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A treasure much bigger than previously thought

New numerical methods can make use even of short meteorological measurement series to produce global weather reconstructions far back in time. These short records have not received much attention so far. According to a new study published in the *Bulletin of the American Meteorological Society*, there are thousands of such records in archives and libraries worldwide prior to the start of National Weather Services, enabling new insights from past weather.

An international team of 54 experts from 26 countries, led by the University of Bern, Switzerland, systematically compiled information on short meteorological measurement series for the period prior to 1850 (prior to 1890 for Africa and the Arctic). They searched archives, libraries, old catalogues, and the internet for any hints. The resulting inventory now lists where, when, by whom, and why the measurements were taken, if they have been digitized, or where the manuscripts can be found. Several thousand records are listed. Some of the long records are well known, but there are many short records, which together also cover long periods and could be valuable for daily weather reconstruction. „The sheer number of series found is baffling“ says Stefan Brönnimann, who coordinated the study. „Although some of the series may never be found or turn out to be unusable, the potential for climate research is enormous.“

Climate data mirror history

The inventory, which is contributing to the efforts of Copernicus Climate Change Services, is an important resource for climate scientists. Data rescue projects can be planned more easily and the potential of old data can be estimated more accurately. However, the inventory is also a resource for historians. For instance, after a rise of the number of series during the Enlightenment, peaking in the 1780s, a substantial drop followed during politically troubled times. Station maps witness the expansion of settlement and the rise of colonialism. This shows how closely climate data are intertwined with societal aspects. The inventory also demonstrates that a substantial fraction of the inventoried data series has never been digitized. Of those series that have been digitized, many have not (yet) found their way into global data repositories. There are still many treasures out there, waiting to be recovered.

Source: Brönnimann, S. and co-authors (2019) Unlocking pre-1850 instrumental meteorological records: A global inventory. *Bulletin of the American Meteorological Society*, **100**, ES389–ES413.

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Further resources: Three videos explaining how historical weather data can be used for climate risk assessment: <http://www.palaeo-ra.unibe.ch/outreach/>

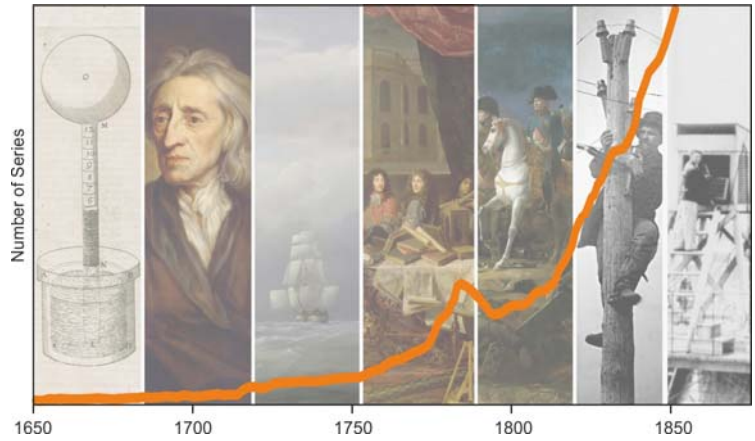


Figure: Number of meteorological series worldwide in a given year until the start of National Weather Services. History imprints on this curve (photos: Wellcome, Wikimedia Commons, NOAA Photo Library).

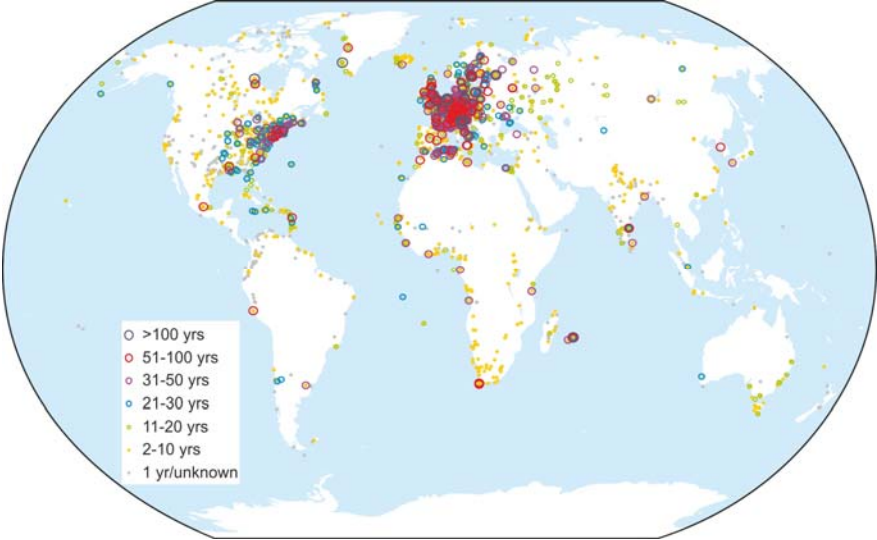


Figure: Map of stations and length of series prior to 1850 (1890 for Africa and the Arctic).

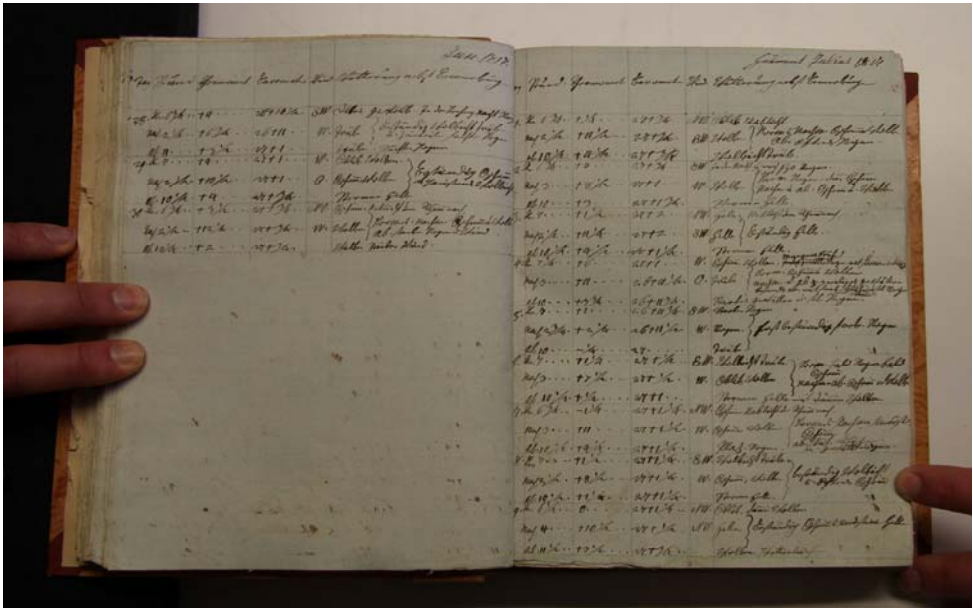


Figure: There is still a large amount of historical climate data in numerous archives waiting to be digitized.