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Rockfall risk mapping for the entire Swiss national road network

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Since January 2008, the federal roads office (FEDRO) is responsible for the entire national road/highway network of Switzerland. Until then, the national roads were managed by Cantonal road services until 2008. As a result, Swiss-wide, standardized information on natural hazards that threaten national roads was not available. The FEDRO therefore decided to initiate a four year project, with the technical support of the Federal Office for the Environment (FOEN), aiming at quantifying and mapping all risks due to natural hazards threatening Swiss national roads (total length = 1892 km). For rockfall, the frequency and intensity should be determined by geotechnical bureaus that carry out the field investigations and the subsequent hazard and risk modeling. To aim for a homogeneous and comparable dataset, a working method consisting of three steps has been developed. The first step defines how and which event-size scenarios (return period 0 – 10 yrs, 10 – 30 yrs, 30 – 100 yrs, 100 – 300 yrs.) should be determined. The second defines how the potentially affected area given the 4 scenarios and existing protective measures (nets, dams, forest, etc.) should be delimited. The third defines how the risk of having highway closure, damage to cars and infrastructure or casualties due to rockfall affecting the national roads and surroundings should be calculated and visualized. A pilot study started in July 2008, which covers 20 km of the Gotthard highway, in which 2 groups of jointly working geotechnical bureaus are studying the rockfall hazards. Their first results are currently available. We will present the details of each step of the developed method illustrated by the first project results and subsequently discuss gaps in knowledge and methodological differences that emerged and, if possible, potential solutions.