

The rockfall observatory in the Reintal, Wetterstein Massif, German Alps

Anne Schöpa, Jens M. Turowski, and Niels Hovius

GFZ Potsdam, 5.1 Geomorphology, Potsdam, Germany (schoepa@gfz-potsdam.de)

The Reintal is an Alpine valley in the Wetterstein Massif close to the Zugspitze, Germany's highest mountain. Due to the variety of active geomorphic processes, including rockfalls off the steep limestone cliffs, debris flows, and snow avalanches, and the river Partnach, the Reintal has been the field area of many geomorphological and hydrological research campaigns over the last few decades.

In 2014, the Geomorphology Section of the GFZ Potsdam started to install a monitoring network to detect and classify rockfalls in the Reintal. The network includes six seismic stations, optical and infrared cameras, and two weather stations measuring air and rock temperature, air pressure and relative humidity, precipitation, wind speed and direction, and solar radiation. The continuous observations of the network are supplemented by repeated field campaigns including terrestrial laser scans of a prominent rockfall niche at the Hochwanner mountain. The about 1,500 m high north face of the Hochwanner experienced the detachment of a 2.8 Mio m³ rockfall about 500 years ago that created the so-called Steingerümpel (German for rock debris deposit) and dammed the river Partnach. The cliff still shows high rockfall activity, and an 80,000 m³ block can be expected to fall in the near future.

In this contribution, the layout of the observatory and details of the seismic network centered around the Hochwanner north face are described. Furthermore, the network data of a severe thunderstorm event in June 2016, that triggered many rockfalls and debris flows in the Reintal, is presented.