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Natural Hazards and Earth System Sciences
Discussions

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

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We appreciate the reviewer's effort in reviewing our paper, but we do not agree with the points he/she provided in the comments. This study is not only an application of the AdH model. We used the model as a powerful tool to study hydraulic features in the main channel-floodplain system during flooding events. Perhaps the title and the abstract do not fully reflect our goals and our efforts in this study. However, the added value of this study compared to a simple model application or a case study is clearly shown in the paper. Some specific flow dynamic features that have not been examined previously were studied in this work. We have analyzed the floodplain-main channel exchange with two approaches, the proportion of flow through floodplain and

the transboundary flux, i.e. the flow flux passing through the water. This feature may have a strong impact on river water quality, especially dissolved oxygen levels. We also analyzed the temporal change of inundation area during flood events, which led to the finding that the flood inundation shows a hysteresis loop with time; in other words, the same flow discharge can result in different inundation areas during rising and receding periods of flood events. This result may affect both flood control and stream ecology.

The reviewer also concerned the DEM resolution for the floodplain delineation in the modeling study. Although we agree that finer resolution DEM may provide more spatial details, we do not think it will greatly affect the result of this study. The study area is much larger than the 30 m DEM grid size and can be described fairly well by the current DEM. There are no very sharp topographic changes in the floodplain that needs very fine grid size to capture, and very small topographic features can be neglected.In the main channel, we have very detailed Lidar survey result for the bathymetry, which is well enough for the channel flow simulation.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 3711, 2014.