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Glacier length records for the Alps and Scandinavia over the last centuries: first results

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Due to access to long and high-quality records of glacier variations and to the highest density of proxy evidence worldwide, there is the unique chance to gain knowledge on past glacier and climate variability for the European Alps with an outstanding precision. Since direct determinations of glacier changes (mass and length fluctuations) did not start with increasing accuracy before the end of the 19^{th} century, historical methods can be used to reconstruct the behaviour of glaciers for the preceding time.

In this project, we will enhance the currently available (European) glacier record by new reconstructions of glacier fluctuations for the last few centuries. Available glacier length reconstructions dating far back in time from the western (e.g. *Mer de Glace*) and the central Alps (e.g. *Unterer Grindelwaldgletscher*) will be completed by records from other glaciers in the western, central and eastern Alps. The task will be performed by the interpretation of historical pictorial documents (drawings, paintings, prints, photographs, maps) and written sources, which were collected in the last 25 years at the Institute of Geography in Bern. In particular, newly available photographs are suggested to refine the Alpine glacier record mainly for the mid/end of the 19^{th} century. Additionally, historical data (pictorial documents, incl. photographs, and written sources) for Scandinavia will be collected, especially for the well-documented 19^{th} century, to study past glacier fluctuations in Norway and Sweden.

Both the Scandinavian and Alpine glacier length records will finally be compared to each other, in order to assess the spatial distribution of glacier fluctuations in Europe during the last few centuries. The detailed knowledge of the spatial distribution of glacier fluctuations in Europe and what their main climatic triggers at different time and space scales are, is a great challenge.