

Nat. Hazards Earth Syst. Sci. Discuss., author comment AC3  
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## Reply on RC3

Sarra Kchouk et al.

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Author comment on "A geography of drought indices: mismatch between indicators of drought and its impacts on water- and food securities" by Sarra Kchouk et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-152-AC3>, 2021

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Dear reviewer,

Thank you very much for your positive, constructive and highly encouraging review, that will certainly improve the quality of our manuscript.

When we revise our manuscript, we intend to incorporate all the suggestions.

Individual responses to the points you raised can be found below.

On behalf of all co-authors,

Sarra Kchouk

Comments related to findings:

- Line 221: In this paragraph or the next, it would be relevant to mention governance and/or corruption, some of the factors other than physical and demographic conditions that are widely recognized as contributing to food insecurity.

Yes, thank you for the useful suggestion. We will dive into the literature to discuss the role of governance and corruption in food security and include this analysis in section 4.2.

- Paragraph starting on 231: You could also conclude that focusing on physical drivers of drought is a "luxury," more apt to be of interest in places where more basic needs such as food security have been met.

Thank you very much, this is a very good point, which we will add to section 4.2.

- Line 275: The sentence starting with "One reason ..." is probably off the mark, overly concerned with definition, implying that people are somehow dismissing studying hydrologic drought because it's an impact and less worthy of study. It seems more likely that hydrologic monitoring is very local and conditional, directly related to water

supplies, and data probably isn't shared, subject to the socio-economic conditions described in the preceding paragraph. Bottom line, researchers in those countries lack incentives and/or data to do the work.

We agree with the reviewer and the sentence will be amended to include the suggestions accompanied by bibliographic references.

- Line 291: I usually think of a "driver" as a meteorologic or physical system or condition that creates drought, which is measured by a drought index.

We agree with the reviewer and believe a typo created this confusion. Earlier in the text (135) we provide a definition matching the reviewer's suggestion. We will reformulate the sentence to read: "The indices linked to the three categories of drought are seen as drivers as they refer to the contributing or counteracting meteorological or physical factors that affect the development of droughts. They are used to determine the occurrence and severity of a drought. However.."

- Line 293: Rather than saying it is not clear, perhaps state that it is context-dependent.

We agree with the reviewer and will rephrase the sentence as suggested.

- Line 300: It is well-established that human-driven demand affects water security, along with the hydrologic system. You could say this is consistent with Van Loon et al 2016.

Thank you for the suggestion. We will include this reference to strengthen our statement.

- Line 320: The sentence starting on 321 is a bit of a contortion. How would food security NOT be related to these social processes? And what is "food security related to drought studies"? Food security as seen through the lens of drought studies? Just trying to construct this sentence suggests that too much focus on drought obscures the larger goal.

We tried to tie the discussion as much as possible to our methodology which was based on retrieving studies mentioning "drought" and the keyword of interest. Thus, by "food security related to drought studies", we meant the studies mentioning "drought" and an impact linked to food-security. We will rephrase it as: This indicates that in drought-related studies focused on SSA, food security and the occurrence of these social processes may be closely related.

- Line 346: It's not drought indices that are eluding monitoring of social processes that contribute to impacts. It's the focus of inquiry or intent. A drought index is one thing. Variables or indices related to food or water security are another piece of it. There may be many pieces in a bigger system.

Thank you for the suggestion, we agree. The focus here was on drought indices while it should have been on the monitoring systems that only use this type of information. What contributes to an incomplete prediction of drought impacts and their severity is the omission in those monitoring systems of indicators depicting social processes. We will rephrase this part.

- Line 351: Drought and a related variable such as food security may be directly related, or drought may be one of many stressors in a complex food system. Aligning a drought index and some kind of impact variable is a good start but given the complexity of the systems in question it is unlikely that drought would have sufficient explanatory or predictive power on its own. I think this is actually what you are saying but the final sentence of this paragraph is a bit murky.

Yes, that is the point that we are attempting to make. We will rephrase this paragraph according to your suggestion that seems to convey the main message in a clearer way.

- Line 360: Final sentence may not be needed.

Yes, thank you for the suggestion. We will delete it.

- Line 363: "might be centralizing the background work" ??? reword, please

Yes, this was speculation that Reviewer 1 also pointed out. We will delete this sentence.

- Line 364: This is an extreme understatement.

We will develop this point further and add supporting references

- Lines starting with 378: Clarify this paragraph. Is this study about increasing the relevance and utility of drought-related variables? Or about framing questions that put drought-related variables in appropriate context, and appropriate relation to one another?

Indeed, there is a mistake in line 380. It is not about drought-related variables but drought monitoring systems mainly relying on physically-based indices. We will correct this and incorporate your suggestion of mentioning that our study also contributes to "put drought-related variables in appropriate context, and appropriate relation to one another".

- Paragraph starting on 392: Yes, yes, yes! ... Does this suggest the basis for a next bibliometric study, analyzing the role of drought in research on Sustainable Development Goals? Do your results shed new light on how researchers are or are not incorporating DEWS into development efforts?

At this stage, we don't believe we can directly draw conclusions based on our results on how DEWS are part of development efforts. Therefore, we will develop this paragraph further and provide suggestions for future research.

- Line 385: Or thinking bigger than drought mitigation, to mitigation of food and water insecurity, in which drought plays a role. You have this in the sentence starting on Line 390, but take a convoluted route to get there.

We agree and will rephrase that sentence to align better with our statement in line 390.

- Could mention somewhere: Institutional incentives in many western countries may favor research that falls into well-defined silos. Research that meaningfully incorporates

both physical and social science may not be sufficiently interesting to merit ground-breaking publications on both fronts; it may instead require one or the other discipline serving in a more consultative role.

Thank you for this suggestion. We agree and will include this point in the final paragraph of our section 4.4. Scientific Interest and Orientation, in a new paragraph starting at line 308.

Minor:

- Line 182: Either delete "a" or the "s" on "events".

Thank you; we will delete the "a".

- Line 201: "dry" not "dryer"

Thank you; we will correct it.

- Line 230, probably "population" instead of "demography"

Yes, population (growth).

- Line 318: Extra word?

Yes, "heatwaves" will be deleted.