Distinguishing archaeological and non-archaeological signatures using principal component analysis.

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Buried archaeological remains are sometimes difficult to prospect in field condition due to similar soil colours of the surrounding soils. This can lead to misinterpretation or even overlooking existing marks. A modified PCA method is introduced to identify such archaeological signatures in a fast and quantitative way. This method can distinguish soils which are altered by anthropogenic activities by comparing soil reflectance spectra to principal component values of a selected group of natural soils. Soil spectra can be gathered by field spectrometers covering the visible to near infrared spectral range. The study presents the development and application of the methodology to an archaeological site in Hungary. Here a comparison between a real archaeological pit and a natural soil feature, which visually resembles an archaeological feature, is presented to verify the effectiveness of the method.