



Mapping Soil Depth with Topographic and Land Cover Attributes from Remote Sensing Data

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Soil depth is an important parameter for identification of the overused slope land in Taiwan. The retrieval of high resolution soil depth at a large scale is costly and time-consuming. The main objective of this study is to develop an approach to estimate soil depths using satellite data with the aid of field survey data in Taiwan. The data were processed using the soil-landscape regression kriging model. The predictor variables, including elevation, slope, aspect, curvature, topographic wetness, spectral indices, and land use, derived from remotely sensed data were used as model inputs for the soil depth estimation. In this study, topographic attributes were derived from an 5-m resolution digital elevation model, and the land-use map and spectral indices were obtained through interpretation of Landsat-8 data. The absolute mean and root mean-square errors were used to assess the reliability of the prediction, indicating a goodness-of-fit of the estimation model. The results of soil depth estimation compared with the field survey data indicated close relationship between these two datasets. The results obtained from this study could spatially provide quantitative information of soil depths, which is an important indicator for assessing the overused slope land. The methods were thus proposed for retrieval of soil depths in Taiwan.