

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

**G. Naumann et al.**

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Response to Review #1 (J. Bogardi) of the paper “Exploring drought vulnerability in Africa: an indicator based analysis to inform early warning systems” by G. Naumann et al.

**We would like to thank Prof. Janos Bogardi for the positive comments and suggestions to improve the manuscript. The specific comments are addressed**

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**in detail below. Please note that the Reviewers' comments are shown in plain text and authors' replies are in bold typeface.**

Detailed comments and suggested changes, indication of need for more clarity:

Title: You do not inform early warning systems. rather replace "to inform" by "...to be used /or applied/ in..."

**We have changed the title to: "Exploring drought vulnerability in Africa: An indicator based analysis to be used in early warning systems"**

Abstract Page 12218 Line 26 till Page 12219 line 3: three main different geographical regions: then a list 7 regions follow. Synchronize number and list!

**This paragraph was changed as follows: The analysis of the renewable natural capital component at sub-basin level shows that the basins with high to moderate drought vulnerability can be subdivided in the following geographical regions: the Mediterranean coast of Africa; the Sahel region and the Horn of Africa; the Serengeti and the Eastern Miombo woodlands in eastern Africa; the western part of the Zambezi basin, the South-eastern border of the Congo basin, and the belt of Fynbos in the Western Cape province of South Africa.**

Page 12221 Line 11 Nations Line 17: I believe vulnerability is not so much controversial as difficult. May change the word!

**We have changed the sentence as follows: "Given the complexity of drought vulnerability..."**

Page 12222 Line 6 "hazard aspect of vulnerability" Not clear: one may be vulnerable to a certain hazard but is it the same?

**"...hazard aspects of vulnerability..." was changed to "...hazards..."**

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Lines 24 - 28 It reads as the aim would be to "early warn" vulnerability. It is certainly to early warn about droughts (the hazard).

**We agree that this paragraph is somehow confusing. We propose to simply delete the following last two sentences: "The aim is to provide a comparative measure of the direct and indirect determinants of drought impacts and response. To this end, the variables selected have policy significance for the implementation of drought early warning systems in Africa."**

Page 12223 Line 15 Vörösmarty is written without "h" Line 26 unclear what does "African level" mean? African context?

**Vörösmarty is now written correctly. The sentence where "African level" was written was changed to: "Therefore, the values of the resulting indicators can only be interpreted and compared within the African continent."**

Page 12225 Line 14 add "line" after the word poverty!  
**Done.**

Page 12226 Line 23 Vörösmarty see above!  
**Done.**

Page 12227 Lines 16 - 17 coping is a very low level "response" thus coping and responding capacity are not automatically the same.

**We agree with the reviewer but the words "cope" and "respond" are not used here as synonyms but as complementary words.**

Page 12228 Lines 8 - 9 I disagree that life expectancy at birth is an indicator of a population's vulnerability to extreme events such as drought. This is too "global" statement.

**We have changed the sentence to better reflect the interpretation of the authors**

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to: “Life expectancy at birth can be related to a population’s vulnerability to a number of extreme events, including drought, because the lack of sufficiently elderly people will prevent appropriate traditional knowledge transmission to young generations.”

Lines 19 and 21 "water infrastructure" term is too general. Do you mean storage facilities? And else?

**The following line (22) explains that water infrastructure is meant here as “water stored as proportion of total renewable water resources.”**

Page 12229 Line 15 the use of equal weights can be questionable if several indicators measure more or less the same feature. Thus with equal weights these overwhelm the assessment.

**Although it’s not included in the paper material, we have checked that the variables used in each component were not correlated. In this way, we checked that they were not measuring the same features, and hence there is no problem in using equal weights.**

Page 12231 General comment: while discussing the uncertainty of the choice do not forget the uncertainty of vulnerability itself.

**The sensitivity analysis done allowed checking the robustness of the DVI by addressing the uncertainties carried by the different input factors (number of variables included, weighting, and aggregation).**

Page 12232 Between lines 10 and 20 the text is not clear. Quite sudden change of thought in line 15.

**We agree that this paragraph was confusing. We have changed it in order to make it clearer: “The DVI and PRA variables were converted to dichotomous variables by using their median threshold to define two categories (low and**

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high DVI; low and high PRA). After the dichotomization a tetrachoric test was carried out to determine whether there is a significant agreement between the two variables.”

Page 12234 Line 15 - 19 These are normally expected phenomena (refers to the frequently trivial results of vulnerability assessments).

**We agree with the reviewer comment.**

Page 12237 Lines 4-5 dichotomized number of persons strange formulation.

**We have changed the sentence in order to make it clearer to: “Table 3 shows the contingency tables and tetrachoric coefficients between the dichotomized PRA and DVI variables.**

Page 12246 Fig 1. central box Vörösmarty is without "h"!

**Done.**

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