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Integration of historical glacier images into the Euro-Climhist database

Christian Rohr¹, **Samuel U. Nussbaumer**², Céline Walker², Corina Haller¹, Tamara T. Widmer¹, Matthias Fries³, Lukas Würsch³, and Heinz Zumbühl⁴

¹University of Bern, Institute of History, Bern, Switzerland (christian.rohr@hist.unibe.ch)

²University of Zurich, Department of Geography, Zürich, Switzerland (samuel.nussbaumer@geo.uzh.ch)

³University of Bern, Centre for Development and Environment, Bern, Switzerland

⁴University of Bern, Institute of Geography, Bern, Switzerland

Glaciers are excellent climate indicators, and the worldwide glacier retreat serves as a warning signal for the current climate change with its dramatic effects on humans and the environment. Visualizing glacier change by means of images can reach a broad public. Historical glacier images, especially from the so-called Little Ice Age (LIA, approx. AD 1300 to 1850 in the European Alps), show the earlier glacier fluctuations in a particularly impressive way and give us a unique insight into the climatic events of that time. These findings are in turn the key to understand current and possible future climate changes.

The long-term research project "Euro-Climhist" is one of the first projects of its kind worldwide to extract historical documentary data on climate and weather from a wide variety of source types, evaluate the data accordingly, and make it generally accessible in an online database (<https://www.euroclimhist.unibe.ch>). Until now, the Euro-Climhist database consisted mainly of written sources and measurement data. Within this project, the Euro-Climhist database was conceptually extended to include and secure glacier images in the long term, and to make them accessible to researchers and to the public. Around 500 glacier images were specially prepared for the database and provided with the corresponding metadata, i.e., the name of the artist, the original descriptions as well as supplementary descriptions from the literature, the dating of the images, and the image type. In particular, the assignment to one of five image types - drawing, oil painting, print, photograph, or map - allows conclusions to be drawn about the accuracy of the glacier extents depicted.

Besides written evidence, historical pictorial representations of glaciers allow us to reconstruct glacier extents in the Alps from the early 17th century onwards. Satisfactory quantities of historical material are only available for those glaciers that achieved the necessary degree of fame early on to attract travellers, scientists, and artists. Pictorial representations in painting and graphic arts date back to the early 17th century, but only appear in large numbers with the emerging popularity of Alpine travel during the 18th century. Photographs are available from the end of the 1840s.