Conference Agenda

Session

S02-04: Advances in Historical Climatology (Part 2)

Time: **Tuesday, 19/Aug/2025: 2:00pm - 3:30pm**
Session Chair: **Samuel Aaron White**, University of Helsinki

Location: **16-0043**

English Park Campus, House 16

Presentations

ID: 328
Panel
On-Site
Topics: Climate Histories
Keywords: historical climatology, Atlantic, early modern, modern, weather

Advances in Historical Climatology (2)

Chair(s): **Samuel Aaron White** (University of Helsinki, Finland)
Presenter(s): **Garima Singh** (Nicolaus Copernicus University), **Konrad Chmist** (Nicolaus Copernicus University), **Carla Mateus** (Maynooth University)

Panel Abstract

Historical records offer crucial evidence about past climates and weather, expanding our understanding of climate variability and helping us prepare for the recurrence of extreme events. Research in historical climatology continues to develop new methods and to analyze new sources for weather and climate of past centuries, including weather descriptions, early instrumental records, and phenological observations. These sources can also be compared and combined with natural proxies for a more complete record of the past and deeper perspective on present climate change. The four papers of this panel explore diverse historical records on weather and climate from the Atlantic region, including a long-term reconstruction of Irish heat waves and cold waves and early instrumental records from Labrador.

Paper 1: Thermal conditions on the coast of Labrador during the late 19th/early 20th century

G. Singh G.1, R. Przybylak R.1, 2, P. Wyszyński P.1, 2, A. Araźny A.1, 2, K. Chmist K.1

1 Faculty of Earth Sciences and Spatial Management, Nicolaus Copernicus University in Toruń, Poland
2 Centre for Climate Change Research, Nicolaus Copernicus University in Toruń, Poland

The late 19th/early 20th-century Moravian missionary observations offer an exclusive perspective on the climate of the Labrador coast, providing essential data on air temperature, air pressure, cloud cover, precipitation and wind patterns and short descriptions of the weather from observations made three or five times a day. This study focuses on the analysis of air temperature conditions in Labrador's coastal region using invaluable instrumental meteorological observations, which were carried out by Moravian missionaries on behalf of the Deutsche Seewarte. These data records are sourced from Deutscher Wetterdienst (Germany). Long continuous series of sub-daily temperature series (from 7 to 36 years) are available for six stations: Rama (1882–90), Hebron (1882–1918), Okak (1883–89), Nain (1882–1913), Zoar (1882–94) and Hoffenthal (1882–98). The sub-daily data will be used to calculate mean daily air temperature (MDAT) using the simple arithmetic mean. Such calculated MDATs will be corrected to the real mean. The corrected MDAT data will be used to calculate standard climate statistics (monthly, seasonal and yearly means, day-to-day temperature variability, thermal seasons, etc.) as well as to calculate indices such as growing degree days (GDDs), air thawing index (ATI), positive degree days (PDDs) and air freezing index (AFI) degree days.The ther mal conditions of the study period in the coastal part of Labrador will be compared to present-day ones. The analysis improves the knowledge about the region's climate variability during the early instrumental period. (The work was supported by the National Science Centre, Poland project No. 2020/39/B/ST10/00653).