



## **A dynamic traffic simulator for roads affected by natural hazards**

J. Voumard, M. Jaboyedoff, and M.-H. Derron

University of Lausanne, IGAR, Lausanne, Switzerland (jeremie.voumard@unil.ch)

This work focuses on the issue of natural hazards threatening roads. Nowadays, risk estimations of rock falls or landslides affecting whole sections of road are generally quite accurate and under relatively good control. Mitigation measures provide intervention means to reduce the hazards along roads. However, as classical models of risk calculation on communication routes do not take into account the dynamic traffic parameters, little is known on the way of reducing the risk at road level. It is not known precisely what really happens on the road when an event occurs and how vehicles interact.

A dynamic traffic simulator in development provides information on factors having an impact on the risk level related to the road. Variables such as visibility, curvature radius of turns or vehicle type were included in the model. Varying these variables within dynamic traffic simulations can suggest solutions to minimize the risks for road users. These simulations can provide answers to various questions, such as: does speed have a significant impact on the risk incurred by drivers? Is it possible to significantly reduce the risk with appropriate speeds? The simulation is performed with the MATLAB<sup>®</sup> software. The model is yet to be calibrated and validated through in situ tests.