

Clim. Past Discuss., referee comment RC1
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Comment on cp-2022-34

Anonymous Referee #1

Referee comment on "Pre-industrial temperature variability on the Swiss Plateau derived from the instrumental daily series of Bern and Zurich" by Yuri Brugnara et al., Clim. Past Discuss., <https://doi.org/10.5194/cp-2022-34-RC1>, 2022

The manuscript "Pre-industrial Temperature Variability on the Swiss Plateau Derived from the Instrumental Daily Series of Bern and Zurich" by Brugnara et al, presents the result of the data rescue of the Early Instrumental Period (EIP) of two Swiss stations (Bern and Zurich) back to mid XVIII century.

The recovery of EIP data (pre-1850) is a fundamental research activity to shed light on a very important period of transition between the pre and post industrial era.

There exists a huge amount of unexploited data dating back to late 18th/early 19th century and any work to recover them is very welcome.

I appreciated a lot this paper and, in particular, the rich metadata that enrich the data with fundamental information for their homogenization and conversion to the correct units.

For these reason I judge the paper ready for publication after few minor improvements.

Some specific comments:

- Add kind of thermometer and observation times (when available) in table 1 and 2 for the different sub-periods, this will facilitate the reader.
- The EIP warm bias of the HISTALP dataset is still an open problem: as the authors mention in their manuscript, also in Böhm et al. 2010 an important warm bias (up to

1°C in some seasons) with respect to other reconstructions (based on the same data, but undergoing different homogenization) is evident in the EIP (see figure 14 of the mentioned paper). The same warm bias is confirmed also by some proxy reconstructions (see e.g. Frank et al. 2007 Warmer early instrumental measurements versus colder reconstructed temperatures: shooting at a moving target. *Quat Sci Rev* 26:3298–3310). The ever-increasing availability of data for EIP is key to solving this dilemma.

- This is not mandatory, but when the number of sub-daily observations allows it, I suggest the authors to extrapolate the minimum and maximum daily temperatures: their daily values will probably be affected by a high uncertainty, but their monthly averages could provide a relevant information. Also the availability of the daily temperature range at monthly resolution provides the user with a good instrument to improve the homogenization, the DTR being very sensitive to inhomogeneities.

Reagrds.