

Interactive comment on “HESS Opinions: Deep learning as a promising avenue toward knowledge discovery in water sciences” by Chaopeng Shen et al.

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Dear reviewers and editors,

At the point of this writing, a revision has not been requested by the editor yet. However, to embrace HESSD's spirit of online discussion and faster communication, we are uploading a document here to demonstrate the direction we would like to take in terms of revising this manuscript. Due to time constraint, the revision here is incomplete, early, and has been consented to by only a few co-authors. It will take a lot more time to work with so many authors to develop the formal revision, but the open discussion window will be closed shortly. However, we do think it might be valuable to post this

preview so that reviewers, as well as the editor, can see where the plan to take the revision. And there might potentially be more communications than what a traditional review process would have allowed.

Mainly, we re-organized the flow of the manuscript. We will put "challenges" first, in Section 3, and discuss how we can address these challenges as a community in Section 4. Please find the revision draft. We will add more examples where DL showed advantages, more examples of DL interpretation, a roadmap toward DL-powered advances in hydrologic science, and discussion of possible research directions. There will be some overlap with the companion review paper including some summaries of the content there, but there will also be new elements. We will add discussion of shared baseline models and a grass-roots revamp of education. This manuscript differs resoundingly from previous related papers. The revision will make it even more so.

Please pay more attention to the new Sections 3 and 4.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2018-168/hess-2018-168-SC3-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2018-168>, 2018.

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Discussion paper

