

Supervised machine learning  
based models predicting soil  
surface area among different  
taxonomical soil “types” using  
water adsorption curves

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This paper discusses a new Pedo-Informatic (P-I) paradigm, where complex soil behaviour of different soil “types” is predicted using machine learning (ML) based models. Here, we discuss ongoing work to develop P-I models that predict the surface area of soils. For this work, collected field soils were physically and chemically characterized to build multivariate signatures from the decomposition of centered log-ratio “compositions” using the nonlinear dimension reduction technique, UMAP. These compositions predicted the assigned NRCS designations with 95-100% accuracy. Ongoing work correlating surface area of different soil “types” using supervised regression techniques will be discussed. The results are expected to generate a framework by which functional soil surface areas can be predicted based on NRCS soil taxonomic designations.

**This abstract is too long to be accepted for publication.  
Please revise it so that it fits into the column on one  
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