Modeling agricultural soil C sequestration on global scales. (S06-thomson095316-Oral)

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Abstract:

Sequestration of carbon in agricultural soils can help slow global climatic change by reducing the rate of increase in atmospheric CO2 concentrations. Farming practices can be altered to sequester carbon by reducing or eliminating tillage, and by optimizing fertilizer and irrigation use. We report on progress toward modeling the effects of current and potential agricultural management on soil carbon and determining the potential for carbon sequestration in agricultural lands worldwide. This activity requires the acquisition and assembly of global databases of climate, soils and agricultural management information needed for the i_EPIC (Interactive Erosion Productivity Impact Calculator) agricultural model. Results of preliminary runs of wheat production and soil carbon balance on several hundred representative farms in major agricultural regions of the world are presented. In addition, we use historical county-level yields from the U.S. and Argentina to validate the simulated yields. The encouraging results obtained thus far provide confidence in the capability of this methodology to simulate world agricultural production and soil carbon sequestration.

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