Geophysical Research Abstracts
Vol. 16, EGU2014-5478, 2014
EGU General Assembly 2014

Quantification of rock fall processes on recently deglaciated rock slopes, Gepatsch glacier, Tyrol (Austria)

Lucas Vehling, Joachim Rohn, and Michael Moser
Dept. of Applied Geology, University of Erlangen-Nuremberg, Erlangen, Deutschland

The recently deglaciated area in alpine glacier forefields is characterized by intensified mass movement processes in particular debris flows, shallow landslides and rockfalls. Due to enhanced geomorphic activity, rock slopes adjacent to shrinking glaciers contribute in a substantial way to the sediment budget. In this study, direct measurements of rock fall intensity are conducted by rock fall collector nets and natural sediment traps. The study area is a high mountain (1750-3520m a.s.l) catchment, which is recently about 30% glaciated. The extension of the Gepatsch glacier has been reducing since the little ice age maximum in the mid of the 19^{th} century with an average annual shrinking rate of a few decameters at its tongue. The first results of the direct measurements demonstrate that on the recently deglaciated rock slopes, rock fall intensity is at least one order of magnitude higher (2,38-6,64 g/m^2/d - corresponding backweathering rate: 0,3-0,9 mm/a) than on rock slopes which had has ice free since the last Pleistocene deglaciation (0,04-0,38 g/m^2/d - backweathering rate: 0,005-0,05 mm/a). The highest rock fall intensity is attributed to the recent deglaciated rock slopes which are located close to larger fault systems ($>$60 g/m^2/d – backweathering rate: $>$8 mm/a). Rock fall intensity shows also considerable intra-annual variations which are related to cold climate weathering processes and rainstorm activity.