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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Values in water management" *by* Erik Mostert

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First of all, I would like to thank the reviewers for their comments.

Possibly the most fundamental comment is that the paper "doesn't really talk all that much about water" (reviewer 2) and is "not really tailored to the water management field" (Francesca Pianosi). Most of paper would apply equally to for instance "climate change adaptation", "ecosystems conservation" or "landscape management" (Francesca Pianosi). The reviewers would like to see more discussion of how the different concepts apply in water management and more examples (reviewers 2, Francesca Pianosi). They would like to see more discussion of the contents of the references from water-related fields, discussing for example the experiences with the use of Q methodology (Francesca Pianosi) or how values have been included in socio-hydrological models (reviewer 1).

In response, I would argue that the whole paper deals with water, but not exclusively and always explicitly. How humans interact with water depends on the prevalent values, but these values do not depend exclusively on water. Hence, to understand human-water interactions, it is necessary to look beyond water. The same can be said of for instance climate change adaptation, ecosystems conservation or landscape management. Much of the paper is equally relevant for these issues, but that in itself does not reduce the paper's relevance for water management and hydrology.

That being said, it is essential that the paper shows how the different concepts apply in water management. Here I see several possibilities for improvement. I can provide more examples and give more illustrations from the field of water.

It would be interesting to review the experiences with Q methodology concerning water issues, but that would require a paper on its own. With respect to measuring techniques, the present paper only aims to provide an overview. The purpose of including references to applications of Q methodology without discussing the applications is simply to inform readers that Q methodology has been applied to water issues and to suggest further readings for those interested in the details. There is currently no need to review the role of values in socio-hydrological models since the review by Roobavannan et al. from 2018 is still up to date.

Additional comments reviewer 1

Reviewer 1 wondered whether the article is relevant enough for hydrology and water management since it focuses on the values of human actors instead of the value they assign to water (valuation). I would argue it is. Water management is a human activity and hence human values are very important. The examples and illustrations I plan to add should make this clearer. Valuation is of course highly relevant too, but this deserves an article or articles on its own. I do refer to a good recent overview of valuation techniques. Given the broad scope of my article, the broad title "Values in water management" seems appropriate; for an article focusing on valuation a better

title would be “The values of water”.

Reviewer 1 mentioned that the paper is more like an opinion paper or a review paper than a research paper and questioned the use of the term “conceptual theory”. These issues have been discussed before in the review process. The paper is based on literature research. It reviews a lot of literature but it is not a “classical” review paper, and it contains a discussion section but it is not a pure discussion paper. While I think the emphasis is on research, I accept that the paper has a somewhat hybrid character. The term “conceptual theory” best describes the content of the paper, especially of sections 3 and 4, which distinguish different types of values and discusses their causes and effects. I recognise that the term “theory” may be used differently in different disciplines. That is an issue I cannot resolve.

Reviewer 1 also commented that the abstract should clearly describe the methodology and main findings of the study. I will add the main research method used. The main findings have already been included.

Moreover, reviewer 1 commented that the statement on Page 13, Lines 12-13 is not accurate since many studies have tried to implement values in socio-hydrological models. I will try to make the statement clearer. Literally, I did not state that values are ignored completely in socio-hydrological models values, but that they “may be ignored”, provided they are stable. In that case, and only in that case, ignoring values does not affect the performance of the models negatively.

Additional comment reviewer 2

Reviewer 2 would like to see water management inspired examples for Table 1 and 2. In these tables there is very little room to give examples. As discussed, I plan to give more examples, but this will be mostly in the main body of the text.

Additional comments Francesca Pianosi

Francesca Pianosi had several comments concerning the support for the conclusions

and proposals. First, concerning the statement that "for water management research actual values seem more relevant than ideal values because they are linked directly with actual behaviour, but ideal values are important too." The relevance of actual values for water management research follows directly from the definition of actual values as values that are enacted in practice or embodied in institutions and artefacts. They “motivate actual behaviour and can best explain this” (section 3.1). The relevance of ideal values is explained on P. 13, L. 18 and further.

Secondly, what led the author to propose starting research at the intermediate level of social groups and organisations and how would this work in practice (which social groups and organisations to be involved, what internal dynamics to investigate, etc.)? In fact, the proposal is based on the preceding paragraph, which discusses the limitations of research that starts at the individual level or at the highest level of “society”. Which social groups and organisations and which internal dynamics to investigate is indeed a crucial question. The simplest answer is: the most important groups, organisations and dynamics. Sometimes, most or all may already be known at the start of the research, but in other cases these should become clear during the research. I will develop the proposal more.

Thirdly, what evidence backs the conclusion of the article concerning the importance of different social groups and organisations in water management? I agree this conclusion needs to be supported more explicitly. It is based, first, on the importance in water management of collective behaviour, such as the construction of reservoirs or flood protection works. This involves groups and organisations and not individuals acting on their own. But secondly, even when individuals act on their own, their individual values that motivate their actions are influenced by cultural values, so by the dominant values in the groups and organisation they are a member of.

In conclusion, I plan to make the following improvements:

1. Most importantly: add examples and illustration of how the different concepts dis-

cussed in the paper apply to water management and hydrology.

2. Add in the abstract that the paper is based on literature study.

3. Clarify the statement that in socio-hydrological models values may be ignored provided they are stable.

4. Develop the proposal to start research at the intermediate level of social groups and organisations.

5. Provide more explicit support for the conclusion concerning the importance of social groups and organisations in water management.

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