

## ***Interactive comment on “Reconstructions of Droughts in Germany since 1500” by Rüdiger Glaser and Michael Kahle***

**Anonymous Referee #2**

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This manuscript is a general approach to study of droughts in historical dimension, using a large database. Different indices are implemented with overlapping to instrumental data period with more complete indices availability.

Historical dimension of drought is faced with a correct approach, considering it's a complex phenomena not easy to identify and evaluate in historical time, where not all information already is available for researchers. Justification of research is also well focused, with scientific and social preoccupation because of increasing frequencies and severities of present drought events.

Definition of droughts. Authors describe from a general and integrated point of view. Avoiding conceptual problems. Correct references, and historical approach, where conceptual definitions are not so easy. A complete conceptual development could take

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too pages. Context of manuscript, working on historical dimension, don't justify so detailed conceptual analysis.

Use of large database avoid the massive reference of sources and data previously available for this analysis. Bibliography is updated and complete. Absolutely adjusted to proposed research. Figures are well displayed and helps to understand results of manuscript. This manuscript, is a first analysis to show potential developments of historical droughts using quantitative and quantified information.

GENERAL ASPECTS + Title is too short. A subtitle could complete definition of proposed analysis.

+ Table 1. Very interesting proposal. Putting in relation drought duration with drought severity seems logic and useful to study drought in historical time, where information about definition and development of indices is not so complete and detailed as we would like. But, just a question about it. For a large natural region, as Germany or Central Europe, proposed table of criteria of classification is enough? Area under study is enoughly coherent or homogeneous to use only one system of criteria? Authors consider it would be possible application of similar method to be applied in different natural regions? Have they explored on this matter? Extension of this method to a larger spatial scale would be a good research path. Potential application of this method in other regions seems very useful. Authors could suggest any consideration about it?

+ Concerning method proposed for indexing drought phenomena, manuscript show a single construction of index. Related with previous questions. All information available for Germany is reduced to one index with proposed method. Authors consider this only index is representative of drought variability for all Germany? On the other hand, it exist any wheighting process or statistical method to generate this index considering different climatic contexts? All information is considered in a similar way or level? Any clarification about it would be useful.

+ Line 206. "The consequences and impacts (of drought) on the environment and

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society can also be reconstructed very well". This matter has increasing interest. Integrated approaches for natural and social dimension of hydroclimatic extremes. But authors only mention this potential in one sentence. It could be possible additional description of these potentialities, under point of view of authors? Sources, density and diversity of available information... For example, what opinion about complementary sources, as economic (taxation records, tithes, market oscillations of prices... or other related aspects, as records about water resources. Any consideration about this dimension of drought impacts, would be interesting to reinforce sentence of line 206.

+ Section "Outstanding single years". Lines 244-252. A more detailed description or analysis was expected. A short relation of years with drought, not chronologically ordered, with no clear explanation about severity or duration of respective drought characteristics. Please, could you explain into text what characteristics or reasons justify for every date singularity of drought recorded? Why these years are "outstanding"? What they have in common? Any figure about characteristics of singularity: duration? Extension?, severity? any combination of magnitudes? Considering important dimension of database tambora.org, manuscript could include a more detailed analysis about extraordinary drought events? It would be an excellent opportunity to exchange knowledge of these events to other colleagues, promoting comparative analysis in different spatiotemporal scales.

#### SPECIFIC ASPECTS

+ Lines 128-129, 152, 214, 239. Definition and use of concept of "cascade effects" (as impacts of droughts). Term is clear, but it could be improved with a more adjusted concept? Could be possible change "cascade" by "cumulative" effects? In fact, a cascade is water flowing downstream, meanwhile impacts of drought are increasing by addition in the same place. On the other hand, use of water-related phenomena, when drought is an important absence/shortage of water..... it seems even ironic!

Line 166. Exclamation sign. Better final point.

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Lines 167-168. Unclear. Please, complete or clarify sentences.

Line 172. Formula doesn't appear clearly showed in text. May be by any editing problem. A black dot covers partially final part of formula.

Line 265. "Prominet" by "prominent"

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