

Dear Hazel Gibson, Charlotte Kämpf and Erwin Zehe,

Thank you all again for your thorough reading of our manuscript and for your interesting feedback. Please find attached the revised manuscript, which we have adapted based on your comments (according to our earlier reply, (<https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-297/hess-2018-297-AC1-supplement.pdf>)). Please find your original comments below in bold italic, accompanied by our remarks and excerpts from the manuscript (in italic).

**** In particular the phenomenon on intermodality, switching between modes of communication channels, should be addressed as well as the various meanings of 'jargon' - the authors are advised to consult any of the available technical / science communication paper textbooks.***

As we understood it, your remark could point both to the intermodality of the text versus pictures and to the intermodality in the method of surveying (on paper versus on iPad). Concerning the text vs. pictures, we have added a paragraph in chapter 1 (Introduction), referring to a study by Arthurs

"In our research, we choose to study both the understanding of textual terms and the understanding of pictures. Some interesting work has been done about alternate conceptions in oceanography, focusing on students and using both textual and pictorial multiple choice questions (Arthurs, 2016). Arthurs' study also focuses on the topic of intermodality, i.e. switching between modes of communication (textual vs. pictorial)".

Concerning paper vs. iPad, we have added this to chapter 4 (Discussion).

"We expected there would be no difference between people who filled out the survey on paper and people who filled out the survey on iPad. However, we did not test for this, so we cannot take into account any possible influences of the material used. This might be a topic for future research."

**** In a paper on ambiguity of terminology, the frame addressed (here 'jargon') should also be tested for ambiguity. A short look at administrative efforts globally to transpose academic language (jargon?) into plain language would make a fine addition.***

We agree, and have added some relevant paragraphs to Chapter 1, citing (amongst others) Hirst and Somerville and Hassol.

"The word 'jargon' derives from Old French (back then, it was also spelled as 'jargoun', 'gargon', 'ghargun' and 'gergon') and referred to 'the inarticulate

utterance of birds, or a vocal sound resembling it; twittering, chattering', as noted by Hirst (2003). In the same article, the author comes up with several general definitions of jargon, the two main ones being 1) 'the specialized language of any trade, organization, profession, or science'; and 2) 'the pretentious, excluding, evasive, or otherwise unethical and offensive use of specialized vocabulary'. The first one can be considered neutral definition, the second one has a negative connotation (Hirst, 2003).

Within the geosciences, no specific definition of jargon is available. As noted by Somerville and Hassol (2011), scientists often tend to speak in 'code' when communicating about geosciences to the general public. The authors refer in their article to climate change communication, and encourage scientists to use simpler substitutes and plain language, without too much detail - as an example they suggest 'human caused' instead of 'anthropogenic'. However, they do not suggest a specific definition of jargon.

Nerlich et al. (2010) write that climate change communication (as part of geocommunication) shares features with various other communication enterprises, amongst which health communication. Since there is no specific definition of jargon in geosciences and since the definitions by Hirst are very broad and not science-specific, we chose adopt the definition from medical sciences (Castro et al., 2007) in which jargon is defined as both (1) technical terms with only one meaning listed in a technical dictionary, and (2) terms with a different meaning in lay contexts."

**** Some terminology should be revised such as 'hydrology induced hazards'***

The terminology was chosen to be familiar to the readership of HESS. However, we have made some amendments to make sure our terminology is also clear for those outside of hydrology.

**** In addition more care should be given to labeling illustrations such as Fig 3 (the comment on the meaning of the star should not stay in the bodytext - it should go into a legend for this figure).***

We fully agree and have changed this in the manuscript.

"Figure 3: Graph showing the posterior distribution of the misfit between laypeople and experts by using Bayes Factor (BF) for every term used in the survey. Pictorial questions are marked with an asterisk.

A value $BF < 1/10$ is strong evidence towards H_0 : it is more likely that laypeople answer questions the same as experts than differently. A value $BF > 10$ is strong evidence towards H_1 : differences are more likely than similarities. "

**** Firstly, in the method section, it is not made clear how exactly the pictures and definitions used in the survey were actually chosen? If they were written/selected only by a panel of experts***

with no input from non-experts then that represents a significant limitation in the work as the choices made by the experts may not include important representations that the layperson might have selected. This does not mean that the layperson, when interviewed would not select one of the options regardless, but that actually their true representation was not an option. This would then lead me to ask how representative are the definitions of lay people's definitions?

In chapter 2 (Methodology) we have added a description on how we choose to definitions to the paper.

"The focus group consisted of experts, which mimics the process of science communication: the experts choose and use the definitions, which are then communicated to laypeople. (...) The pictures were chosen by two of the authors: one of them a hydrologist, one of them a 'lay-person' in terms of hydrology."

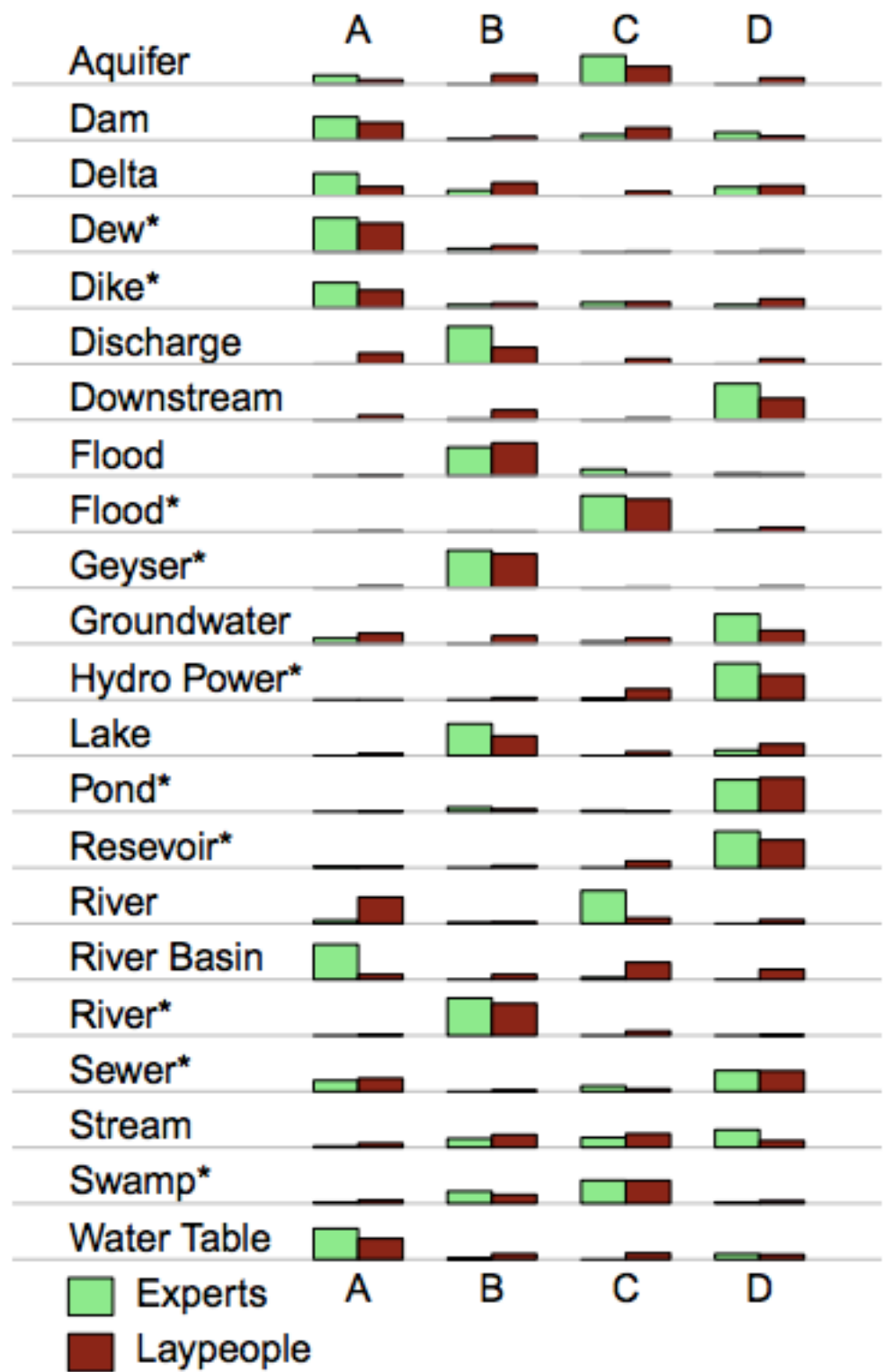
Furthermore, in chapter 4, we have added a recommendation that future research could include lay people in the process of selecting definitions.

"In this study, we have chosen to use terms as defined by experts, because it mimics the 'real life' situation in which scientists use specific terms by communication to a broader audience. As suggested by one of the reviewers, in future research it would be interesting to adopt a broader perspective by also incorporating terms as defined by laypeople. This could be done by organizing a focus group consisting of laypeople and discuss with them the meaning of specific terms."

**** Secondly, in the presentation of the results, having the numerical data is fantastic and really allows me to pick apart the patterns for myself, but in terms of ease of reading, a bar chart of this data would really help with legibility here.***

We have replaced the table by bar charts, and moved the table to the supplements.

*Figure 2a: Bar charts showing the answer distribution of both textual and pictorial questions (pictorial questions are marked with an asterisk *)*



**** Thirdly, in the results section, I found the repeated use of the phrase 'no disagreement' quite confusing and it frequently threw me out of the text as I tried to understand what it was saying - if possible the use of the phrase 'agreement' here would make things much easier to follow.***

We have changed this.

"Concerning the text questions, there was full agreement between the experts on 'discharge' (100% agreement, N = 33 answered B, N = 1 answered blank) and almost full agreement on 'downstream' (97% agreement, N = 33 answered D).

This can be seen in Figure 2 and Appendix C.

Concerning the pictures, there was full agreement between the experts on 'geyser' (100% agreement, N = 34 answered B) and on 'river' (100% agreement, N = 34 answered B). High levels of agreement were found on the pictures 'flood' (97% agreement, N = 33 answered C), 'hydro power' (97% agreement, N = 33 answered D). and 'reservoir' (97% agreement, N = 33 answered D). This can be seen in Figure 2. The complete table with an overview of the multiple choice answers (and the number of laypeople and experts that chose that specific answer) can be found in Appendix C."

**** Fourthly it might be useful to the authors to consider some of the work on climate change communication as it may have more parallels to hydrogeological communication than medical (although I really do like Castro's definition of jargon). I would suggest the authors take a look at 'Somerville, R. C.,; Hassol, S. J. (2011). Communicating the science of climate change'. Physics Today, 64(10), 48' and 'Nerlich, B., Koteyko, N.,; Brown, B. (2010). Theory and language of climate change communication. Wiley Interdisciplinary Reviews: Climate Change, 1(1), 97-110' as these have some very relevant sections that will strengthen the context of your work.***

We have read the recommended literature and added relevant citations to our manuscript (please see our answer to the remark about the term 'jargon', above).

**** There are a few grammatical and text based changes that I have highlighted in the attached pdf as highlights and comments, but overall I think that this is a good paper that, with a few tweaks and a little extra information, very much deserves to be published.***

We're glad to hear that and we have changed these errors.

**** I think the paper needs to be revised to clarify open questions and to optimize the presentation for the reader. In this respect I follow most of the recommendations of reviewer 1 - particular the question about the group who selected the pictures and terms for the study is interesting, including the potential bias arising from this choice. I think that also reviewer 2 made a point with respect to the citation of the literature from technical communication, and the annotations of your manuscript seem valuable as well.***

We agree with the recommendations and have revised the manuscript accordingly, please see our answers to the remarks above.

Again: thanks again for your time and your recommendations!

Kind regards, Gemma Venhuizen, Rolf Hut, Casper Albers, Cathelijne Stoof, Ionica Smeets