



Use of very high-resolution imagery to create multi-temporal landslide inventories along key highway corridors in Nepal.

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The mountains of Nepal are one of the most hazardous environments in the world, with frequent landslides caused by tectonic activity, extreme rainfall and infrastructure development. As a landlocked country, proper functioning of major transportation networks such as the highways are of prime importance for sustaining and improving the livelihoods of the population. Every year there are reports of landslides blocking the highways, especially during the rainy season; however, the frequency and location of landslides along the highway corridors are not well reported. Risk, hazard and susceptibility analysis along the highways require a complete and accurate inventory that might only be possible from very high-resolution (VHR) imagery. In this study, we utilize VHR imagery obtained from various data providing initiatives to create multi-temporal inventories along three important highways in Nepal, the Karnali, the Arniko and the Trishuli highway. We used object-oriented image analysis and machine learning to create multi-temporal landslide inventories along these highways. All workflows were carried out in an open source framework, using number of libraries available for free in Python. The effectiveness of this method, its transferability as well as the frequency and characteristic of landslides along these highways will be reported.