

### Reviewer 3:

We would like to thank the reviewer for many valuable comments:

1) While the authors explain clearly how they compute drought indices for the instrumental records, it is not clear what a ‘drought in the Czech lands’ means during the 1500-1805 period. According to the authors it is a period when there are evidences of droughts during at least two consecutive records, but nothing is discussed about the spatial distribution of these records. So, two dry months in a single location lead to a drought in the whole area? Is the same for two drought records in consecutive months but in different locations? It is not clear from the text. This must be clarified because, as shown by the authors in their figure 9, droughts do not affect necessarily to the whole Czech territory. This is a source of uncertainty of the current 1500-1805 series which should be discussed in the paper. So, if the droughts have great spatial variability, does it make sense to build a series of ‘Czech droughts’? In fact, I think that these records are an excellent opportunity of analyzing the long term spatial variability of the droughts in the Czech territory. This is not possible if the records are merged into a single index with uncertain interpretation.

Response:

In Section 5.1.1 we mentioned all existing uncertainties in documentary data. Documentary data are distributed unevenly over the entire Czech Lands territory and the sites vary within time. It is a typical feature of this type of evidence and – with respect of weaker spatial correlations in precipitation known from instrumental period – there is no way we can reduce this caveat. To develop any chronology we have to work in greater areal units to minimise number of missing information. This is a general style of work in historical climatology where temperature/precipitation indices are interpreted for bigger units like Germany, Switzerland, Low Countries, England etc. In Section 2.1 we tried to characterise various types of documentary evidence and there as well as in Section 3 we define what droughts mean in our interpretation. This is complemented by intensity estimates expressed by precipitation indices in the style generally accepted in historical climatology giving in many quotations (e.g. Pfister, 1999; Brázdil et al., 2005, 2010; Glaser, 2008). We believe that there is not necessary to repeat this more-or-less well known information. Concerning of instrumental period, we are working with drought indices calculated from mean Czech temperature and precipitation series, i.e. territorially pre-instrumental and instrumental parts are fully comparable. Including of Figure 9 to the publication which tries to show both types of uncertainties in instrumental data (averaging over the whole Czech territory) and documentary data (uncertainty related to the part of territory for which records are available). There is necessary to add, that many reports speaks of droughts in the entire Bohemia or Moravia and such cases in which drought is interpreted only from one place are rather exceptional. From this reason we believe that also pre-instrumental droughts may be used prevailingly to describe average patterns for the Czech Lands territory similarly as it is in the instrumental period.

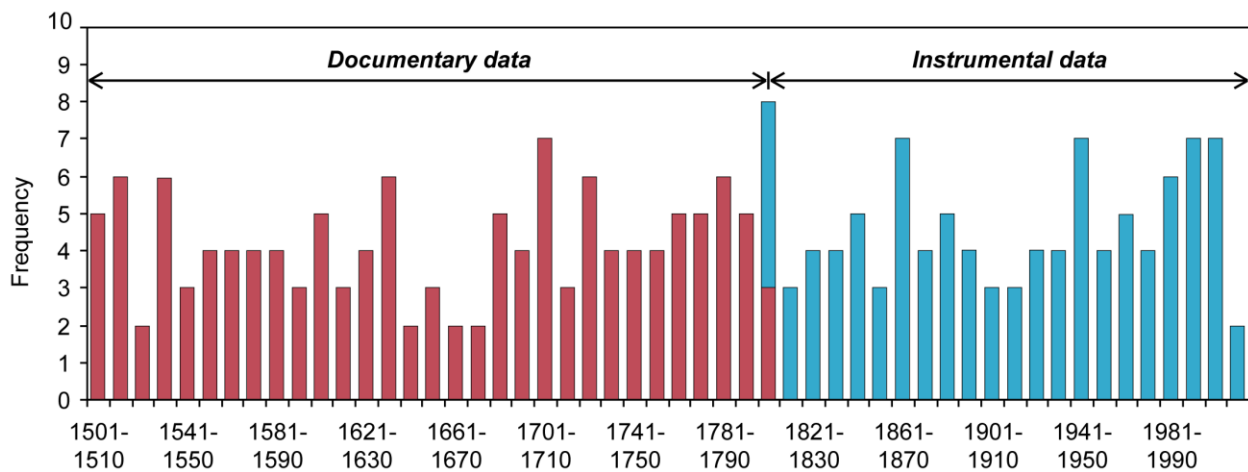
Despite above explanations, to respond to some critical comments of the reviewer we added some explanatory sentence as the third paragraph in Section 3 as follows:

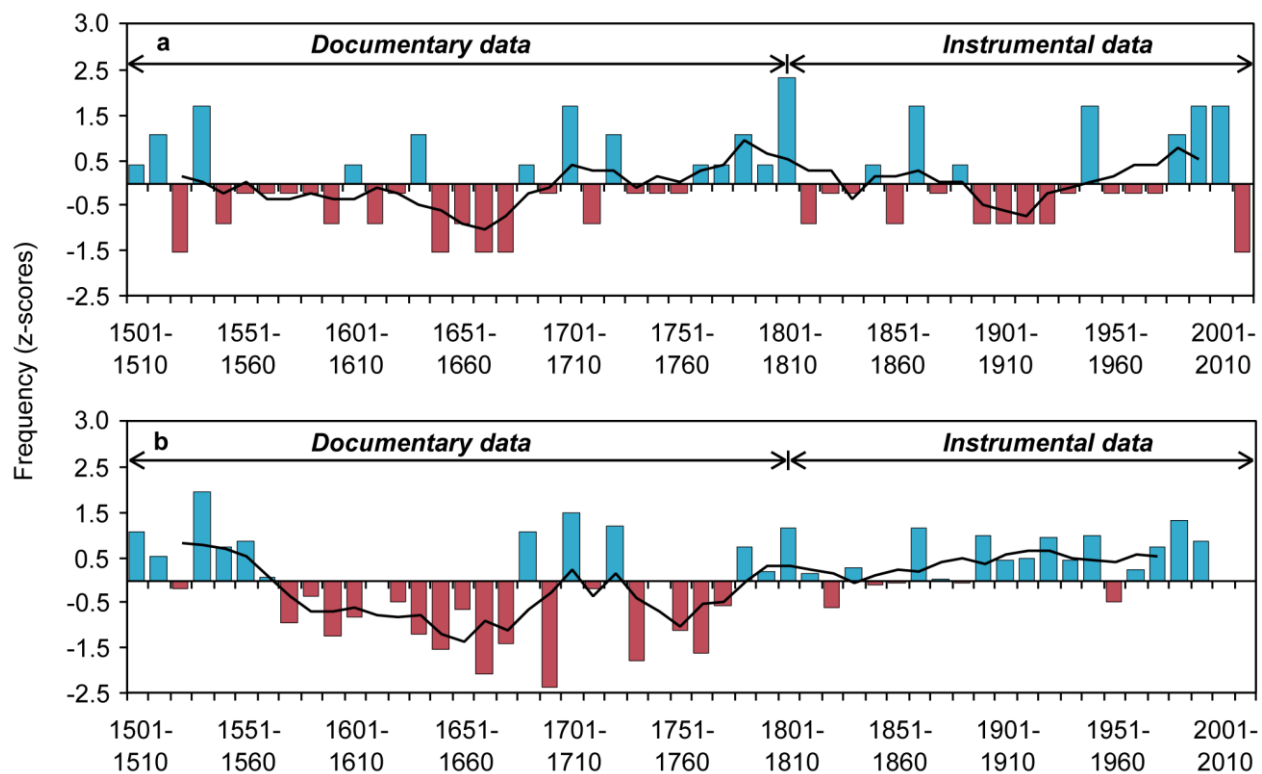
“The spatial pattern of droughts interpreted from documentary evidence is related to the Czech Lands as a whole. This is supported by the fact that individual drought episodes are captured by documents from a variety of places and regions scattered throughout the territory of the Czech Lands in the majority of cases. Moreover, in some cases particular drought events are directly reported for far larger territorial units, such as Bohemia or Moravia. Such data coverage is important for comparison with droughts in the instrumental period, in which drought indices are derived for the entire Czech territory.”

2) I think that figures 7 and 11 and their corresponding analysis should be deleted since they imply a homogeneity in the record which has not been achieved yet. In fact the authors recognize the need of a further analysis for a period overlapping instrumental and documentary records. Merging both types of series in a single record is misleading since they are clearly inhomogeneous. If they authors want to present the whole record, they should represent both parts of the records with different symbols and, in any case avoid a joint analysis.

**Response:**

We believe that we cannot apply criteria of homogeneity known from instrumental period on documentary data because there is simply no other option. We characterised all existing uncertainties in data in such detail that the reader should be enough aware to understand the whole series as a homogenous unit. The reviewer's proposal to distinguish the both types of information in figures we see as very important – Figures 7 and 11 were corrected on a part derived from “documentary data” and a part from “instrumental data”. The both parts of series are distinguished not only by inscriptions but also by colour, see new version of figures below.





#### Minor comments

1) In my view some of the problems found in the comparison with tree rings (section 5.2) could be derived from the different spatial representativeness of the records. Perhaps a more refined spatial analysis of the documentary records could improve the association with tree ring evidences.

#### Response:

We tried to explain in point 1 (above) that the spatial and temporal coverage of documentary evidence reports do not allow to do analysis for smaller regions but only on “national” level. We realize this spatial bias when we compare our results with tree ring data and we mentioned this fact as a one source of uncertainty in Section 5.

2) In section 6 the authors claim that the severe droughts of the 19th century were caused by lack of precipitation but the more recent droughts can be more clearly attributed to significant increase in temperature. This is not supported from any data in the manuscript. The authors should support this statement either with data or an appropriate reference.

#### Response:

The two quotations dealing with this were added to the corresponding sentence as follows:

“While the severe droughts of the 19th century, in a relatively cooler climate, were caused by lack of precipitation, the last onset of droughts in the Czech Lands can be more clearly attributed to significantly increasing temperatures than to any important decrease in precipitation totals (Trnka et al. 2011; Brázdil et al. 2012a).”

Additional remark: Brázdil et al. (2012a) is already quoted in references. Newly added is:

Trnka, M., Brázdil, R., Dubrovský, M., Semerádová, D., Štěpánek, P., Dobrovolný, P., Možný, M., Eitzinger, J., Málek, J., Formayer, H., Balek, J., Žalud, Z.: A 200-year climate record in Central Europe: implications for agriculture. *Agronomy and Sustainable Development*, 31, 631–641, 2011.