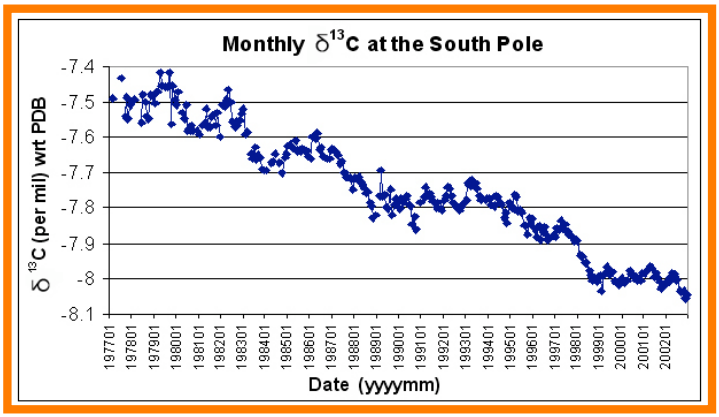
Websites for Lecture 2 Part 1, Part 2 Carbon & Oxygen cycle and Stable Isotopes Walker, GEOL 1122, Fall 2008 If you would like to read further or check the slides

1. For the d^{13}C data, the slides are from **CDIAC, the Carbon Dioxide Information Analysis Center** located at Scripps Institution of Oceanography (SIO), in La Jolla, California. Data are from C.D. Keeling, A.F. Bollenbacher, and T.P. Whorf (2005), Monthy atmospheric $^{13}C/^{12}C$ isotopic ratios for ten SIO stations (Oak Ridge Labs, Tennessee). CDIAC web site

http://cdiac.ornl.gov/trends/co2/iso-sio/iso-sio.html



A. A challenge question would be: Why is the d^{13} ratio of the Atmosphere CO2 decreasing?

B. Another challenge question would be: Why are there small ups and downs in the d^{13}C per year in Antarctica, a continent covered mostly by ice?

2. Variations in carbon stable isotopes through the Phanerozoic that are used by geologists to understand environmental change in the rock/fossil record.

See R. Berner's paper: R.A. Berner, 2003, The long-term carbon cycle, fossil fuels and atmospheric composition. Nature 426: 323-326.
(We have basically covered his main take home points in class, but if you'd like to read further from the scientist who is at the forefront of Phanerozoic Carbon, here you go!)

3. Carbon stable isotopes in organisms on earth:
http://www.carleton.edu/departments/GEOL/DaveSTELLA/Carbon/c_isotope_models.htm

3. d^{18}O, Oxygen-isotope pictures (website):
http://www.emporia.edu/earthsci/student/tinsley1/webpage1.html

A. A challenge question would be: If you took a water sample off the coast of Georgia and compared it to an ice sample from the Arctic which sample would have relatively more $^{16}0$? Which sample would have relatively more ^{18}O? And why?