosphere? What is the process called?

5. How much carbon is released each year from burning fossil fuels? Where does the carbon go?



6. Carbon dioxide is a greenhouse gas. Why are greenhouse gases important to the survival of life on earth?

7. Click on the link [warmer](#). How much warmer is the planet today than it was 100 years ago?

8. List the effects of global warming. Then navigate back to the page on the carbon cycle.

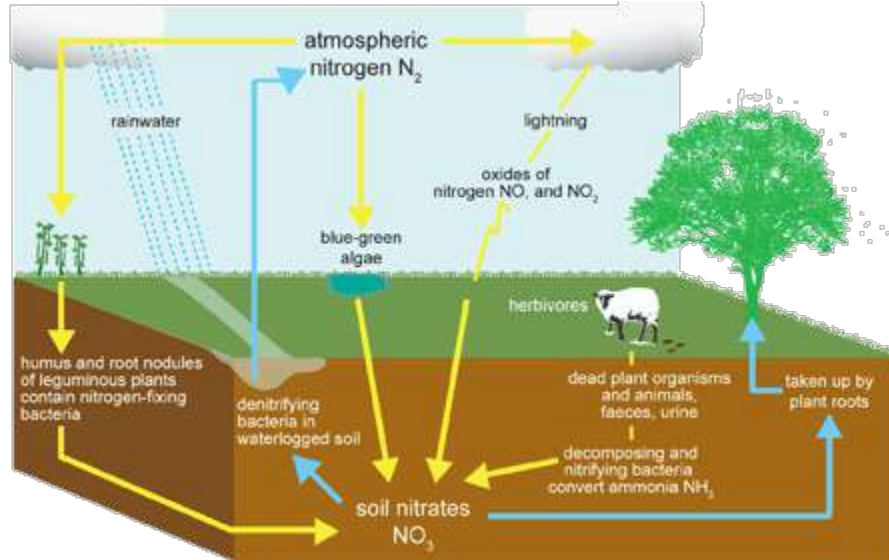
- ✓ S
- ✓ A
- ✓ G
- ✓ S
- ✓ H
- ✓ E
- ✓ E
- ✓ H
- ✓ M
- ✓ W
- ✓ S

(RETURN to MAIN Carbon Cycle Page)

9. Besides coal and oil (fossil fuels) what type of rocks store a great deal of carbon?

10. Go to http://www.windows2universe.org/earth/climate/carbon_cycle.html and click on "[Play the Carbon Cycle Game](#)" and go through the Carbon Cycle.

The Nitrogen Cycle (http://www.visionlearning.com/library/module_viewer.php?mid=98)



1. Nitrogen is a component of what 3 building blocks of life?
2. What makes nitrogen in the atmosphere (N_2) unavailable for use by living organisms?
3. Write the chemical formula for nitrate _____ and nitrite _____, and ammonium _____.
4. Briefly define and distinguish between:
 - a. Nitrogen fixation:
 - b. Denitrification:
 - c. Nitrification:
 - d. Nitrogen Mineralization:
 - e. Nitrogen Uptake:
5. Name 3 ways that humans have impacted the nitrogen cycle.
6. Click the ***“Questions & Quizzes”*** Tab and take the quiz. Record your score _____
7. If you have time, navigate back to the nitrogen cycle module. Click on the ***Carbon Cycle link*** and the quiz there too! What was your score? _____

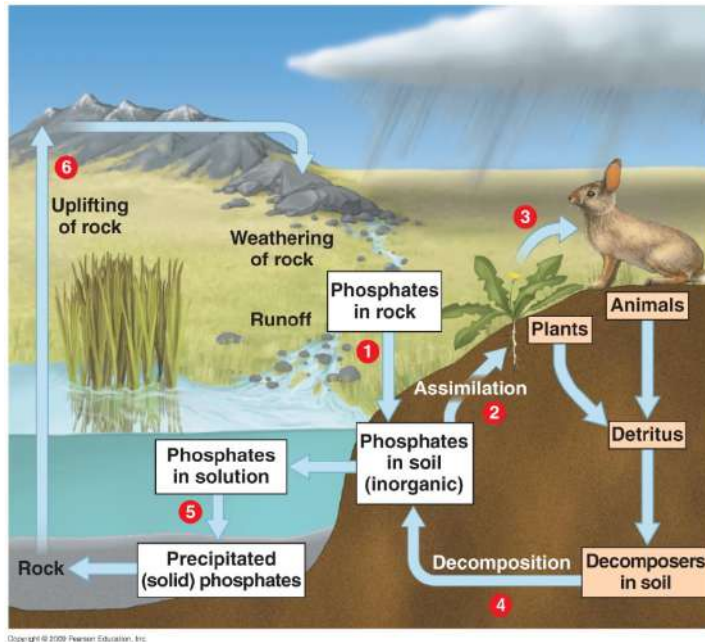
Phosphorous Cycle Introduction

Use the following websites to answer the questions:

<http://www.enviroliteracy.org/article.php/480.html>

http://filebox.vt.edu/users/chagedor/biol_4684/Cycles/Pcycle.html

http://filebox.vt.edu/users/chagedor/biol_4684/Cycles/cycles.html



Phosphorus is an important chemical for plants and animals. It is part of DNA, certain fats in cell membranes, bones, teeth and shell of animals.

Phosphorus circulates through water, the Earth's crust, and living organisms. It is not in the atmosphere and is most likely to enter food chains following the slow weathering of rock deposits. Some of the released phosphates become dissolved in soil water which is taken up by plant roots. Phosphorus is therefore the main **limiting factor** for plant growth in most soils and aquatic ecosystems. Animals obtain phosphorus by eating plants and/or herbivores. Dead organisms and animal wastes return phosphorus to the soil, to streams, and eventually to ocean floors as rock deposits.

1. Explain why phosphates are a critical part of life.
2. How is the phosphorus cycle different from other biogeochemical cycles? Explain
3. The largest reservoir of phosphorus is in _____ rock.
4. Explain how phosphorus travels through the cycle from rock to omnivores.

5. Why are excessive concentrations of phosphorus sometimes considered a pollutant?

6. How do humans contribute to these excessive levels of phosphorus?

7. Phosphorus is mainly stored in the _____
_____.

8. How does the soil-based view of the phosphorus cycle compare/contrast with the global-view of the phosphorus cycle?