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12.085 Seminar in Environmental Science
Spring 2008

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Week 6

This week I read several articles from a Soil Science Society of America special publication called Soil Carbon Sequestration and the Greenhouse Effect. I tried to focus on the articles which focused on quantifying the potential for carbon storage. The first was by Gross et al titled “A National Assessment of Soil and Carbon Sequestration on Cropland: Description of an Analytical Approach”, and the second was “An Inventory of Carbon Emissions and Sequestration in United States Cropland Soils” by Eve et al. Both articles were aimed at methods of estimating carbon storage, but they were different methods, though they both used some of the same data. They both rely on field point data taken from the National Resource Initiative soils database (SOILS5). This contains an inventory on private land conducted every five years at about 800,000 points with information collected about over 200 attributes including land use and practices, cover, erosion, and irrigation.

The Gross paper simply outlined an approach which had not been put into practice yet, which involved modeling and monitoring carbon storage in U.S. farmland east of the Rockies. This was achieved using a model called EPIC-Erosion/Productivity Impact Calculator, which clusters soils and climate areas by their characteristics. The goal of this project is to establish a baseline of the 1992 levels of soil carbon sequestration, and monitor changes over time.

The Eve paper uses the method set out by the IPCC to calculate the changes in carbon storage in U.S. croplands since the 1990 baseline. This is not just a description,

and they find that soil use practice changes have resulted in a net sink to mineralized soils of 11.31 million metric tons carbon per year, however the organic portion of soils is still a net source of 6.03 million metric tons per year. The warm temperate moist mineral soils are the largest sink, whereas the sub-tropical moist organic soils have the largest emissions.

I found it interesting to note that the whole book was edited by R. Lal, and he contributed to several articles in it also. He seems to come up a lot in this subject area, and seems very much in support of soil sequestration. I wonder if I should keep this in mind when I read work by/for him.

Resources:

Eve, M. D., K. Paustian, R. F. Follett, E.T. Elliot. 2001. An Inventory of Carbon Emissions and Sequestration in United States Cropland Soils. In *Soil Carbon Sequestration and the Greenhouse Effect* ed. by Rattan Lal. SSSA Special Publication number 57.

Gross, D.W., Joaquin Sanabria, R.L. Kellogg, J.L.Bere. 2001. A National Assessment of Soil Carbon Sequestration on Cropland: Description of an Analytical Approach. In *Soil Carbon Sequestration and the Greenhouse Effect* ed. by Rattan Lal. SSSA Special Publication number 57.