

Lecture 7 Notes –Biogeochemical cycles

Readings: Smith&Smith Chapter 25 514-523 and Chapter 26 525-537 (C cycle)
Galloway, et al. Transformation of the Nitrogen Cycle: Science 320, 889 (2008)
Oki, et al. Global Hydrological Cycles and World Water Science 313, 1068 (2006)
Filippelli, *The Global Phosphorus Cycle: Past, Present, and Future*. Elements, Vol. 4, pg. 89–95

How much of an element or compound is present in a certain component of the biosphere?
What is the global amount, the reservoirs, the compounds and their transformations ?
The movements between reservoirs are **fluxes**. How much of an element or compound moves from one reservoir per unit time?

- 1.Global geochemical cycles are assessed in terms of fluxes and reservoirs. Typical fluxes range \geq teragrams (10^{12} g) per year.**
- 2. The different cycles of the elements (P, S, N, C) vary in terms of their major reservoirs, rates of flux, and biological interaction.**
- 3.Change in valence (redox state) caused by biological processes greatly influence elemental paths in several biogeochemical cycles.**
- 4.Human activities are influencing the flux within some elemental cycles on the same scales as all natural processes combined (P, N, S).**

MIT OpenCourseWare
<http://ocw.mit.edu>

1.018J / 7.30J Ecology I: The Earth
Fall 2009

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.