

Review of Stefan Brönnimann: 18.02.2026

The paper presents a newly discovered, historical meteorological record from Wrocław in Poland, covering the years 1773-1781. It is a relevant addition to the existing record in Wrocław, which began in 1791. Because the gap between the two records can be filled with data from nearby Żagan (1781-1792), a long record spanning more than 250 years can be generated.

The paper describes the record and some analyses. It is relevant and within the scope of the journal. However, I have some suggestions that I would like the authors to take into account.

Reply. Thank you very much for your positive estimate of our work.

Quality Control: The authors should elaborate more on how they perform the quality control. A number of standard checks are available: Range checks, checks of large steps, comparing morning, noon and evening measurements, checking for constant values. The series could and should be compared with those of Berlin and Prag at a daily scale. After 1779, outliers could even be compared against Warsaw, although the distance is large.

Is the series homogenised? I don't really see this described. But there is the sentence "The correction of historical mean monthly temperature data in Wrocław was necessary because the Prague series was homogenised, which means that the historical data were also corrected to be comparable to present-day data." So how were the data "corrected", what was the reference, which tests were applied? I think the authors should refrain from making statements about the temperature difference to more recent periods.

Reply to both parts of the remarks/comments. They are generally similar to those made by the 2nd reviewer, so we provide only a brief response here to avoid repetition. We addressed all these suggestions in our reply to the 2nd Reviewer (see points 1-4 for details). To summarise briefly, we have demonstrated that there is sufficient metadata to conclude that Scheibel was very well-versed in meteorological and climate research, including methods for measuring various meteorological elements. He also used the latest instruments, which, as he writes, were calibrated repeatedly. Because he coordinated research at the Silesian meteorological station network, he was able to continuously monitor and correct observation results. The thermometer was shielded from external conditions. We also know the approximate times of the meteorological measurements, so in the current version, we are adding a new series of corrected mean daily temperature values. To sum up, the metadata available to us clearly demonstrates the reliability of meteorological measurements, their ongoing control, and their archiving. To check for outliers in the temperature data, the differences between all series (midday minus morning, roughly DTR; midday minus evening; and evening minus morning) were calculated, as well as day-to-day differences across all three series. In addition, we carried out a quality check of the data, comparing observations with data from other stations in Silesia (Jelenia Góra and Żagań), for which Scheibel also provided data for 1773, 1774, and mid-1775. However, he published monthly data, and the annual course of all these data is very similar, with a correlation equal to 0.99. We also compared the series of mean daily data from 1779-1781 with those from Warsaw. These also showed very high convergence and no significant deviations, with a correlation of 0.97. That correlation is even higher than that between the data from Żagań (near Wrocław) and Warsaw for the period 1781-1792, for which the observations originated from the Mannheim network.

The paper says a lot about temperature, though very descriptive, but very little about the other measurements I think pressure would be very valuable, and also precipitation (which was more rarely measured) and humidity would deserve more description. Conversely, I don't see much value in tabulating means.

Reply. We also address this suggestion in the reply to 2nd Reviewer (see point 3 in particular).

The comparison with ModE-RA is best performed on the scale of monthly-to-decadal variability. Longer term trends and changes of longer periods in this data set are from model simulations and not from observations.

Minor:

L. 28: I think comparisons over long time periods are difficult since the series is not homogenised.

Reply. We agree that it is not easy, particularly in detail. But such comparisons are important, at least, for establishing long-term fluctuations and roughly distinguishing cooler and warmer periods. Moreover, we hope that the reviewer will now change his opinion about the historical series for Wrocław. In light of the gathered information and the analyses presented here, it is reasonable to conclude that the discovered series is of high quality and homogeneous. We are positively surprised by the comprehensive climatic investigation (topoclimatic, microclimatic) conducted by the Silesian Patriotic Society in Silesia (network of stations). The rest of the series comes from the official networks of meteorological stations (Prussian and Polish), and their quality was checked.

In the Introduction, perhaps give a somewhat broader context on enlightenment science activities in Poland ("Patriotische Gesellschaft in Schlesien").

Reply: Done. We added the following information:

The Patriotic Society in Silesia existed in Wrocław from 1772 to 1790. Initially, this association had economic objectives, stemming from the Schlesiische Landschaft, which provided loans to local nobility and agriculture. The Prussian government supported it. The organisation's primary goal was to help agricultural reforms, which was also served by scientific research conducted in the spirit of the Enlightenment (T.P., "Patriotic Society," in: Encyklopedia Wrocławia, Wrocław 2006, p. 858). These studies were published in "Oekonomische Nachrichten der Patriotischen Gesellschaft in Schlesien", in which Scheibel also contributed significantly. From the perspective of the subject of this article, it is important to note that the Society organised and coordinated weather and climatic research in Silesia. The Society established several meteorological observation sites in the area, taking into account, among other factors, various landforms (valleys and ridges). The main aim of this network of stations was to provide data for investigating the impact of weather and climate on social activities, particularly agriculture.

L. 156: Weighted averages: How calculated?

Reply. The formula is given in line 152 of the manuscript. Here is a copy of the formula from this line:  
( $T_{\text{morning}} + T_{\text{midday}} + 2 \times T_{\text{evening}}$ )/4.

The Polish Meteorological Service used the weighted average until the early 1970s. This average, used to calculate the average daily temperature, was closest to the so-called real average, calculated from

eight or more measurements per day. Taking two evening readings well compensated for the lack of a 1 a.m. nighttime reading.

Dear Professor Stefan Brönnimann,

To conclude our response, we would like to thank you for finding the time to read our paper. Thank you very much for your constructive comments and suggestions. We hope we have adequately addressed at least most of them.