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SOIL PRIME MINERALS MAPPING USING LINEAR SPECTRAL UNMIXING THECNIQUE IN MULTISPECTRAL IMAGERY DATA

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Generally, soil characteristics are obtained via field observation. However, completely relies on field survey is not effective due to various cost and time issues. In addition, information taken via field survey is lack of spatial context, and thus it is difficult to have overall and comprehensive view of the soil dynamics. Therefore, in this paper, we presented an alternative method of soil mapping by utilizing widely available multispectral data.

The aim of this research is map soil characteristic in a mixed volcanic and carbonate mineral-dominated formation named Kebobutak formation. In tropics, the main issue for soil mapping would be the variation of land cover which led to the abundance of mixed pixels. As a resolve, we applied pixel unmixing method on multispectral data to obtain the fraction of soil characteristics on EO-1 ALI (Advanced Land Imager) image. ALI image was selected because it has several additional bands which benefited in the process of incorporating spectral library data for soil mapping. Soil spectra from spectral library were down-sampled to match the spectral resolution of ALI image prior to unmixing process. The results of unmixing were classified via rule-based classification to obtain tentative soil map. Finally, the tentative soil map was assessed using field data to produce final soil map which shows the distribution of soil characteristic in spatial context.

: mixed pixel, unmixing, soil characteristic, unmixing, ALI, spectral library
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