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Soil Water Content Variation Regression Analysis Using Hyperspectral Camera in Weathered Granite Soils

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Soil water content is one of the most common physical parameters that cause landslides or debris flow. Therefore, it is of very importance to determine or predict the water content variation due to infiltration of rainfall quickly and non-destructively. This study investigates the hyperspectral informations in the visible near-infrared regions (VNIR, 400nm~1000nm) of different samples of granite soils possessing varying water contents. Totally 162 granite samples were taken from 3 mountain areas. A Partial Least Squares Regression (PLSR) analysis was applied to develop calibration models and prediction models. In the water content variation prediction model, the Area of Reflectance(Near-infrared, NIR) parameter was the most suitable parameter to determine the water content. The results demonstrate that the hyperspectral camera combined with the PLSR model can be a useful and non-destructive tool for the determination of soil water content variation in the weathered granite soils that could be applied to the evaluation of possible instable area in a mountain site.