



High-resolution multitemporal measurement of rockglacier dynamics and periglacial sediment storage in the eastern Alps, Austria

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High alpine environments are subject to rapid change due to melting glaciers and permafrost. As a consequence, rockwalls and moraines experience destabilization and increased mobilization of sediment.

The work presented here is part of the joint project PROSA (High-resolution measurements of morphodynamics in rapidly changing PROglacial Systems of the Alps) which deals with the calculation and quantification of the sediment budget for an alpine catchment situated in the Kaunertal, Austrian Alps.

Rockglaciers are frequently appearing landforms in the Kaunertal and represent large sediment storages. Usually the sediment flux of rockglaciers is rather small, depending on their activity status. All activity forms of rockglaciers (active, inactive and relict) are present in the catchment area.

Besides the highly active and well-known Ölgrube rockglacier, this work deals especially with the examination of the Riffeltal rockglacier which is situated on the opposite valley side. The activity status of the Riffeltal rockglacier is assessed and compared to the Ölgrube rockglacier with respect to the local parameters aspect, altitude, existence/absence of glaciers, geology and catchment area. Furthermore sediment volumes of both rockglaciers, their rates of movement and therefore their contribution to the sediment budget of the Kaunertal-catchment area is estimated.

The internal structure of the Riffeltal rockglacier was inferred from geophysical measurements (refraction seismics, ground penetrating radar and electrical resistivity tomography). Temperature loggers were placed on and around the rockglacier before the first snowfall to measure the bottom temperature of snowcover (BTS) once per hour during winter, and BTS measurements will be performed with a probe in February, March and April to infer permafrost probability. Rockglacier dynamics are identified with the analysis of multitemporal orthophotos and digital elevation models, derived from high-resolution airborne and terrestrial laserscanning and additional measurements with differential GPS.