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## What role does human laziness play?

Thorsten Wagener (Referee)

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Referee comment on "Rainbow color map distorts and misleads research in hydrology – guidance for better visualizations and science communication" by Michael Stoelzle and Lina Stein, Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-118-RC3>, 2021

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This is a nice study by Stölzle and Stein which add to the growing guidance literature on how to best visualize data. Given that the earlier reviews already stressed several aspects, I'd like to suggest three aspects for the authors to consider. They are in no particular order:

[1] Maybe I missed this in the paper, but how many software packages (Matlab etc.) offer a rainbow colour scheme as the default? Do the authors simply use the default and not think about it? This would be my personal hypothesis based on my own past mistakes. If many software packages offer this as default scheme, then is there just a straight mapping of default schemes and schemes used? If so, then would the best strategy to approach the software producers to change their schemes (rather than focus on the users)? How much does the use of rainbow colour schemes correlate with the default colour scheme in the software used (do the authors have the data to calculate this)?

[2] The authors discuss in section 3.3. that tools like colorbrewer2.0 and others can be used to avoid issues for colour blind people. Tools like these offer a much wider help to avoid a wide range of colour issues discussed in this paper. Do the authors not think that a general use of such tools would avoid most errors they discuss? Basic use of such tools for all colour choices would solve most of the problem, why not suggest this as a standard? Would this be easier than a list of things that the scientist has to check separately?

[3] Point two leads me to my third point. The authors state at the end of their paper that "As a guide we presented manifold visual techniques...". This is great for those highly motivated to do the right thing in terms of publishing visualizations, but there is a risk that this will be too much for many scientists. Is there a simpler step-wise guide the authors could propose? My personal strategy is to require all my students to use colorbrewer 2.0 to ensure that major errors are avoided, but maybe the authors could

summarize their suggestions into a few key points?

Overall, this is a very nice and valuable paper and my suggestions do not require more than minor revisions to the actual manuscript. I personally think (and the authors do not have to share this opinion of course) that much is to do with laziness. Hence thinking about how we have a better starting point (change software defaults?) and what a simple strategy might look like that scientists can easily adopt (e.g. use existing tools as a standard) would be my suggestions to fight this.

Thorsten Wagener