Anonymous referee #1

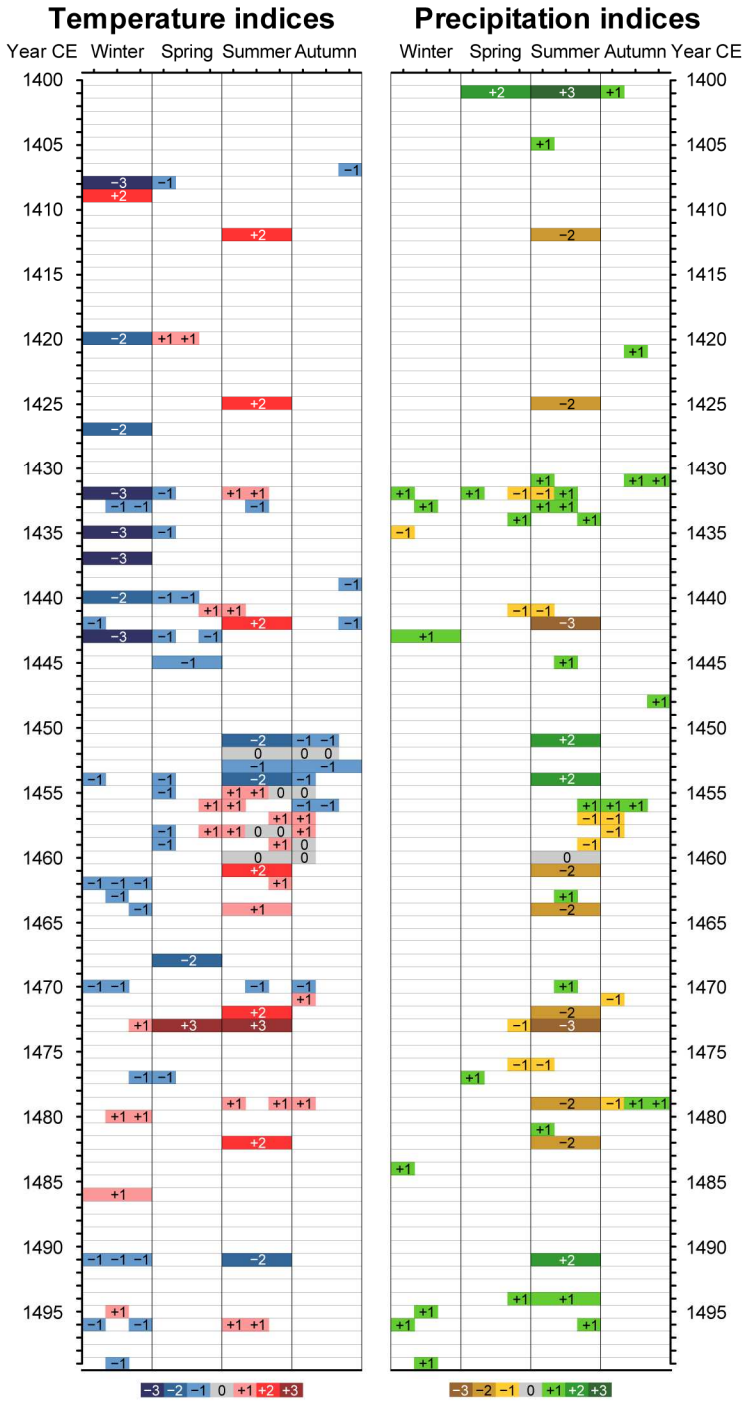
This is a very comprehensive work that develops knowledge on a topic or area that was lacking in its entirety regarding the climate of the Late Middle Ages in Central Europe. The authors express the limitations and challenges of the availability of sources, which demonstrates their expertise and honesty. The analysis of the information obtained is optimal, and the results are integrated into the context, which the authors themselves summarize very accurately.
RESPONSE: We would like to thank the anonymous referee #1 for generally positive evaluation of our study as well as several useful comments, which we are responding to below.

I have no general criticisms to raise, but only some minor details that I leave for the authors' consideration if they would introduce or consider some of the suggestions:

+ Section 3. "Documentary data." Would it be more appropriate to express this as "Documentary Sources"?
RESPONSE: Accepted and changed as "Documentary sources".

+ At various times, the difficulty in finding information to cover all the years under study within the 15th century is explained. Don't the authors consider creating groupings by 5 or 10 years to overcome this problem? At least in some cases, as a support for the annual study, continuous diagrams by groupings would perhaps provide a complementary result.
RESPONSE: We do not believe that grouping data by 5 or 10 years would be able to overcome the problem of missing information. To only work with years for which we have documentary data seems to us to be more scientifically correct, because limited information is not always representative enough for 5- or 10-year intervals.
A major advantage of documentary records is the unrivalled temporal resolution for information on pre-20th century conditions. The comparisons with biological proxy data presented highlight this in some cases, as tree growth (or the processes that result in the isotopic composition of the annual wood layer) record climate over longer (i.e., seasonal) temporal windows than some of the documentary events (e.g., frost events or torrential rain). By averaging these types of data at sub-decadal or decadal scales, there is an obvious loss of information. Because the central aim of our manuscript is to collate and introduce this unique material, these longer averages and comparisons could be considered secondary. However, we do agree that the approach can be very useful in other instances, as evident by previous publications by some of the authors (e.g., Brázdil et al. 2013).
Reference:
Brázdil, R., Dobrovolný, P., Trnka, M., Kotyza, O., Řezníčková, L., Valášek, H., Zahradníček, P., and Štěpánek, P.: Droughts in the Czech Lands, 1090–2012 AD, Clim. Past, 9, 1985–2002, https://doi.org/10.5194/cp-9-1985-2013, 2013.

+ Fig. 2. Displaying a time axis in successive units but without maintaining its consecutive timeline of years creates problems in interpreting the information. There are jumps or gaps that cannot be perceived, and it seems to be a continuous series when in reality it is not. Wouldn't it be possible to present the information with axes that correctly visualize the chronological progression? For example, by marking the years without information with a softer colour or gray colour?, without breaking the continuity of the annual series.
RESPONSE: Accepted, we prepared the new version of Fig. 2 showing continuously missing data or available indices for the whole 15th century – see below:



+ Lines 305-320. The level of disagreement between the dendroclimatic and historical data is explained. Could this low level of consistency be the result of the different geographic locations of the two proxies? Could this be explained in the text? I know of countries where these comparisons have been attempted, but the areas where the dendroclimatic and historical data are obtained are completely different, with their own ecosystems and dynamics. Therefore, the differences are entirely logical, even considering that the objective is to assess climate variability on a broad temporal scale. I don't think these differences imply the slightest loss or relativization of the quality of the results.

RESPONSE: We fully agree with the overall sentiment of the reviewer's comment, and we touched upon this briefly on lines 314-320, including: "These varying relationships may reflect the fact that precipitation extremes tended to be spatially restricted to the extent that

they found no reflection in documentary sources. Further, TRW-based precipitation reconstructions display relatively low skill. Finally, some extreme years or seasons are not reflected in precipitation indices simply because of the low density of available documentary evidence."
Beyond this, we also believe that the temporal resolution (part of "their own ecosystem and dynamics") that we referenced to in the above comment on decadal averaging likely plays a role here. Despite all these complexities, there are statistically significant relationships between the different data sources – which in itself is remarkable. We have modified the wording to reinforce this view in paragraph before Table2 (lines 316-318) as follows:
"As follows from Table 2, full or only partial agreement appears for just a few of them. These varying relationships may reflect the fact that precipitation extremes tended to be spatially heterogenous to the extent that they found no reflection in documentary sources, or potentially due to differences in the resolution of recording (i.e., the biological proxies tend to incorporate conditions over the full growing season and often fail to capture events at sub-monthly scales). Further, TRW-based precipitation reconstructions display relatively low skill."
Hopefully the revised framing has clarified the issue.

+ Line 487, p. 24. A strong volcanic eruption from 1452-1453 is mentioned as "unknown," but perhaps this isn't the eruption of Mount Kuwae?
RESPONSE: We do not believe that there is an adequate consensus on the topic of origin (Ballard et al., 2023). It is worth noting that the 1452/53 event is more prominent in Northern Hemisphere records, and it has therefore been suggested that it was the result of an extratropical eruption (Burke et al., 2023). The Kuwae event, which previously was placed in 1452/53 (Gao et al., 2006), is thought by some to have originated in 1458/59 (e.g., Gautier et al., 2021) – which has, in part, been corroborated very recently by Antarctic ice core data (Ro et al., 2025). This latter study by Ro et al. (2025) also raises the possibility of two independent but concurrent eruptions around 1458 – making the story even more complex. As we are not tephrochronologists, we prefer to not attribute the eruption(s) directly (and doing so/not doing so does not change the story of our manuscript). Nonetheless, we tried slightly change the corresponding paragraph (lines 485-493) as follows:
"Despite some uncertainties in the identification and timing of large volcanic eruptions, parti□ularly in th□1450s (Bau□h, 2017; Esp□r □t al., 2017; Abbott □t al., 2021; Ro et al., 2025), their cluster in Fig. 6b coincides well with temperature fluctuations in Europe. In JJA temperatures by Luterbacher et al. (2016) (Fig. 8a), a significant cooling appeared in 1453 as a response to an eruption of debated origins in 1452/53 (□g., Ballard □t al., 2023; Burk□□t al., 2023), previously attributed by Gao et al. (2006) to the Kuwae volcano eruption in Vanuatu. The cooler Czech summers in 1453–1454 identified in the documentary sources (cf. Fig. 2) followed this eruption. The volcanic cooling persisted for about the next 15 years, and its Northern Hemisphere extent was demonstrated in several TRW proxy reconstructions (Esper et al., 2017), but it did not appear further in the Czech JJA temperature indices (cf. Fig. 2). Strange atmospheric phenomena visible all over Europe in September 1465 as the result of a volcanic dust veil, but dated to 1464/1465, were described by Bauch (2017). The persistence of the cold period may be related to another Southern Hemisphere eruption in 1457 or 1458 (Abbott et al., 2021). Moreover, the recent analysis of Antarctic ice core data by Ro et al. (2025) mentions the possibility of two independent but concurrent eruptions around 1458."
New references:
Ballard, C., Bedford, S., Cronin, S. J., and Stern, S.: Evidence at source for the mid-fifteenth century eruption of Kuwae, Vanuatu, J. Appl. Volcanol., 12, 12, https://doi.org/10.1186/s13617-023-00138-1, 2023.

Burke, A., Innes, H. M., Crick, L., Anchukaitis, K. J., Byrne, M. P., Hutchison, W., McConnell, J. R., Moore, K. A., Rae, J. W. B., Sigl, M., and Wilson, R.: High sensitivity of summer temperatures to stratospheric sulfur loading from volcanoes in the Northern Hemisphere, Proc. Natl. Acad. Sci. USA, https://doi.org/10.1073/pnas.2221810120, 2023.
Gao, C., Robock, A., Self, S., Witter, J. B., Steffenson, J. P., Clausen, H. B., Siggaard-Andersen, M.-L., Johnsen, S., Mayewski, P. A. and Ammann, C.: The 1452 or 1453 A.D. Kuwae eruption signal derived from multiple ice core records: Greatest volcanic sulfate event of the past 700 years, J. Geophys. Res., 111, D12107, https://doi.org/10.1029/2005JD006710, 2006.
Ro, S., Hur, S. D., Ekaykin, A., Han, Y., Ro, C.-U., Hong, S.-B., Lee, M. J., Chang, C., Lee, S., Moon, J., Jung, H., Veres, A., Lee, A., and Hong, S.: Origin of the 1458/59 CE volcanic eruption revealed through analysis of glass shards in the firn core from Antarctic Vostok station, Commun. Earth Environ., 6, 828, https://doi.org/10.1038/s43247-025-02797-x, 2025.