Natural Hazards
and Earth System
Sciences

Discussions

Interactive comment on "Early warning and drought risk assessment for the Bolivian Altiplano agriculture using high resolution satellite imagery data" *by* Claudia Canedo Rosso et al.

Anonymous Referee #2

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The manuscript concerns an important problem, the development of early warning system for assessment of drought and related yield reduction in agricultural practice. Drought is an important problem for Bolivia region, where the agriculture is one of the main economic activities and drought is an often disaster. Using of satellite information for monitoring risk events and issuing early warnings is relevant and contemporary approach. In general, the work is based on using the standard accumulated growing degree approach in agricultural science and precipitations to assess the yield effects at warm/cold ENSO phases. The authors pretend that high-resolution satellite imagery data are used for precipitation and vegetation characterisation. Quantitative analyses are based on applying statistical correlation methods. Generally, the topic is relevant

for the journal but the quality of the presented material is not satisfactory. There is a discrepancy between the title, the results reported and the conclusion made by the authors. The reported results are not sufficient to support the interpretations and conclusions. The paper is not well conceived and laid down with examples not corroborating the case. The manuscript needs major revision and significant improvement before publishing.

Specific recommendations

1. The title does not reflect the essence of the work presented. Actually there is no "Early warning" of drought because it is only underlined that the early warning of ENSO warm and cold phases is of importance but a methodology of issuing warnings is missing in this work. "Early warning" have to be avoided in the title because it is not approved in the text. # 2. Introduction is too expanded with material, which is beyond the context of the paper. For example: P2/ln 6 'Regarding the prevention . . .These include the setup of insurance and irrigation systems'; the topic is not how to overcome drought but to create a system for drought assessment? P2/ln 25 'Such an approach is now seen as the most 25 appropriate in data-scarce environments (see IPCC, 2012;and UN, 2015)'? Please note that the approach used in the paper here is still not introduced, first motivate the used approach. Instead of this, it is expected the Introduction section to include the state of the art on the specific problem, i.e. on early warning and drought risk assessment as it is declared in the title. Although the scarcity of data in the region, there is some international experience that should be summarized. # 3. P3/ln15 The aim is not relevant presented; it sounds like declaration of something already done? 'We therefore used new precipitation and vegetation satellite data that present full coverage of the spatial distribution in the study area. We combine. . . . . . .'.? Why these data are classified as 'new'? The authors say that this HR satellite quasi-global rainfall dataset is available from 1981 (p4, ln32)? 4. P3 Section 2 'Case Study Region and Data Availability. Again too many words not in the essence of the work Why such details about the population and cities in a scientific paper on

drought are included? Do the readers really need from Table A1 or a map with the location of the stations will be enough and more informative? # 5. P5/ section 2.3 Why crop production and vegetation data in the section title are considered as two different items? Can you provide any finding about the reason for distinguish both. Is it possible to have crop without vegetation? # 6. P5/Ln 17 It is declared that "the Normalized Difference Vegetation Index (NDVI) was used in our study in order to relate climate, vegetation". Actually NDVI is still not used, this is expected to be done in the results section. The author should give proper credit to previous and other related work with clear indication of specific contribution in using NDVI here. # 7. P6/section 3.1. The procedure for validation satellite data using only qualitative 'Yes/No' evaluation is not relevant. For validation purposes of satellite product, rain quantities from the two sources of measurements should be compared, moreover that you are speaking that the 'accuracy' is tested (p.1/Ln 17). Also for the purposes of drought assessment the rain quantity is the essential point. # 8. P6, p.7 Not relevant titles of the section 3.2 and 3.3. please explain why crop yield and vegetation are two different things? # 9. P12 /ln7 The authors should specify which aspect of their work is a first attempt to relate agricultural drought in relation with ENSO? Not enough credit to previous works on this is given. # 10. P12/Ln10 it is claimed '.........., a significant influence of precipitation on vegetation and crop yields in the region was identified'. Everywhere, for each region precipitation has influence on vegetation and crop yield. This cannot be considered as a result from this study. # 11. Ln12 It is claimed by the authors 'Our study provides valuable information for early warning systems, primarily by providing information of the relationship between crop production and vegetation, and subsequently a relation between vegetation and climatological parameters'. What would be the difference between crop production and vegetation if any, please precise terminology so the results to be evident. # 12. There are a lot of references but scare information is used in convincing the results and discussion sections. # 13. The overall presentation is not well structured; there is no relevant balance between results -discussion sections and other parts. The readability of the text is not sufficient.

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