Carbon accounting at the national scale: uncertainty in the U.S. inventory (S05-ogle094642-Oral)

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Abstract:

We conducted an uncertainty analysis for the national greenhouse gas inventory, using a carbon accounting method developed by the Intergovernmental Panel on Climate Change. The IPCC method estimates the relative change in soil organic carbon (SOC) stocks based on land use and management in agricultural lands. The method requires reference SOC stocks, land use/management factors, and land use/management history. Each required input has some uncertainty that we quantified in probability density functions. Change in SOC storage between 1982 and 1997 for U.S. agricultural lands was estimated using a Monte Carlo analysis. Overall, agricultural soils gained 6.4 TgC/yr during the inventory period, with 95% confidence interval ranging from 0.2 to 12.6 TgC/yr. Mineral soils gained an average of 15.9 TgC/yr, while organic soils lost an average of 9.4 TgC/yr. About 90% of overall uncertainty was due to land use/management factors that represent the impact of changing management on SOC storage. Uncertainty may be reduced by refining the probability distribution functions for the factors based on future field studies and improved scaling of studies to better represent impacts in various regions of the country.

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