Geosci. Commun. Discuss., referee comment RC1
https://doi.org/10.5194/gc-2021-22-RC1, 2021

Comment on gc-2021-22

Anonymous Referee #1

Referee comment on "GC Insights: Identifying conditions that sculpted bedforms – human insights to building an effective AI (artificial intelligence)" by John K. Hillier et al., Geosci. Commun. Discuss., https://doi.org/10.5194/gc-2021-22-RC1, 2021

This paper explores and interesting idea. I particularly liked the idea of comparing and complementing AI-based and human decision-making, and the insights concerning the relevance of expertise are interesting. As a reader with a background in machine learning and AI, rather than geoscience, I have a number of comments and questions concerning the current version of the manuscript:

- It is not clear to me what precisely the input to the ANN was, or what the task was (classification of time serieses of photos, I think, but this is left rather implicit). Was the input a sequence of images in each case? How many were included in the training / testing sets? How was the algorithm's performance evaluated? In general, there is not sufficient information in the paper to understand exactly what was done in the neural network part of the study. I would like to see complete detail, and/or reference to an implementation available for scrutiny/study.
- Why the particular choice of ANN? Why those numbers of neurons and in that configuration? Were other options considered?
- It seems that the results of the ANN study are very preliminary, and no conclusions can yet be drawn. (The manuscript uses phrases like "that training an ANN on these data alone should be productive".) Is that right? What are the conclusions drawn from the ANN work to date, or is it still at the speculative stage? The paper was unclear, to me, about this.
- The manuscript claims that "Thus, insights from the participants have contributed to building an effective AI to reliably infer flow conditions from bedform morphology". I didn't see justification for this in the paper. The argumentation and explanation of the ANN results (and the lack of clarity around which are speculations and which are results) make it difficult to see where this comes from.

I think the submission could make for an interesting contribution, if the method, results, and contributions were more clearly stated.