

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC3
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Comment on nhess-2021-152

Anonymous Referee #3

Referee 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-RC3>, 2021

This is a strong article that takes an interesting approach to understanding how and why drought research is framed differently in different places. It appears that the research team was systematic and methodical in their search of drought-related research. While search terms can always be adjusted, my sense is that they came up with results that are a fairly accurate representation of drought discourse on different continents related to food and water security. They note the limits of focusing on drought and its drivers as a physical phenomenon, and recommend focusing instead on aspects of human well-being, such as food and water supply. They accurately observe that this overarching focus on reducing poverty and improving food and water security would help resolve the issue of defining drought impacts. This larger framework, accounting for underlying vulnerability along with changing conditions, including drought, would put drought research in a larger context by asking, what is the contribution of drought to food and water security and to rates of poverty?

My main criticism is that some definitions or arguments may be tautological. I elaborate below. Also, to the authors' credit, they have at this stage explored many explanations. There is much good material here; it just needs some tightening and focus for greater clarity.

The analysis and description of how drought research is framed, or what its main questions are, by continent, is informative and solid.

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.

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.

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.

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.

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

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.

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.

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.

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.

Line 360: Final sentence may not be needed.

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

Line 364: This is an extreme understatement.

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?

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?

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.

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.

Minor:

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

Line 201: "dry" not "dryer"

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

Line 318: Extra word?

