

Abstract Eucop 2014:

The sediment yield at the front of active rock glaciers, a study based on observations and field measurements conducted in the western Swiss Alps

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The recent creep acceleration observed for numerous rock glaciers in the Alps (e.g: Roer et al. 2008, Delaloye et al. 2013) tends to raise concerns about natural hazards. Indeed, if we consider that the sediment yield at the front of active rock glaciers is related to their velocity, this recent acceleration will increase the production of easily transferable sediment. Thereby, the possibility of developing debris flow will be reinforced (Delaloye et al. 2010). The sedimentary connectivity on periglacial hillslopes represents thus an important aspect in the assessment of natural hazards in mountain areas.

The current contribution intends to present results from observations and measurements carried out on several study sites in the western Swiss Alps. The first goal is to observe the processes responsible for the sediment discharge at the front of active rock glacier and to point out the influencing factors. The second goal is to find out how to estimate the volumes and the rates of the sediment yield.

Our results are based on data collected using different methods (webcam images analysis, DGPS, photogrammetry, ...). They point out the major role of liquid water in the erosion of rock glacier fronts and illustrate the link between the sediment yield and the creep velocity. Additionally, terrestrial laser scanning campaigns performed at the front of two rock glaciers during the summer 2013 allow to assess the volumes and the spatial distribution of the sediment discharge.

Delaloye, R., Lambiel, C., Gärtner-Roer, I. (2010). Overview of rock glacier kinematics research in the Swiss Alps. Seasonal rhythm, interannual variations and trends over several decades. *Geogr. Helv.*, 65: 2, 135–145.

Delaloye, R., Morard, S., Barboux, C., Abbet, D., Gruber, V., Riedo, M., Gachet, S. (2013). Rapidly moving rock glaciers in Matternal. In: *Matternal - ein Tal in Bewegung*. Graf, C. (eds). Publikation für Jahrestagung der Schweizerischen Geomorphologischen Gesellschaft 29. Juni - 1. Juli 2011, St. Niklaus, Birmensdorf, Eidg. Forschungsanstalt WSL. 21–31.

Roer, I., Haeberli, W., Avian, M., Kaufmann, V., Delaloye, R., Lambiel, C., Kääh, A. (2008). Observations and considerations on destabilizing active rockglaciers in the European Alps. In : Kane, D.L. & K.M. Hinkel (eds): *Proceedings of the 9th International Conference on Permafrost*, June 29-July 3, 2008, Fairbanks, Alaska, 2, 1505-1510.