PICTORIAL SOURCES IN HISTORICAL CLIMATOLOGY

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Content

- Winter images from Little Ice Age
  - Dutch and Flemish paintings from the 17th century
  - How reliable are these paintings for climate reconstruction?
- Reconstructing glacier dynamics
  - Example: the Grindelwald glaciers
  - Glacier images in Euro-Climhist (www.euroclimhist.unibe.ch)
- Extraordinary winters mirrored by impressionistic painters
  - Combining paintings, newspapers and instrumental measurements
- (Reconstructing natural disasters)
  - Example: the ice flood of 1830 in Vienna
  - Documents of self-representation?
Popular images for literature dealing with Little Ice Age (LIA)

A Cultural History of Climate
Wolfgang Behringer
London 2009

The Frigid Golden Age
Climate Change, the Little Ice Age, and the Dutch Republic, 1560–1720
Dagomar Degroot
Cambridge 2018

Christian Rohr: Pictorial sources in historical climatology

18 August 2023
Hendrick Avercamp: Winter in the Netherlands, oil on canvas, around 1605. Vienna: Kunsthistorisches Museum
Pictorial sources for LIA (?)

Hendrick Avercamp: Winter in the Netherlands, oil on canvas, around 1610. The Hague: Mauritshuis
Pictorial sources for LIA (?)

Frost fair London 1683, painting by an unknown artist
Historical climatology and art history
December 1879: an extremely cold and snowy winter (1)

December 1879: an extremely cold and snowy winter (2)

- 10 December, 1879: -23.9 °C in Paris
- More than 1 m of snow in the city centre
December 1879: an extremely cold and snowy winter (3)

Monthly mean temperatures in Paris, 1850-1910

12/1870
12/1879
12/1890
2/1895

Source: Rohr 2013
Iconographic analysis in historical climatology

- Historical development of glaciers
  - Scientific findings
    - Ice cores
    - Geological investigations of the terminal moraines
  - Pictorial sources (paintings, drawings, photos)
- Pictorial sources and their evaluation for historical glaciology
  - Sufficiently dense corpus on a specific glacier over a longer period of time
  - Serial iconography
- Challenges of glacier image analysis
  - Different types of images
  - Different perspectives
  - Distinctive landmarks necessary for comparison
  - Exact dating (year, season) often not ascertainable
Iconographic analysis of the Lower and Upper Grindelwald glacier

- Upper and Lower Grindelwald glacier best studied in terms of pictorial evidence
  - Extensive corpus of pictorial sources
  - Early tourism in Grindelwald directly beneath the glacier
- Life’s work of the geographer Heinz J. Zumbühl (Bern) and his team
  - Natural scientific-glaciological and pictorial approach combined
  - Images integrated into the Euro-Climhist database
Iconographic analysis of the Lower and Upper Grindelwald glacier
All images taken from Zumbühl et al. 2016: 110

Albrecht Kauw, 1669 (pen and ink, watercolour; detail)

Emanuel Handmann, 1748/1749 (oil on canvas; detail)
Iconographic analysis of the Lower and Upper Grindelwald glacier
All images taken from Zumbühl et al. 2016: 110

Caspar Wolf, 1774/1776 (oil on canvas; detail)

Johann Jakob Biedermann, 1812 (oil on canvas; detail)
Iconographic analysis of the Lower and Upper Grindelwald glacier
All images taken from Zumbühl et al. 2016: 110

Samuel Birmann, September 1826
(pencil, watercolour, gouache; detail)

Aimé Civiale, 1859 (photo; detail)
Iconographic analysis of the Lower and Upper Grindelwald glacier
All images taken from Zumbühl et al. 2016: 110

Julius Beck, 1868 (photo; detail)

Samuel Nussbaumer, 2013 (photo; detail)
Iconographic analysis of the Lower and Upper Grindelwald glacier

Combining written and pictorial evidence
The ice flood of 1830 in Vienna (1)

- Many cold winter in the so-called Dalton Minimum (1790-1835)
- Ice flood similar to the one in 1784
- In 1830, most of the central European rivers get frozen
  - Danube River and catchment
  - Czech Lands

Main Sources
- Narrative sources, including newspapers
  - Focus on the affected districts of Vienna (casualties, damages)
  - Rescue management (single “local heroes”, donations)
  - Role of the Habsburg imperial family
- Pictorial evidence
  - “Official” pictures by Eduard Gurk showing Archduke Ferdinand in action
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (2)
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (3)

The flooded quarter of Leopoldstadt (Jägerzeile) in Vienna. Watercolour drawing by Eduard Gurk, 1830.
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (4)

The flooded quarter of Leopoldstadt (Jägerzeile) in Vienna. Watercolour drawing by Eduard Gurk, 1830 (details).
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (5)

The flooded quarter of Rossau (Schmidgasse) in Vienna. Watercolour drawing by Eduard Gurk, 1830.
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (6)

The flooded quarter of Rossau (Schmidgasse) in Vienna. Watercolour drawing by Eduard Gurk, 1830 (details).

Protective fences in the streets
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (7)

The flooded quarter of Rossau (Schmidgasse) in Vienna. Watercolour drawing by Eduard Gurk, 1830.
Combining written and pictorial evidence
The ice flood of 1830 in Vienna (8)

The flooded suburb village of Leopoldau. Watercolour drawing by Eduard Gurk, 1830.
Rescue management by the ruler Emperor Napoleon III of France during the flood of 1856 in Tarascon

Emperor Napoleon III of France visiting flood victims of Tarascon on 3 June 1856. Oil-on-canvas painting by William Adolphe Bouguereau, 1856. Tarascon: Hôtel de ville, Salle des Consuls