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Pictorial sources in glaciology: from the icy splendour of the Little Ice Age to the melting glaciers of today

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Alpine glaciers are precious witnesses to the Earth's climatic past. Many of them have been documented in vast collections of texts and images since the modern era, when they gradually ceased to be perceived as repulsive and hostile places, and became fields of scientific knowledge linked to the demonstration of the theory of ice ages. In the early period, the perception of glaciers was dominated by fear, but later, during the Age of Enlightenment and in the 19th century, it changed to fascination and realistic observation. Several decades ago, historical glaciology discovered glacier images as valid sources reconstructing past glacier extent, which can also be combined with geomorphological and other evidence.

Our interdisciplinary approach examines the historical attention paid by naturalists to glaciers and their visual representation from the 16th century to the present. A key element is the systematic evaluation and study of historical images, which have proved very valuable in reconstructing the extent of selected Alpine glaciers during the Little Ice Age. Such reconstructions are only possible for certain glaciers that have achieved the necessary degree of fame to attract early travellers, scientists, and artists. For the western and central European Alps, the resulting glacier records based on historical documents date back to the 16th century and show that the current glacier retreat is unique in historical times. Finally, we place the Alpine glacier change in a global context. In 2025, the United Nations' designated "International Year of Glaciers' Preservation", glacier observation will take on particular significance.

Today, the global retreat of glaciers serves as a warning signal for the current climate change with its dramatic effects on humans and the environment. The visualization of glacier change through images can also help to communicate the radical warming of the climate to the general public. To this end, the Euro-Climhist database (<https://www.euroclimhist.unibe.ch/>) has been conceptually extended to include glacier images. Subsequently, a first set of glacier images (western and central Alps, southern Norway) and the corresponding metadata have been integrated into the Euro-Climhist database.



Figure 1. High-quality depictions of Alpine glaciers (left to right): Lower Grindelwald glacier (C. Wolf, 1774–77), Glacier des Bossons (J.-A. Linck, early 19th century), Glacier des Bois (S. Birmann, 1823), Upper Grindelwald glacier (T. Ender, 1854). Source: Nussbaumer, Zumbühl (2023).

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