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Water content changing in shallow soil cut-slope of highway in seasonal frozen regions

A. Wei Shan , B. Ying Guo

Northeast Forestry University, Harbin, China (shanwei456@163.com / Fax: +86 451 -82191477 / Phone: +86 451 -82191477)

One of the main factors influencing the slope stability of highway in seasonal frozen regions is water content changing in shallow soil cut-slopes. Filtration and erosion of rainfall, surface water proof and evaporation of vegetation, and freezing/thawing process of water in shallow slope do influence the stability of the shallow slope.

Based on RS and GIS technology, combined field observation, laboratory tests and numerical simulation analysis, the study established a Coupling Model which indicated the interaction among soil, water, temperature changes and plant roots on soil cut slopes of highway in the seasonal frozen regions. Further, explored not only the relationship between vegetation distribution and water content changing in shallow soil slope, but also the effect of freezing and thawing on water content in the shallow slope. At last quantitative evaluation of the influence of shallow water content on the stability of cut-slope was made.