Geophysical Research Abstracts
Vol. 14, EGU2012-10769, 2012
EGU General Assembly 2012

Prehistoric rock avalanches at Rinderhorn, Switzerland

L. Grämiger (1), J.R. Moore (1), and S. Ivy-Ochs (2)
(1) Department of Earth Sciences, ETH Zurich, Switzerland, (2) Institute for Particle Physics, ETH Zurich, Switzerland

Large prehistoric rock avalanches are frequently associated with the retreat of alpine glaciers following the last glacial maximum. However, due to a lack of accurately dated rock avalanche deposits, precise conclusions regarding the temporal occurrence of these events remain elusive. Here we present two case studies of rock avalanches in the Rinderhorn area of the central Bernese Alps, Switzerland. Preliminary results suggest that the Klein Rinderhorn rock avalanche released approximately 50 million m3 of sedimentary rock with a runout distance of up to 4.7 km. The Daubensee rock avalanche lies slightly upvalley to the south, and first results suggest a released volume of about 10 million m3. The 2.3 km long runout crossed, and apparently breached, a Late glacial moraine. The release and deposit areas of both events are located near the well-known Kandertal rock avalanche, and therefore provide an excellent opportunity to study chronological correlations between deglaciation and the timing of large slope failures in the region. We date the two events using Cl-36 cosmogenic surface exposure dating on deposited boulders. We also model the local pre-failure topographies in order to perform runout simulations. The combined outcomes enable better understanding of the failure scenarios and provide insights into how changes in rock slope boundary conditions associated with glacial retreat helped condition the slope failures.