

## ***Interactive comment on “Practitioners’ viewpoints on citizen science in water management: a case study in Dutch regional water resource management” by Ellen Minkman et al.***

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We thank the reviewer for her/his constructive comments. Below we list our thoughts on improving the manuscript. We appreciate any additional feedback.

1. We think it is indeed appropriate to add a paragraph on the use of modelling and prediction tools in water management. We will do so in the revision of the article.
2. We have discussed how to make the steps taken to reduce bias more explicit and present them as a framework in the revised article. We plan to present this as follows:

The bias introduced is twofold:

C1

- a. Researcher bias: the opinion of the researcher is too dominant
- b. Selection bias: the selection of the statements (Qset) or the participants (Pset) is biased and over representing one perspective.

Researcher bias can be introduced in the formulation of the statements, selection of the participants and the interpretation of the results. Following actions were taken to reduce bias in each of these steps:

- a1 Formulation statements (Qset): following Watts & Stenner (2000) we based the statements where possible on quotes from others.
- a2 Selection participants (Pset): we did not know the participants except for two, so we also did not know their opinion beforehand.
- a3 Interpretation: we followed a structured way of describing the viewpoints based on distinguishing statements (Watts & Stenner, 2000) to avoid cherry picking.

Selection bias can appear in the selection of the Qset and Pset. Following actions were taken to reduce bias:

b1 Formulation Qset:

- b11 Base the Qset on a diverse set of interviews to avoid dominance of one perspective.
- b12 Ask each participant (Pset) if they miss a statement to check if all relevant aspects were covered and nothing new came up.

b2 Selection Pset:

- b21 Apply snowball sampling. Ask participants to suggest potential participants with other opinions.
- b22 Have participants with a diverse background and job description. If desirable we can add a table with background and job description of the participants.

C2

In the discussion, we may add the note that further bias reduction can be achieved by having two or more researchers execute each step in parallel.

3. We will improve the captions in the revision.

4. Thanks for this suggestion. We can colour-code the loadings to make it easier for readers to quickly see agreement and disagreement in Table 1. We think we can improve the readability of Table 2 by replacing this table with a radar chart.

5. We will improve the explanation of the novelty of the approach in the introduction and discussion. We see three main novelties :

a. Scarcity of research on the motivations of the target group, compared to citizens and scientists.

b. Linking the (envisioned) use of citizen science to (envisioned) level of citizen participation

c. With respect to the methodology: linking the qualitative and quantitative aspects by using Q methodology. So far this has not been applied to this problem. Our approach has the advantage over quantitative approaches in that we have explored a wide spectrum of viewpoints whereas quantitative methods would arrive easily at averaged values. Quantitative methods will likely not reveal the distinguishing elements that are in our opinion crucial to be aware of for effective implementation of citizen science. Our approach has the advantage over fully qualitative methods that it reduces the variation in opinions to a representative small set of viewpoints in a trackable, relatively little biased way (see above). The fact that the number of viewpoints is small makes them useful for actual implementation of citizen science campaigns.

6. We will make the abstract more specific in the revision.

7. We have read about two studies that describe citizen science as a form of public participation. One is about air pollution (<http://sth.sagepub.com/content/35/2/244.short>). The other case related to water quality in Rhode Island is mentioned in the review

C3

of Conrad & Hilchey. We will add a reference to these cases in the introduction and discussion in the revision.

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