BIOGEOCHEMICAL CYLCES

DO NOT write on this sheet! Place all answers and diagrams on your own paper, with name and period.

1) Review the biogeochmical cycles listed below by accessing the websites listed below. **Summarize each biogeochemical cycle (in paragraph or bullet form).** In addition, **write two multiple-choice questions** with five possible answers for each of the three biogeochemical cycles (include the correct answer).

Carbon cycle tutorial (page 72)

- Explain the relationship of photosynthesis & respiration in the carbon cycle
- Identify 5 ways carbon is released into the atmosphere
- What % of the atmosphere is CO2
- Identify 4 Carbon sinks

http://bcs.whfreeman.com/thelifewire/content/chp58/5802002.html

Phosphorus cycle tutorial (page 76)

- Identify if the phosphorus cycle has a gaseous component
- List 3 ways humans have impacted the phosphorous cycle
- Explain the connection between phosphorous, fertilizers and algae blooms.

http://www2.wwnorton.com/college/biology/discoverbio3/core/content/ch24/animations.asp (click on phosphorous cycle)

Nitrogen cycle (page 74-75)

- Explain the process of nitrogen fixation, and the role of nitrifying bacteria.
- Define Ammonification, and denitrification.
- Define: Nitrification & Assimilation

http://bcs.whfreeman.com/thelifewire/content/chp58/5802004.html

2) Review the sulfur cycle on **page 78** of Miller: Living in the Environment and **draw a diagram of the sulfur cycle.** You may also want to search the internet for a diagram of the sulfur cycle to help you.

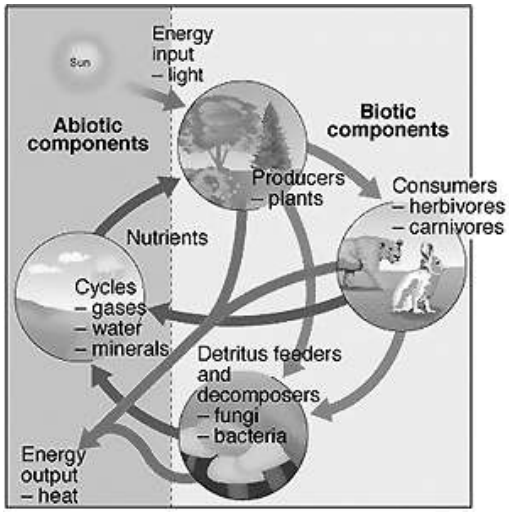
Explain the formation, common sources, and ecological importance of the following sulfur compounds/molecules SO_4^{2-}, SO_2, CH_3SCH_3, H_2SO_4, and S^{2-}.

3) Visit the website **http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.watercycle/** Watch the animations on the water cycle, and draw a simplified diagram of the water cycle. Write a paragraph explaining the role of condensation, precipitation, infiltration, runoff, evaporation, transpiration, and how humans can negatively affect them.

4) Biogeochemical Cycles Project (30pts)

Each group (of 3 or 4 members) will choose a cycle to illustrate in some meaningful way:

- Video enactment
- Song
- Dance
- 3-D Work of Art - Sculpture, Mobile, Toy, etc.
- Interactive website
- Powerpoint or Flash presentation
- Other (subject to approval)
- The following cycles may be presented:
  * Carbon
  * Nitrogen
  * Phosphorus
  * Sulfur



For each cycle, the presentation must include:

- Chemical reactions involved
- Inorganic and organic reservoirs for the element
- Pathway of movement
- Impact of human intervention on the cycle
  (In other words, everything in the text under the section for your cycle!)
- In addition, you must provide your peers a note sheet on your cycle.

Each presentation should take no less than 3 minutes and no more than 5 minutes. Grading will be based on accuracy, completeness, creativity, learning value, and quality of presentation. Each group will be able to use one day of class time to work together. All other work will be done outside of class. This assignment will be worth 30 points, and all members of the group will receive the same grade. All class members will be responsible for all cycles on quizzes and Unit Assessment.

Rubric:

Category	Points possible
• Demonstrating the Chemical reactions involved	5 points possible
• Demonstrating the Inorganic and organic reservoirs for the element Pathway of movement	5 points possible
• Demonstrating the Pathway of movement	5 points possible
• Demonstrating the Impact of human intervention on the cycle	5 points possible
• Informative note sheet on your cycle	5 points possible
• Creativity	5 points possible