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## ***Interactive comment on “Comparing peasants’ perceptions of precipitation change with precipitation records in the tropical Callejón de Huaylas, Peru” by W. Gurgiser et al.***

### **Anonymous Referee #2**

Received and published: 4 January 2016

Thank you for the opportunity to review and comment on this paper. It represents very good research that is important and timely. I’m supportive of the publication of this study and am excited about its contributions and the opportunities that are raised.

To begin I’ve now read and concur with a completed review that has been made available (Anonymous Review #1). The other review is focused primarily on the analysis of precipitation records and makes a number of good points that coincide with my evaluation. As a result I’ll focus my review comments on additional core aspects of the paper. In particular my focus is the paper’s analysis of peasant perceptions of precipitation change, which is similarly important and central to the paper.

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Suggestions for potential revisions that could contribute to improvements:

1. Perceptions and group-level sociocultural differences. On one hand, the paper acknowledges the role of “societal processes. . .contingent upon and characterized by the different interests, positions, and vulnerabilities of affected groups” (p. 1864) and the research framework is designed explicitly to include different groups in the interview sample (p. 1865). This acknowledgment and design are well-chosen and correspond to other scientific studies of the climate perceptions of peasants and other sociocultural groups in the Andes, including works that could potentially be drawn upon to strengthen the parts of this study that concern peasant perceptions of precipitation (see Comments 6, 7, and 8, especially the first item in 8). Equally or more important is that the paper being commented upon here possesses the potential to extend and strengthen its analysis of perceptions to include the group-level differences that it acknowledges and is designed to consider, but that, in the current version, do not appear here in the results, discussion, or conclusion. As a result the analysis of the realm of perceptions gives the impression that significant differences do not exist among the groups interviewed. If so that is an important result and, in this reviewer’s opinion, should be presented and discussed. If there is the finding of differences of climate perceptions among groups that result also is also of importance and should be presented and discussed in order to strengthen and extend analysis.

2. Continuing the above comment to an additional point I think one of the main reasons I’m excited and supportive of this study and its publication is because I think it does have the potential to address the issue being addressed in this comment #1. While the authors would need to discern potentially testable hypotheses based on their data and insights my readings and ongoing research on these issues in the Andes suggest at least a couple possibilities that could be relevant and feasible: (i) potential differences of precipitation perceptions among peasants and non-peasants in the interview sample; and (ii) potential differences among peasants with irrigation access and without, or alternatively (since the paper describes the disabling of an irrigation canal), the po-

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tential differences among peasants in the higher elevation community and those of the lower elevation communities. These kinds of hypotheses are based on existing scientific works on peasant climate perceptions elsewhere in the Andes (see Comments 6, 7, and 8 below) and there may also be findings in existing studies of the Callejón de Huaylas that would also support such hypothesis construction and testing.

3. The reporting of results about “Peasants’ reports about changing precipitation patterns” should give percentages of the interviewees reporting each of the 4 findings presented. Also, the wording of the section title should be reconsidered since 2 of the findings, which are important, do not concern precipitation patterns per se.

4. The introduction to findings on peasant accounts of changing precipitation (p. 1868), which is generally quite good and presents valuable original insights, describes perceptions as part of local knowledge that is “modified by specific political and discursive dynamics.” This statement raises a point that is relevant, important and accurate. But in my review of the paper I do not see results or discussion on this point. It would be helpful to either present the relevant results and discussion on this point or, alternatively, mention how and why there were no findings on this point.

5. Similar to #4 above the paper introduces the findings section (p. 1868) by stating that “The derived information represents a snapshot of the broad local knowledge about environment, society, and history.” This statement is relevant, important and accurate. But the findings per se (pp. 1870-1872) do not present information on the social or historical aspects of peasant perceptions of climate and precipitation. Here too—similar to #4 above—it would be helpful to either present the relevant results and discussion on this point or, alternatively, mention how and why there were no findings on this point.

6. With regard to scientific studies of peasant perceptions, knowledge, and social dynamics of climate and climate change in the Andes—including ones outside the immediate area of the Callejón but still quite relevant to the context of the paper being

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commented upon—it would be well worth considering the works of Sietz (e.g., Sietz et al. 2012 in *Regional Environmental Change*) in the southern Peruvian Andes and elsewhere in Peru and, also, Postigo (e.g., J. Postigo et al. 2008).

7. Similar to #6 it is worth considering incorporating and using works that focus on sociocultural dynamics of peasant perceptions of climate and climate change in the Andes such as Orlove (potentially Orlove et al. 2008 or Orove and Caton 2010).

8. Building further on preceding points it is relevant to consider incorporating and using works that focus on group-level differences in peasant perceptions of climate in the Andes (Zimmerer 1993 in *Economic Geography*) and the role that the seasonality of precipitation plays in the social dynamics of water use among Andean farmers whereby poorer tail-end irrigators are often most affected and aware of precipitation seasonality and potential climate change impacts (Zimmerer 2010 in *Professional Geographer* and 2011 in *Global Environmental Change*).

9. The design and framework of this study resemble, perhaps even quite closely, the approach of ethnoscience featuring the comparison of Western scientific knowledge and the knowledge systems of non-experts. If so it would be worth mentioning this similarity in the paper's introduction to the research framework and maybe to mention one or two relevant ethnoscientific studies of climate or other knowledge system—conducted with Andean peasant people and their perceptions.

10. Returning finally to the paper's documented loss of an important irrigation canal among peasants in the study communities (also referred to above in Comment #2) I would pose the question if that reduced access has sharpened or accentuated peasants' perceptions of the increased seasonality of precipitation since they no longer have access to an important water source that previously would have buffered the seasonality of precipitation.

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Interactive comment on *Earth Syst. Dynam. Discuss.*, 6, 1863, 2015.