Where I work

Andrin Caviezel

I drop rocks down mountainsides — for science. Rockslides are a major hazard here in Switzerland. They can damage roads, railways, buildings and tunnels, and the risk only grows as climate change shrinks glaciers and exposes more loose rock. Geologists can predict when and whether a particular rock is likely to fall, but that's only part of the story.

Rockfall scientists such as myself use experiments to predict the path and destructive potential of a rock if it tumbles. My colleagues and I are using these data to build a rockfall-hazard model that can be applied to any alpine area. Engineers can digitally scan a particular rock and enter it into the model. Or they can browse our growing rock library to find a match. Once they know how rocks might behave, they can take necessary precautions, such as installing fences or perhaps even moving buildings.

In this picture, I'm placing a sensor inside an artificial 3.2-tonne cement block on Schraubachtobel Mountain in the Alps southeast of Zurich. These hunks of cement are more durable than natural rock and we can choose their size and shape. Once the sensor is in, a Super Puma helicopter — the biggest helicopter we can get in Switzerland — carries the block to the top of the slope and releases it. The sensor, similar to those found in smartphones, measures acceleration, rotation and force.

A large rock can reach speeds of up to 40 metres per second as it crashes down the slope. At this site, we're studying how obstacles such as trees and dead wood affect a rock's path. It might seem a lopsided contest, but a tree that's 30 centimetres thick can actually slow or deflect a 3-tonne rock.

We can't hear the crashing rock above the sound of the helicopter. And one falling rock doesn't have the power of a full avalanche. But flinging giant objects down a mountain is still super fun. Someone who didn't know what was happening would guess that it's just a bunch of kids playing with big toys.

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Photographed by Arnd Wiegmann/Reuters/Alamy.