Interactive comment on "Integration of 2-D hydraulic model and high-resolution LiDAR-derived DEM for floodplain flow modeling" by D. Shen et al.

Anonymous Referee #1

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This paper put forward a method to integrate the 2-D hydraulic model results and the high-resolution LiDAR-derived DEM data, then it was used to simulate the floodplain flow in the Gongshuangcha polder, a flood storage area of Dongting Lake. This method improved the accuracy of flood extent and depth. As this authors mentioned, applying high-resolution DEM data to floodplain flow models has become a common trend in flood studies, and many similar studies have been published. However, the innovation should be explained clearly. Comment 1: When the LiDAR data was acquired? With a lower water level in a year, nor not? The authors should explain it clearly because it may impact the accuracy of simulation results. Comment 2: This work employed

the high-resolution LiDAR-derived DEM data to improve the accuracy of flood extent and depth. Its method is similar to the some previous similar works. And the authors should compared your method and results with other methods. Comment 3: I think that authors can directly create the high resolution TIN based the high-resolution LiDAR data for the 2-D hydraulic model because the computational capability of the computer is power than ever and the parallel technology can be employed in the current time. The flood extent may be found based on the high resolution TIN and the flood depth may be represented by the contours made from the TIN. Comment 4: This paper divided a large amount of DEM data, 8.36GB, into 5 strips spatially, and then each strip would be read at one time. I think this means is not so good to enhance the computational efficiency. If the database could be used to manage the lager data, it would make better results. Comment 5: The sentence "What's more, the quality of mesh resolution has little effect on the results of 2-D hydraulic models" may be not appropriate. If the DEM is high-resolution in vertical, the results of 2-D hydraulic models would be better. Comments 6: The language should be checked carefully and the representation as well. For example, in page 3, "their methods still have weaknesses (Marks et al., 2000)", we are in 2015, any progress during this 15 years?

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