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Surficial Stability Analysis for Landslide Prediction

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In Korea where rainfall of strong intensities is frequent, the depth of weathered residual soil is shallow in mountainous region. Therefore, full saturation of soil layer caused by the reaching of rainwater from the slope surface to impermeable bedrock is one of important causes of landslide. In this study, a shallow slope failure analysis method for slopes with shallow bedrock was developed to predict landslide based on one-dimensional Green-Ampt model. Constant intensities of rainfall were considered and shallow impermeable boundary condition was imposed on the Green-Ampt model to simulate the impermeable bedrock underlying the shallow weathered residual soil. The prediction results showed that the proposed method can be used to predict the landslide due to rainfall infiltration by efficiently considering the movement of the saturated region in the hillslope with shallow impermeable bedrock.

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