Reviewer 3rd (anonymous)

In this paper, the authors describe a newly recovered series of temperature observations from a site in Wrocław covering the period 1773–1781. Such series are extremely valuable because—despite the inherent limitations of early instrumental observations—they provide data at a much higher temporal resolution than is achievable with most proxy records. In particular, they capture the full seasonal cycle, whereas many proxy series are restricted to specific parts of the year (for example, growing-season temperatures).

The period studied is also of particular interest, as it coincides with a time when the competing influences of solar variability and volcanic forcing remain poorly constrained, and which broadly corresponds to a phase of relatively cooler average temperatures.

The temperature observations presented appear to be highly reliable and to have been recorded using a responsive instrument. I was pleased to see the comparison with temperature estimates from the ModE-RA reanalysis, and I fully agree with the authors that assimilation of these data into palaeoreanalysis products would further enhance their value, particularly if combined with the construction of a longer regional temperature series.

The paper primarily consists of a description of the data and an evaluation of the observations against other available series. As such, it represents an incremental contribution; nevertheless, it is a valuable one and fits well within the remit of the journal.

Reply. Thank you very much for your high assessment of the value of our article for understanding the climate of Poland and Central Europe.

Specific comments

Line 21: “atmospheric” is not needed before “precipitation”.

Reply. Done.

Line 44: The definition of the aims of historical climatology is too limited. For example, Brázdil et al. (2005, p. 366, doi:10.1007/s10584-005-5924-1) describe three aims of historical climatology:

(i) reconstructing temporal and spatial patterns of weather and climate, as well as climate-related natural disasters, for the period prior to the establishment of national meteorological networks (mainly over the last millennium);

(ii) investigating the vulnerability of past societies and economies to climate variability, climate extremes, and natural disasters;

(iii) exploring past discourses and social representations of climate.

Reply. Thank you for this suggestion. This comment was also made by the second reviewer. We took into account his suggestion to write that one of the main tasks is to describe what we wrote. Since we are citing the work of Brázdil et al. (2005), interested readers can find the remaining goals of historical climatology in that paper.

Line 160: It would be useful to place the link to the data in a more prominent location, for example in a dedicated section at the end of the paper titled “Data Availability”, with a brief description of the repository.

Reply. Done.

Line 142: Change “exposition” to “exposure”.

Reply. Done.

Figure 4: The morning and Tmin curves are shown in the same colour; please revise the figure to allow clear visual distinction.

Reply. Done.

Figure 9: Please invert the sign of the difference so that, for example, the grey bars represent positive values.

Reply. Sorry, but we do not agree with your suggestion. According to our knowledge, in the majority of work, the reference period (for example, 1961-90, in our case 1873-81, 1973-81 and 2013-21) is subtracted from the studied period (in our case 1773-81). Additionally, we also use this method of comparing data with contemporary conditions in our other works analysing Poland's climate in historical periods (e.g., Przybylak et al. 2023). Therefore, to maintain a uniform approach to this issue, we prefer not to change anything here. Please also note that the main topic is historical climate, not present-day. Drawings must show the direct temperature conditions in the historical period (warmer/colder than today), not the other way around.

Przybylak R., Oliński P., Koprowski M., Szychowska-Krąpieć E., Krąpiec M., Pospieszyńska A., Puchałka R., 2023, The climate in Poland (central Europe) in the first half of the last millennium, revisited, Climate of the Past, 19, 2389-2408, https://doi.org/10.5194/cp-19-2389-2023

Around page 15: Please include a time series (1773–1781) showing the difference between the ModE-RA series representative of Wrocław and the newly recovered temperature series. This could be included as a supplementary figure if space is limited.

Reply. Thank you for this suggestion. The figure was constructed and added to the supplementary material.

Line 404: Please explain why the reconstructed temperature series should be expected to outperform the palaeoreanalysis.

Reply. Thank you for this suggestion. In the introductory part of your review, you described very well the importance of early instrumental observations compared to reconstructions based on proxy data and modelled. In the paper, we also wrote earlier that some biases available in ModE-RA are associated with the limited use of proxy data sources from Poland in the temperature reconstruction. We included your propositions in our paper by adding the following sentences:
Moreover, they have several important advantages over proxy data. For example, instrumental data provide much higher temporal resolution (daily and even sub-daily) and capture the full seasonal cycle. Proxy series are restricted to specific parts of the year (most often to summer or part of it).

To conclude our response, we would like to thank you for your high praise of our work and for your many constructive comments and suggestions. We hope we have adequately addressed most of them.