The NSSC-KSSL MIR spectral library

The USDA NRCS National Soil Survey Center – Kellogg Soil Survey Laboratory (NSSC-KSSL) has been quietly building one of the world's largest libraries of mid infrared (MIR) spectra for soils. These diffuse reflectance spectral data complement the high quality traditional analytical data that the laboratory routinely produces for a number of physical, chemical and biological properties of soils. As of writing this post, there are over 75,000 soil samples in this library and this number is growing rapidly.

Why is a large spectral library necessary? In order for soil spectroscopy to become a broadly useful tool in soil science, the data need to be representative of as many soil types as possible. There have been several publications (Comstock et al. 2018; Dangal et al. 2019; Ng et al. 2019; Sanderman et al. 2020; Wijewardane et al. 2018) in the past few years demonstrating that with the right models, spectroscopy-based predictions of a range of soil properties on a range of soil types can be excellent when using the NSSC-KSSL library.

The USDA NRCS is a champion of open science. Not only is the spectral library a public resource, the staff at the NSSC-KSSL will help to make sure users fully understand how to access and use the data that this lab produces. SoilSpec4GG is working closely with the NSSC-KSSL to make this data even more accessible and useful to a variety of users.

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