Geophysical Research Abstracts
Vol. 12, EGU2010-1468, 2010
EGU General Assembly 2010

Simulation of frozen soil subsidence under traffic loads

Aiping Tang and Haidong Gu
harbin institute of technology, Civil Engineering, Harbin, China (tangap@hit.edu.cn)

With speed mproving of the railway in cold regions, the problem on the dynamic stability of permaforst has got huge concerns. However, the damage mechanism of the raodbed-structure system in permaforst due to traffic vibration is not solved in China, although the Tibet-Qinghai railway has successfully run for near three years. In order to mitigate the frozen soil subsidence under traffic loads, it's essential to study the dynamic response analysis of frozen soil foundation under traffic loads. In this paper, a numerical model of frozen soil foundation was set up by two-dimensional finite element method, the law of frozen soil subgrade's dynamic response in depth direction and horizontal direction is systemticly studied, and the vehicle speed and frozen soil temperature impacting on roadbed dynamic response is also studied after a comparative analysis was made to roadbed dynamic response under the different vehicle speed and different frozen temperature. The results show that frozen soil temperature and traffic speed are two keys factors to control the frozen soil settlement.