Referee #1

hess-2023-252 “Towards Interpretable LSTM-based Modelling of Hydrological Systems” LA.De la Fuente, MR.Ehsani, HV.Gupta, LE.Condon

This re-submission has a done a good job of addressing comments and corrections. Now it reads better and makes definite linkages between AI/ML and traditional hydrologic modelling that do aid in interpretability of LSTM models. Further they confirm the published experience of hydrologic modellers with regard to results in water-limited versus energy-limited catchments, consideration of the most important inputs, and the number and arrangement of “storages” when constructing their models.

Response: We are glad to know that we have addressed your comments and concerns.

Referee #2

Thank you for allowing me to review your paper for the second time. I appreciate you including some of my previous suggestions in the submission to clarify your experiments and scientific findings.
I propose that this paper be accepted to HESS subject to t**echnical corrections** (see comments below).

Best,

Tadd Bindas

Minor Comments:

Line 90: Grammatical fix: “Explore the similarities and differences between LSTM models and the hydrologic reservoir model.”

Response: We will fix this typo in the revised version.

Table 1: Are the brackets supposed to be facing outward? (ex: o =]0,1[ ) Assuming this is the case since this was a minor comment from my previous paper comments.

Response: We kept them inward brackets because it is mathematically possible that "o" could have a 0 or 1 value. Nonetheless, in Hydrology, such values would not make sense, as they would indicate a bucket that is either completely full or non-existent. However, the idea of the bracket was to represent the mathematical range of values.

Figure 6/7: Can you change the scatter plot dots to a color other than yellow? The choice of color makes the points hard to identify individually.

Response: We have chosen this color to ensure that individuals with color blindness can read the figure, but we are exploring alternative color schemes to ensure even better representation.

Referee #3

The authors have revised all my concerns. I recommend publishing this article.

Response: We are glad to know that we have addressed your comments and concerns.