

Dear editor, dear Jürg,

Thank you for your message and the request for minor revision which we received on March 10, 2022. Below you will find a point-by-point reply:

EDITOR: lines 365 and 1170 contain comments of Francis, they should be clarified.

>>> *Thank you for the comment and our apologies for the omission. The comment in line 365 has now been removed and the new version is clean. The sentence reads as follows: "Paris has excellent climate observations between 1630 and 1640 in municipal acts" as it indeed refers to the period spanning from 1630 to 1640. In line 1170, hyphens have been adjusted and are now the same throughout the document.*

EDITOR: Also line 1130 in fig caption 6 has a comment of Markus that should be deleted.

>>> *The comment has now been deleted.*

EDITOR: Figs 5 and 9 need references in the caption.

>>> *Agree, we have added "NVOLC v2; Guillet et al., 2020" to Fig. 5 and "Gao et al., 2017" to Fig. 9.*

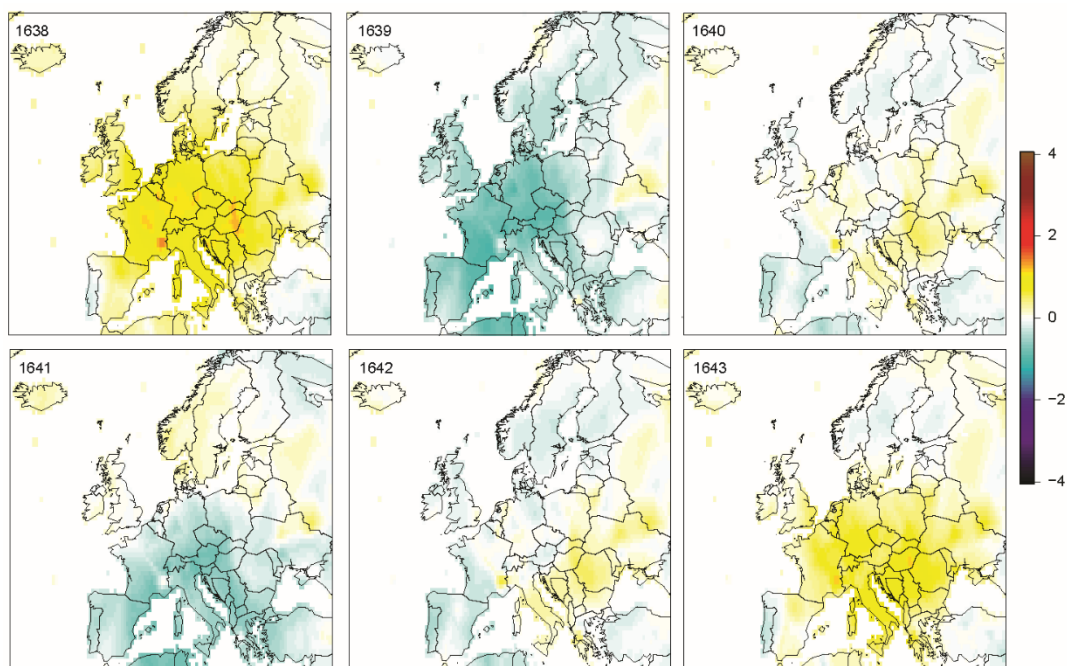


Figure R1: Temperature reconstruction (1638 – 1643) based on the Luterbacher et al. (2004) dataset

EDITOR: Within the section of Figure 6, please compare with the summer reconstructions published in Luterbacher et al. 2004 and add a few sentences if they are in agreement or not and add their maps in Fig 6 so that the reader can compare. Otherwise the reader gets the impression, that your reconstructions are the first ones for those years

>>> We have compared our summer reconstruction ($0.25 \times 0.25^\circ$ grid) which is based on 12 MXD, TRW and isotope chronologies with the dataset published with by Luterbacher et al. (2004). The temperature reconstructions based on the Luterbacher dataset are presented below. This dataset, published in 2004, contains primarily the climate indices of Christian Pfister (Switzerland), Rüdiger Glaser (Germany) and van Engelen (Low Countries) as well as TRW data from Lofoten Island and Yamal, as well as discontinuous data from Czech Republic and Hungary, and is resolved at $0.5 \times 0.5^\circ$.

We observe major differences between our reconstruction and the Luterbacher data (see Fig. R1). We explain these differences by the more limited number of summer-proxy data used and somewhat more limited representativeness of the Lofoten and Yamal reconstructions for summer temperatures in Central and Western Europe. In addition, the climate indices provided by historians (Glaser, Pfister, van Engelen) – while certainly very valuable – are semi-quantitative and based on ordinal-scale climate indices.

By contrast, the dataset that we use in the paper contains a substantially larger number of tree-based records across Europe; many of these datasets were not available at the time of publication of the Luterbacher record in 2004.

We also validated our tree-based reconstruction against a spatially-explicit, dense network of independent summer-temperature sensitive grape harvest records (Fig. R2) for Central and Western Europe (Daux et al., 2012; Corona et al., in review). Whereas the grape harvest reconstruction agrees very well with the tree-based reconstruction presented in this study, it diverges as well from the Luterbacher et al. (2004) dataset. We conclude that for the early- to mid-17th century, differences in the number and spatial representation of proxies best explains the different results obtained.

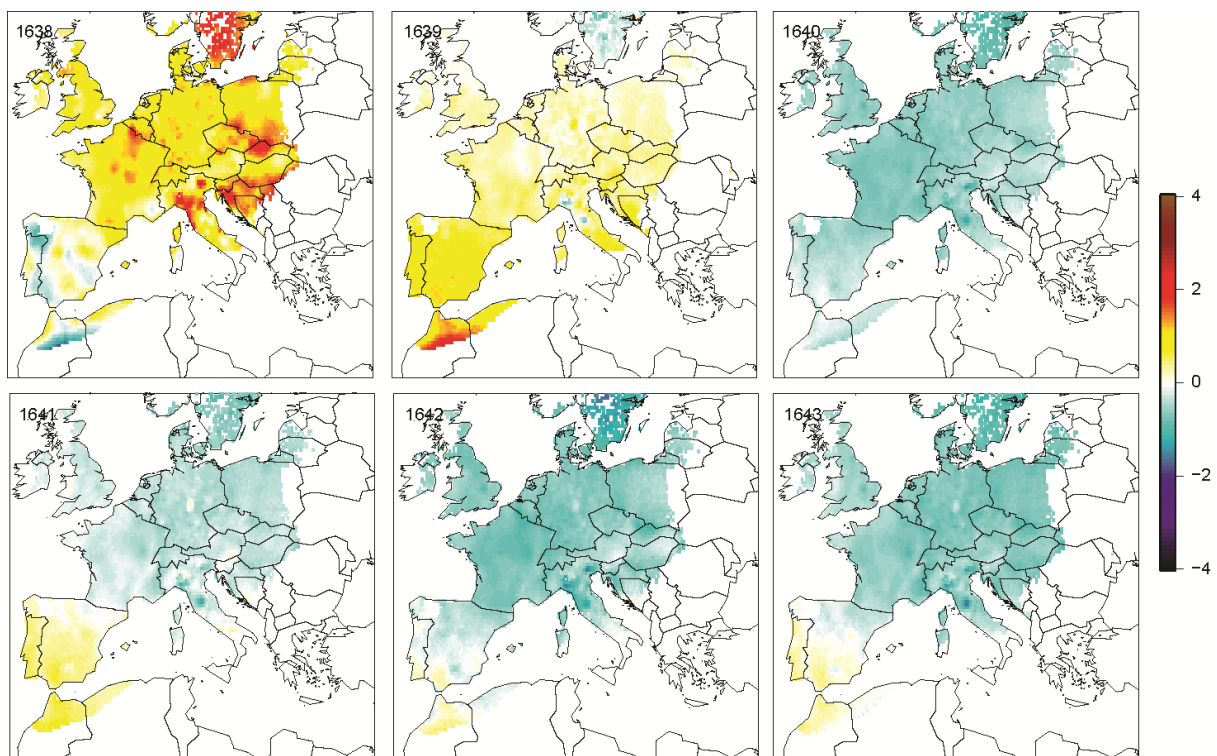


Figure R2: Temperature reconstruction (1638–1643) based on grape harvest dates (Daux et al., 2012, Corona et al., under review)

We therefore decided not to include the Luterbacher reconstruction in the paper. Instead, we added a sentence in the manuscript in lines 260-1 to explain the choice of the dataset used in this paper: “The dataset that we use in this study contains a larger number of summer-temperature sensitive proxies – especially over Western Europe and Scandinavia – and has a finer resolution than the Luterbacher et al. (2004) dataset.

We look forward to hearing from you and to see this paper published soon.

Kind regards

Markus Stoffel, in the name of all co-authors

References

- Corona et al., Comm Earth & Environ, under review.
- Daux et al., Clim. Past, 8, 1403–1418, 2012.
- Luterbacher et al., Science 303, 1499–1503, 2004