

Interactive comment on “Climate change and mountain water resources: overview and recommendations for research, management and politics” by D. Viviroli et al.

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1. Preliminary comment

This manuscript has been submitted as an introduction and overview paper to the Special Issue on Climate change and water resources management in mountains. The current manuscript presents part of the case studies of the special issue but also intends to give a review of current issues in climate change research and water management in mountain environments. It is apparent from the size and structure of the manuscript and the comments by reviewer 3 that this mixture (introduction / review)

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resulted in a paper that shows a considerable lack of conciseness. I invite the authors to re-design the current manuscript into a review paper to be part of the special issue and to submit a new introductory paper or preface before concluding the special issue. This preface should concisely present the content of the special issue and the most important conclusions from the case studies (see an example <http://www.hydrol-earth-syst-sci.net/prefaces/preface96.pdf>).

2. Scientific quality of the manuscript

The received reviews express two rather different views; two reviewers come to the conclusion that the manuscript by Viviroli et al. gives a good overview over current issues in climate change and mountain water resources while one reviewer expresses an important number of concerns regarding this paper.

The difference in the two viewpoints can, among other reasons, be explained by the fact that the reviewer 3 carefully analyzed the paper in terms of the three stated objectives that are recommendations for research, management and politics and critically reviews the paper for each of these fields. Reviewer 1 and 2 namely judged the paper from a research perspective.

The detailed analysis offered by reviewer 3 shows that the paper is not ready for publication in HESS in its current form and with its current focus. The main points of the reviewers can be summarized as follows:

2.1 Scope of the paper

According to the title, the paper aims at giving recommendations for future research, management and politics. The authors had the ambition to summarize global issues based on their selection of case studies. While the manuscript provides an interesting overview over some scientific issues, reviewer 3 points out in much detail that the paper does not provide a sound basis to make recommendations outside the field of “research”.

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I recommend to rethink the scope of the paper and to re-organize the paper accordingly. It would be nice to have a review paper that summarizes the key findings that the group of authors, given their fields of expertise can offer to the audience of HESS. Given that most authors are natural scientists, I recommend focusing the paper on the state-of-the art of quantification / prediction of mountain water resources, promising ways forward and identified mismatches between what scientists can do / predict / know and what managers need (as far as the authors are able to identify such mismatches). Particular attention should be paid to the chosen scale (see also reviewer 3). What is the relevant spatial scale for predicting mountain water resources ? For predicting regimes or extremes? A discussion of alternative approaches to “getting more data” should be included (reference to Prediction in Ungauged Basins, what are the particular challenges for mountain environments?).

If this new focus is chosen, the re-structured manuscript should offer new insights into the field of predicting mountain water resources and quantifying climate change impacts. This namely with respect to existing reviews (e.g. the special issues on mountain hydrology of Hydrological Processes).

2.2 Methodology

Reviewer 3 calls into question the suitability of the entire analysis (spatial scale, used indicators, chosen detailed case studies, analysis of water use in low lands, etc) to make recommendations for management or policy making. If the revised paper keeps a focus on management and policy making, the authors should carefully address all these critics. If the revised paper was to have a new focus on research, all relevant critics of reviewer 3 should be answered in detail.

3. Conclusion

The manuscript will need a re-design. I invite the authors to answer the reviewers' comments and to include, in the answer to reviewer 3, a clear proposal of how the paper will be re-structured / re-focused. The revised version will be sent out for a

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re-review (not public at this stage).

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