Role of Biophysical Models in Monitoring and Verifying Soil Carbon Sequestration. (S05-jones203726-Oral)

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Abstract:

An integrated approach is described in which biophysical models are combined with soil sampling and remote sensing to achieve reliable estimates of soil carbon over time and space. Biophysical models can predict changes in soil organic carbon over time by integrating soil, crop, weather, and management information. They are highly useful in helping one understand potential levels of soil carbon sequestration (SCS) at a site and how management might be used to increase soil C. Models are also useful in scaling up estimates of SCS by simulating different classes of soil, weather and management for a region, identified via remote sensing and other methods, using locally determined model parameters. Although there are uncertainties associated with measurements and models, reliability in estimates is realized by using observations to adjust model inputs and parameters. Example results demonstrate effects of soil, weather, and management on crop production and SCS for a site in West Africa, using the DSSAT-CENTURY model. Methods for estimation uncertainties in parameters (via estimation of parameter variance-covariance matrix) and uncertainties in projected yields are also presented.

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