



A prototype methodology for assessing the utility and value of predictive soil maps, and their uncertainty, for study areas located in the United Kingdom.

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Decision making in soil science occurs across a range of scales, from plot, field, farm to landscape. However, the majority of decision making, and management interventions, occur at the finer scale, at field or plot level, whether this is for agricultural production or for the protection of natural capital and delivery of ecosystem services. Legacy soil data, however, rarely provide soil information at appropriate spatial scales to match the requirements of decision makers or managers, and acquiring more detailed soil information with traditional soil survey methods is both costly and time consuming, especially if the data is required for entire regions or countries. Digital soil mapping coupled with remotely-sensed fine resolution digital datasets and advanced machine learning techniques offer an opportunity to map soil information at a range of spatial scales producing soil maps. Here we present the results from two contrasting studies, one aimed at generating a soil map at national extent but at sufficiently fine scale to be useful to determine soil responses to management practices (top down approach) and second study in which national soils maps are disaggregated to a local scale using local knowledge and within field management zones (bottom up approach). We contrast the utility, and associated uncertainty of both approaches, in particular considering their functionality and end user requirements, based on a systematic survey of end user needs and their tolerance of uncertainty.