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Comment on nhess-2022-86

Anonymous Referee #1

Referee comment on "Water shortage: Assessment and Analysis on a Regional Scale" by Yuri Marques Macedo et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2022-86-RC1>, 2022

Review - Water shortage: Assessment and Analysis on a Regional Scale (Macedo et al.)

This paper presents an evaluation based on Index of Water Shortage Risk results from environmental, social, economic, infrastructural and state planning factors perspective using 19 variables in the state of Rio Grande do Norte in Brazil. I personally liked the conceptualization in the paper which suggests an index, IRSH (I would suggest the authors not use IRSH but use WSRI for Water Shortage Risk Index). This index is composed of 4 indicators each with varying weight: (i) environmental, (ii) infrastructural, (iii) state planning, and (iv) social and economic. Even the authors anticipate adding a fifth indicator (cultural indicator) in future studies. The indicators are calculated as the weighted averages of 19 variables. The authors classified cities according to water shortage at different levels which are very low risk, low risk, medium risk, high risk, and very high risk. This study performs an analysis, but scientific innovation is not enough interest and high quality for this publication. The most important point is that the study does not well describe/explain the purpose of the study, methodology, explanation/evaluation of analysis results and conclusions. Hence, I cannot recommend this paper for publication.

My main concerns in the present paper are an unclear focus, aim, and methodology (which at the same time, makes it unsystematic), and the lack of definition or clarity in the introduction, methodology, result, and conclusion. Many sentences are a kind of a combination of unrelated words. I also struggle a bit still with this analysis - it needs a better framework of why you do what you do and what is expected by method choices and what is 'surprising' or unexpected to warrant it publishable in an international scientific journal. For a scientific paper, it is required more clarity why it should be read by an international audience and it needs:

a) a clearer focus on where the analysis adds to the current scientific state of the art; or as a case study how exactly this case study confirms or contradicts regional state-of-

knowledge

b) some more rigor in phrasing the research gap, the aims/objectives (and possibly hypotheses or research questions)

c) better separation of results and discussion (with the removal of redundant information); discussion is limited and needs more on what the choice of methods means for the results and more clear what exactly was known before and what this study added to it, and what it added for a wider science could be argued more on the results.

d) The paper has been documented as a kind of local technical report rather than a scientific paper. There is a lot of local information that international scientific readers will not be interested in. Local information should be minimized to make the paper more interesting for international readers.

e) A clearer methodology is needed - the conclusion is unrelated to all the text where the authors discuss uncertainties and the results of the analysis the authors have made - None of these were mentioned in the method and result section - the conclusion should include general aspects of relevance. Also, the paper should be in cohesion and coherence - a well-organized paper uses techniques to build cohesion and coherence between and within paragraphs to guide the reader through the paper by connecting ideas, building details, and strengthening the argument. But I could not see a fluent reading in all manuscript and there are many disconnected sentences and repetitions in the Methodology and Results section especially. Results were not clearly explained with their justifications.

A few more thoughts/comments

a)The authors need to think about which role this case study plays in the broader scheme - they emphasized that the results of this research can contribute directly to the management of water resources of the State, diagnosing problems, such as the identification of the most vulnerable cities and what indicators must be improved. This is not sufficient. It is also unclear how the mentioned management of water resources relates to this study exactly.

b)As a general rule: an abstract section should not have or need any reference.

c)The results should include the pure outcome of the analysis rather than the explanation of methodology or discussion - ideally following each methodological step that was described in the Methods section (some are missing and not written in order of

appearance of results).

d)Redundancy: overall the manuscript is too long with too many long descriptions. There are too many repetitions.

e)In drought literature 'risk' is the combination of hazard, vulnerability, and exposure. Why do the authors want to change the definition that is known in the literature very well? Then why should an international readership read this paper if the authors only aim the knowledge gained at the local decision-makers? The authors need to find a scientific aim and added value.

g)It is needed to have a separate discussion section. It is very difficult to understand the combined results and discussion section and the readers struggle to see what the result of this study is and what is the results of previous studies.

h)All figures are really very basic for a journal article and also they are not English. I did not understand anything else from them.

Specific

- Lines 140 and 149: In the drought literature, we use 'meteorological drought not 'climatological drought'.
- Maps in Figures should be converted into English to make them understandable.
- Lines 10-12: Delete the sentence that cites references from the abstract.
- Line 73: "the thesis of Castro (2010)" Better you say "Castro (2010)"
- See also Lines 45-46, Lines 154-156, and some more similar cases through the manuscript
- Line 85: NOT 'Field of Study' Better 'Study Area'
- Line 275: There are 19 variables but 20 maps in Figure 3.
- Figure 4: Four indicators but six maps made me confused.