

Biology 307 - Principles of Ecology

Biogeochemistry: Cycling of Nutrients and Materials

Part I: Nutrient Cycling

I. Types of Nutrient Cycles

- A. Gaseous Cycles
- B. Sedimentary Cycles

II. Model of Nutrient Cycles

- A. Inputs
- B. Internal Cycling
 - 1) Ecosystem Processes Influence: Primary Productivity and Decomposition
 - 2) Climate
- C. Outputs
- D. Terrestrial vs. Aquatic Ecosystems

III. Major Biogeochemical Cycles

- A. The Carbon Cycle
- B. The Nitrogen Cycle (handout)
 - 1) Fixation
 - 2) Mineralization (Ammonification)
 - 3) Nitrification
 - 4) Denitrification
- C. The Sulfur Cycle
- D. The Phosphorus Cycle

IV. Linkages among Biogeochemical Cycles

Part II: Global Cycles and human Impacts

I. The Global Oxygen Cycle

- A. The Ozone Layer

II. The Global Carbon Cycle

- A. Human Impact

III. The Global Nitrogen Cycle

- A. Human Impact on the Nitrogen Cycle

IV. The Global Phosphorus Cycle

A. Human Impact on the Phosphorus Cycle

1) Eutrophication

V. The Global Sulfur Cycle

A. Human Impacts on the Sulfur Cycle

IX. Acid Deposition

A. Aquatic versus Terrestrial Ecosystems

X. Other Human Impacts on Biogeochemical Cycles

A. Heavy Metals: Lead

B. Chlorinated Hydrocarbons

C. Radionuclides