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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Exploring drought vulnerability in Africa: an indicator based analysis to inform early warning systems" *by* G. Naumann et al.

Anonymous Referee #3

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This paper deals with drought vulnerability in Africa. Specifically, the authors have developed a composite drought vulnerability indicator (DVI) that is meant to reflect social vulnerability associated with renewable natural capital, economic capacity, human and civic resources, and infrastructure and technology. The authors examined different weighting schemes and carried out a sensitivity analysis (by removing variables) to measure the degree of uncertainty associated with each component of the indicator. They found that the DVI computed within their theoretical framework components and using proportional weighting gave a robust and unbiased representation of overall vulnerability. A comparison at the country level between the DVI and the drought disaster

information shows some disagreement, though they do find generally good agreement between drought vulnerability and the number of people affected by drought. The authors acknowledge some limitations of the DVI including the fact that it does not fully consider social conditions, response of stakeholder groups, market aspects, and there is no consideration of the dynamics of the variables making up the DVI (e.g., the impact of climate change and population growth).

While I am not very familiar with the literature on drought vulnerability, this work appears to be an important step in developing a quantitative (and at some level verifiable) measure of drought vulnerability. The ability to dissect the DVI into the individual components appears to be a key strength that facilitates interpretation of the results and should help determine future improvements. My main concern is that the authors have not sufficiently addressed the link between vulnerability and disasters. I believe a discussion of this in terms of the differing characteristics of drought throughout Africa (e.g., length, seasonality, variability) as well as the differing regional climatologies (e.g., the timing and length of the rainy seasons) would help greatly in assessing the usefulness of the DVI, especially for decision-making. As such, I think the authors could also learn much from taking a closer look at why Ghana and Kenya had more than 10 million people affected by drought during 1970-2006, yet were classified as having low vulnerability according to the DVI.

Other:

Page 12220 lines 26-27: "where all climate scenarios project further water limitations" - should include a reference to back that up.

Last sentence in abstract: not sure that such a statement (whether or not it is a valuable contribution) is appropriate here - would suggest removing or rewording.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 12217, 2013.