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Optimization of calibration models for soil carbon estimation using mid-infrared spectroscopy

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Mid-infrared spectroscopy is an efficient technique for soil carbon analysis. Efforts to measure and monitor carbon through mid-infrared spectroscopy require the development of soil spectral libraries. These libraries are used for the construction of calibration models which relate analyte values to spectra. The optimization of these models is an important process for the accurate and resource-efficient estimation of soil carbon. This study demonstrates the effect on model performance of subsetting a soil spectral library for soil organic carbon estimation. Various subsetting criteria were tested across different landscapes in the United States, and results are presented in the context of the development of new soil spectral libraries.