

Weather and Climate Dynamics (WCD)
Droughts in western Central Europe and associated atmospheric circulation patterns since 1844
2nd round

General comments:

I appreciate the attention and answer of my comments in the rebuttal. The authors considered most of the issues raised, resulting in an improved manuscript.

I am still concerned about the fact that the land-atmosphere processes are not shown and linked the circulation patterns and the evolution of droughts. The conclusions of the study are thus similar to other studies already showed; there are intense droughts in Europe when the jet stream moves north due to weather patterns associated with ridging and blockings. Also, new research highlights the role of changes in atmospheric circulation in driving summer drying (Dunkl et al., 2026, Nat. geo. Sci.). However, I understand that not everything can be studied in one article and the improved manuscript shows other results that are of interest for members of the community, such as the specific patterns by season and the intensity associated with specific patterns.

Another source of concern is still the difference between Thornthwaite and Penman-Monteith (PM). Figure S15 in panels b) show that Thornthwaite has a long-term trend of 5.973 mm/decade and PM of 4.99 mm/decade for summer (spring has a similar difference). ModE-RA does have all variables for calculating PM except for the ground heat flux, which is a relatively minor share of the energy balance in the soil at long time scales (it could be assumed as 0). Although changes in land-use change have other uncertainties. As stated in the previous round of review, the AED is an essential part of the conclusions of the study; thus, the differences in AED are important for the manuscript.

I suggest moving the section 3 Data and evaluation, before the 2 Methods section. In the latter there are some sentences that might not be understood without knowing the data first; e.g. “corresponding to the common period shared by all post-evaluation reanalyses” (line 91).

Figure 3 – The labels of the three datasets are minuscule.

Figure 4 – Year-round trend is a trend calculated on annual time series? In the abstract and conclusions is mentioned as annual, while in the figure apparently is refereed as year-round.

Line 375 – the sentence is convoluted.

Line 440 – the sentence is no comprehensible. Rewrite.

Line 496 – I do not support is called “drought evolution”. The manuscript does show that the occurrence of drought events is influenced, or interconnected as authors say, to the atmospheric circulation; but it does not show the continuous short-scale change in hydroclimate and hydrological conditions (evolution of droughts). This might be picky wording, but the evolution of drought conditions is a very important concept that has dire implications. Please, consider also change the used concept in the whole manuscript.

Line 505 – I suggest to upload the scripts before the end of the publication process.

Given the considerable input that reviewers gave to the current version of the manuscript, I think that their efforts and content contributions deserve an acknowledgement, in the acknowledgment section, even with the reviews being anonymous.