

**Manning, L.J., Hall, J.W., Kilsby, C.G., Glendinning, S., and Anderson, M.G. (2007)**  
**Spatial analysis of the reliability of transport networks subject to rainfall-induced landslides**  
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**Abstract**

A methodology is developed to examine the susceptibility of a transport system to rainfall-induced landslides, and demonstrated for part of the UK rail network, with regard to the potential changes that might occur with climate change. A mathematical model is given for the system failure, and a statistical model has been formulated for the joint distribution of rainfall at different points along the railway line. These have been used to investigate the response of earth embankments along the railway line to current and future climate scenarios, including the effects of rainfall and evapotranspiration on slope hydrology and stability. It has been shown that for the system of clay embankments in question, the moisture profile through the embankment at the end of the summer months has a critical effect on system stability, both in terms of expected failure timing, and probability of failure. Further, it is seen that with changing climate, the system stability is likely to increase unless the degradation of embankment material properties, another potential effect of changed climate, is taken into account. The spatial distribution of failures is also likely to change.