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## Application of Electrical Resistivity Tomography for Assessment of Slope Creep Vulnerability

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Slope creep is a mass movement characterized by the slow, downward progression of rock and soil down a low grade slope. One of the causes of slope creep is the expansion of materials such as clay. Expansive clay is a soil that is susceptible to swelling and shrinking when they are exposed to water. However, it is not easy to find out if those vulnerable zones exist in soil slopes. Recently, the electrical resistivity survey has been widely used to determine the spatial and temporal variability of soil properties. In this study, field and electrical resistivity surveys were conducted in order to assess the vulnerability of slope creep. In the field surveys, various factors known to affect slope creep, such as soil types, physical and hydraulic properties of soils, gradient, topography, geological characteristics, and forest vegetation, were investigated, and traces of slope creep, such as tension cracks or tilted trees, were also observed. From the results of the field survey, slopes were divided into two groups: a group with a high creep vulnerability and a group with a low creep vulnerability. Then, electrical resistivity tomography was applied to assess the possibility of slope creep. Various statistical properties for soil resistivity values were calculated, and the most suitable criterion to distinguish the two groups for slope creep vulnerability was identified based on the t-test ( $p$ -value). In conclusion, there was a statistically significant difference ( $p$ -value=0.003) between the two groups when classified as a ratio of soil resistivity of  $400\Omega\cdot\text{m}$  or less, and these results indicated that it is possible to identify slope prone to creep using the electrical resistivity survey.

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