

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Review of nhess-2021-41

Anonymous Referee #2

Referee comment on "Assessment of centennial (1918–2019) drought features in the Campania region by historical in situ measurements (southern Italy)" by Antonia Longobardi et al., Nat. Hazards Earth Syst. Sci. Discuss.,
<https://doi.org/10.5194/nhess-2021-41-RC2>, 2021

General comments

The manuscript presents an analysis of droughts based on a 100-year long SPI series computed from observed precipitation series. It certainly fits within the scope of the journal and the SI. Overall the manuscript is adequately prepared, even though it needs to be carefully reread as it presents many typos and sentences that can be improved in language (referee #1 has already provided a detailed list of these technical corrections to be made). I have some concerns on the framing of the manuscript and on the methodology. Also some conclusions on the spatial pattern may benefit from a more in-depth discussion. These points are better detailed below. For these reasons I suggest major revisions prior to publication of the manuscript.

Specific comments

Introduction: One focus of the manuscript are the historical trends of droughts (in terms of SPI), which may be related to climate change. The authors mention climate change, but I think that more words should be spent on this issue, considering the growing literature on the subject (e.g.: DOI: 10.5194/nhess-20-3057-2020, <https://doi.org/10.1016/j.scitotenv.2020.140094>, <https://doi.org/10.1029/2020EF001502>)

Section 2.4 The authors employ the modified version of Mann-Kendal trend test because SPI series are autocorrelated. If they would have referred simply to precipitation the standard test could have been applied. I think the authors should add the analysis of trends computed directly on seasonal and annual precipitation, and compare the results with those obtained with SPI (e.g. SPI3 and SPI12). Then the authors should comment on how significant are the differences between the two.

Conclusions: the authors summarize the results obtained in terms of spatial patterns. Nevertheless, they do not provide any justification from a physical/climatic standpoint. I think the authors should at least try to speculate on this, also based on their possible knowledge of the reasons (e.g. orography) of precipitation patterns in Campania.

Fig 1 (this relates also to the previous point). I see that the gridded dataset derives from a ground based network that has a quite variable density of gauges. A discussion on how this may impact their study and in particular the conclusions on spatial patterns should be added.

Again for the Conclusions (or for Results section), perhaps the authors should discuss how their findings relate to previous studies at the european scale: DOI: 10.1007/s11269-012-0177-z, DOI: 10.1002/2013GL058573, DOI: 10.1002/joc.6719, ...

Minor points

Figg. 4, 5, 6, etc. (all maps): perhaps maps could be improved with a background shape of Campania and the parts of the neighboring regions of Italy

Fig. 7 Perhaps could be presented as a map as well. If the authors would like to keep this differentiation, the plot should be however improved (for instance use a piece-wise line instead of a spline)

L159: q and t_p seem undefined

L172: Perhaps the pairs are $N-1$

L175: T_i , should be T_i

L187-188: These equations are unclearly written. Also keep in mind that Author guidelines discourage to denote variables with multiple letters.

As I have written in the general comments, there are many points where the language needs to be fixed. Instead of giving a list of corrections, I suggest the authors to carefully

reread the manuscript and eventually take into consideration the aid of a native speaker.