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## Reply on CC1

Caitlyn A. Hall et al.

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Author comment on "A hydrologist's guide to open science" by Caitlyn A. Hall et al.,  
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*We thank the community reviewer for their thoughtful comments on this piece. We are grateful for their contribution to the open science in hydrology and feel that their comments sparked great discussion and will greatly benefit the overall manuscript.*

**C1.1:** The article gives a summary of the current open science movement and advice how to advance the open hydrology movement specifically. The authors present a list of guiding principles and useful resources how open science can and should be pursued. I want to thank the authors for this well written contribution to open science. I only have some minor comments that I hope the authors will take into consideration.

*Response: We thank the reviewer for their comments and thoughts on our article. Community feedback is highly appreciated and below we respond to your comments.*

**C1.2:** Section: Motivation for Open Hydrology: A not so noble, but potentially convincing reason to adhere to open science standards would be that accessible articles/data/code see more citations. You briefly mention this for the 4th Principle. It might be worth mentioning this connection already in the Introduction.

*Response: We fully agree that mentioning increased citation of Open Science papers in the introduction helps the manuscript and have thus added "An additional benefit lies in increased citation numbers for articles embracing open science, as they contain useful assets on top of the scientific insights offered in the main text (Piwowar et al., 2007)" on line 41.*

**C1.3:** L47-51: The explanatory sentence "specifically referred to as open hydrology" is a bit confusing, especially with the several citations coming after, it is difficult to connect "research projects" as a continuation of the list started with "open science".

*Response: We agree that the sentence length may lead to confusion. We will re-phrase for clarity and to reduce clutter within this sentence.*

**C1.4:** L116: I think it would be better to separate researchers and other stakeholders as interest groups. Co-development with other research is much more common. Ideas are discussed and shared at conferences. Carrying the same collaborative effort outside the research community is more of a problem.

*Response: This is a good point. We will modify the sentence to:*

*"Stakeholders usually include fellow researchers, but they may also include industry professionals, non-profit organizations, government officials, communities, members of the public, and other parties that have an interest in hydrologic research."*

**C1.5:** L119-124: This transition is a bit sudden. Can you elaborate what FAIR is and what it has to do with stakeholders? I would even recommend mentioning the FAIR standards already further up in the paper. Maybe you can elaborate what FAIR has to do with data management plans (L113).

Additionally, please spell out the acronyms FAIR and CARE at least once.

*Response: We feel that introducing FAIR in L113 would disturb the flow, but we will edit this section to emphasize and articulate more clearly that FAIR aims mainly at fellow researchers as stakeholders, while CARE encompasses a greater variety of stakeholders in this section. We will modify L119- to:*

*"Consequently, we suggest incorporating Findable, Accessible, Interoperable and Reusable (FAIR - Wilkinson et al., 2016; Garcia et al., 2020) and, where applicable, Collective Benefit, Authority to Control, Responsibility, and Ethics (CARE - Carroll et al., 2020; Walter et al., 2020) data standards into open hydrology research. While FAIR data standards were developed to improve access to and machine readability of data mainly to advance further research, thus aimed mainly at fellow researchers as stakeholders, CARE data standards encompass a greater variety of stakeholders as they were developed by Indigenous scholars to consider the interests of indigenous people whenever they are connected with a given dataset (The Global Indigenous Data Alliance, 2019) "*

**C1.6:** L140: Maybe "trustworthy" is a better word than "reliable"? They might still be reliable outputs when not open, but would not be trusted by others.

*Response: We agree and will change it appropriately.*

**C1.7:** L156 and Principle 3: An explanatory half-sentence what "Carpentries" is, would be helpful. Alternatively, I would follow the advice given by Reviewer 1, Francesca Pianosi, and include overview tables. These can include links to the individual resources, which makes it easier for other researchers to access them. A similar, up-to-date table would be useful for the open hydrology project website as well. While a list of articles relating to open hydrology is a useful resource, a table with direct links would be more easily accessible.

*Response: We agree that a short description of "Carpentries" is indeed necessary. We will include the following in parenthesis: ".....".*

*In line with Reviewer 1's suggestion we now present a comprehensive table summarizing tips, tools and resources on four open hydrology principles that the manuscript introduces. We sincerely hope that this table will help hydrologists to adopt open hydrology principles at a practical level.*

**C1.8:** L459: Can you briefly mention Table 2 here, since in the order the document is now, it appears before the scenarios.

*Response: We will add the mention to this table in Line 459.*

**C1.9:** L461: There is no Table 3. Please check your Table references in general and in the scenarios specifically. There probably has been a mishap in numbering.

*Response: We apologize for the inconvenience this has created to the reviewers. We will check out Table references throughout the manuscript and make the required changes in the text.*

**C1.10:** L508: Any advice on how to address the fear of being scooped? Since you mention this worry already in the abstract it would be good to address this in the main article as well.

*Response: We thank the community reviewer for pointing out that the fear of being scooped was not mentioned in the main body of the article. It is certainly one of the factors that prevent people from openly sharing their work. We will modify the sentence in L517 to:*

*"One point to address can be highlighting the potential long-term impact of open hydrology on your career (Allen and Mehler, 2019) and also the fact that early publication in an official repository is a protection against being scooped, as your contribution is then documented with a date attached to it."*

*We will also add an additional sentence in the main text, after line 41:*

*"Another benefit of embracing open science practice is a vastly improved collaboration practice, as intermediate scientific results and ideas are placed in the public domain with clear authorship and date, reducing the potential for being "scooped", i.e. for seeing your results or ideas published by someone else without proper acknowledgement of the origin (Laine, 2017)."*

**C1.11:** Principle 2: Is "Water Metadata Language" a fixed term? If it is, I do not know it and further explanation and reference would be helpful.

*Response: We thank the community reviewer for pointing this out and we have adjusted this to say "...metadata formats following metadata standards based on application and topic, and..."*