

Measurement of Total Soil Carbon by Laser-Induced Breakdown Spectroscopy (LIBS) in Selected Soils of the Atlantic Forest, Brazil, and the Southwestern U. S. (S05-ebinger011517-Poster)

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Abstract:

Measurement of soil carbon is one of the more difficult obstacles in estimating carbon storage in terrestrial systems. Advances in new spectroscopic techniques suggest that high-resolution measurements can be made in the field and may be more accurate and precise than laboratory-based methods such as dry combustion. Laser-induced breakdown spectroscopy (LIBS) correlates well with dry combustion measurements of total soil carbon and provides data from discrete soil samples in minutes. We show the results of initial estimates of carbon inventories in soils from the Atlantic Forest in Brazil and the Sevilleta of central New Mexico that were based on dry combustion analysis and LIBS analysis of soil samples. We included uncertainty estimates in the two sets of carbon measurements and in soil bulk densities, then compared the estimates of carbon inventories. Overall, estimates based on LIBS measurements are more robust due to the increased accuracy and precision of the LIBS measurements.

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