Natural Hazards
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Discussions

Interactive comment on "Modeling inundation of seasonally flooded wetlands at McCarran Ranch on Truckee River, USA" *by* X. Chen et al.

Anonymous Referee #2

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Overview: This paper investigates flooding patterns and processes for the McCarran Ranch reach of the Truckee River in Nevada, USA. The ADH model is applied to study flood characteristics and interactions between the main channel and the floodplain. Metrics of floodplain fluxes are studied as well as inundated areas. The results indicated an interesting hysteresis pattern to flood behavior.

This is an interesting paper with several novel aspects that are worthy of investigation. However, the structure of the paper can be improved to clarify the unique contributions of this work.

Innovation: As commented upon by the first anonymous reviewer, the novelty of this work is not emphasized to the extent that it could be. The introduction and methods

sections emphasize the study area and the modeling approach. Neither of these items are novel. The novelty of this work lies in the investigation of floodplain fluxes and the unveiling of the hysteresis type characteristics of the flood pulses. I suggest that the authors revise the paper to clarify this contribution.

Technical Quality: Unlike the first reviewer, I do not see any major issues with the technical quality of this work. The authors rightfully acknowledge that low resolution topographic data in the floodplain likely influenced the model results under high flows. However, the specific inundation patterns are not the emphasis of this work. Rather, the authors are investigating how models such as ADH can provide better insights for floodplain processes. Again, the authors should clarify this point. I have made several specific comments regarding the technical aspects of this paper below.

Writing Quality: The paper should be thoroughly edited to improve clarity. The grammar needs to be corrected in several places. Many of the paragraphs are much too long and need to be broken up to add clarity.

The opening paragraphs are too focused on the case study and should be broadened to emphasize the contribution of this work – including the inclusion of a specific objective(s). The background on floodplain fluxes should be moved from the results section up to the introduction section. The results and discussion should be broken into two separate sections. Inclusion of the 2D equations is not necessary unless there is some unique aspect that is required to interpret the model results.

Specific Comments: -What was the relative area described by high-res LiDAR vs. USGS DEM? -At what flow does the inundated area cover the USGS DEM? -The two paragraphs under the "Model Test" section are extremely long and should be broken down into separate paragraphs. Again, breaking out the results and discussion sections would be helpful. -Figure 1. Strange elevation binning on Figure 1. For example, 1295.4, 1300.8, etc. -Figure 2. highway is one word. -I'm confused by the Figure 6 results (discharge comparison). If there is only one stream gage, how was the upstream

boundary condition determined? Was the same discharge values used for the BC and the validation?

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