

High-resolution digital soil mapping: Kriging for very large datasets

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Abstract

The ability to take many observations at precisely known spatial locations has transformed agriculture into a spatial science. An important component of precision agriculture is its intersection with pedometrics. Maps of soil properties are in great demand, but there is a point where too much data can “break” the algorithms associated with statistically optimal (kriging) maps. In this research, we present a geostatistical method that relies on highly flexible non-stationary spatial covariances, and for which exact kriging can be carried out for very large datasets (on the order of tens of thousands to hundreds of thousands of data). The methodology is applied to total counts obtained from gamma-radiometer readings in several fields of the Nowley Farm, New South Wales.