Hydrol. Earth Syst. Sci. Discuss.,
doi:10.5194/hess-2016-26-RC1, 2016

Hydrology and Earth System Sciences
Discussions

Interactive comment on "A Q methodological approach to identify practitioners' viewpoints on citizen science in Dutch regional water resource management" *by* E. Minkman et al.

Anonymous Referee #1

Received and published: 13 April 2016

Review: A Q methodological approach to identify practitioners' viewpoints on citizen science in Dutch regional water resource management

Overview:

This paper considers an aspect of citizen science that seldom appears in previous studies, namely, how government practitioners view citizen science projects. The authors use a q methodology to summarize the views of the practitioners and reduce their opinions down to 3 main statements: Citizen science (1) encourages participation, (2) collects illustrative data, and (3) educates. The authors conclude that these results can guide future citizens science project planning.

General comments:

I am very interested in the topic this paper focuses on, and was particularly interested to hear how practitioners (connected with water resource management) in the Netherlands view citizen science projects. I was actually rather disturbed that the practitioners did not want to include citizen scientists in the co-design process. In my personal opinion, the co-design element is really important in citizen science. I believe that overall, the paper presents important results that I would very much like to see published in this special issue. Although I have strong reservations about the way the paper is written, these reservations do not reflect my feeling that the paper presents some important results. I hope the authors take my points as constructive criticism. I would very much like to see a revised version of this paper in the special issue.

Having said that these are important results, I do not agree with the authors that these results (in their present form) can be used to help future citizen science project planning. If they want to make this assertion, then they need to back it up considerably. This study has asked the people who would manage a citizen science project, what they feel about citizen science. Therefore, in my view, these results show how future citizen science projects WILL be planned. These results will not influence this planning. The managers will continue to do exactly what they have been doing up until now, which is exactly what the results reflect. If these results will instigate change or future planning, then something more has to happen. I would like to hear the authors' views on this.

My major concern is that of the audience, and the overall writing quality. I feel that this paper has been written with a statistically-experienced readership mind. I need to stress that this is a special issue for science communication. The issue will ultimately have a multidisciplinary audience from all fields within EGU and beyond.

As a disclaimer, if the authors had submitted this article to a statistics journal then I would not be qualified to review the methodology involved. However, as this is a

multidisciplinary special issue, I see my ignorance as a benefit, as I represent that target readership. I have no doubt that the authors have applied the q method properly and responsibly. However, the authors need to alter the article's focus and content so that is properly considers where it is going to be published.

Specific comments:

Firstly, the focus needs to change. I feel that the main focus of the paper should be on the results and not the method. This is after all a special issue about communication. I would suggest the focus should be shifted initially by simplifying the title to "The viewpoints of Dutch regional water resource management towards citizen science."

Continuing on the issue of focus, the explanation of the methodology is far too detailed at present and assumes a level of knowledge that I feel is more in line with an experienced statistics audience. Many terms that are not explained properly when they are first introduced. For example: factor analysis, extracted factor array, all the terms in Figure 1, PQMethod's correlation matrix, factor loadings, amount others. a more basic explanation of the method. It is also possible that the detail can remain if the authors are aware that explanations of terms are needed when they first refer to them.

It is not just the technical terms that are used without proper explanation. There are several instances in the Introduction alone that terms or ideas are introduced that then raise question marks. For example:

-"...citizen science as a potential solution for achieving various goals..." – What are these goals that the authors refer to? -"... no support for higher levels of citizen engagement..." – What are these higher levels? -"... identified viewpoints can be used to enhance the design of citizen science projects." – How? -"... citizens revel a "striking awareness gap" on water related issues." –What is this awareness gap? -"Citizen science is considered effective for a certain target audience..." –Effective as what? -"Insights in scientist motivation are inconsistent..." – Are you referring to scientists or citizen scientists? It's unclear who the main characters are throughout the

Introduction. -"The first is the short-term participation of volunteers..."- The first what? You are missing a noun here. Maybe use "Firstly,...." "Secondly,..." etc instead.

Secondly, I believe that the flow and general structure of the paper needs improvement. I accept that English is not the mother tongue of the authors. However, I need to stress that some basic rules of writing (in any language) need to be adhered to in this paper. My main concern is that of the paragraph. Each paragraph must (at least to some extent) focus around a single idea or topic. As an example, I would like to draw the authors attention to their 3rd paragraph in the Introduction. This paragraph introduces ideas of the growth of citizen science, "future challenges", a "striking awareness gap" (that needs explaining), and finally climate change and urbanization. It is quite possible that the authors want all this information in one paragraph, but if they do, then I highly recommend them to restructure to make the links clearer.

Continuing on the general structure, I think the sections can be arranged in a more intuitive manner. In particular, I'm afraid I very much dislike that the Conclusion comes before the Discussion. Both these sections start in almost exactly the same way, that it is hard to see the reasoning for this split and this order.

Finally, at the level of the sentence, the paper also needs considerable work. I have already mentioned that the paper needs to be re-tuned to the audience. This has knock-on effects with every aspect of the paper, especially at the sentence and word-choice level. Some examples of sentences that need changing: -"The study seeks to determine which of the goals of citizen science are supported by viewpoint..." -"Participants #20, #24, #25, #30, and #31 out of 33 were recruited using this strategy." – Do we need the actual participant numbers here? Why not just "5 out of 33"? -"High eigenvalues and high variance levels are associated with solid foundations for study" – How are eigenvalues and variances connected with solid foundations for study? And what is a solid foundation of study? -"The voluntariness of participation..." – I had to look up "voluntariness" to see if it was a real word. It is! However, it seems to be used mostly in legal settings. I have never heard it before and it made this reader

stumble hard. -“Factor A has an eigenvalue of 12.44 and explains 38% of the total study variance. 25 participants load significantly (i.e. loadings of 0.38 and above) on this factor.” – This, and much of the results section, make no sense to me. These statements might make sense to q-methodology experts, but doubtful to the general scientific audience this special issue is aimed at.

The bottom line: Most importantly, I do not believe the authors need to re-do any of the analysis. I also think that the paper contains interesting and important results that should be published. However, the paper needs a complete overhaul in order to be appropriate for a science communication special issue. I have to be honest and say that, at present, the paper is not written well. The focus needs to change and become much clearer. There are countless times where terms/ideas are introduced without explanation. There are also many sentences that need improvement, and paragraphs that need structure. Every sentence, paragraph and section needs to be updated with the audience in mind. I would also suggest some professional type-setting or get some colleagues (from other disciplines) to review the paper thoroughly after the alterations.

I hope the authors take this challenge, as I would very much like to re-read this paper and fully understand what they have done. I look forward to reading the updated version.

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