

Interactive comment on “Delineating wetland catchments and modeling hydrologic connectivity using LiDAR data and aerial imagery” by Qiusheng Wu and Charles R. Lane

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Received and published: 22 March 2017

General Comments This manuscript was well thought out, well organized and well written. In the United States the regulatory status of wetlands is currently linked to connectivity to streams so the topic of this manuscript is important. The conceptual model presented for wetland fill and spill seems very useful. The approach used in the reported study is sound and findings support the conclusions reached.

RESPONSE: We thank the reviewer for the encouraging comments.

Specific comments:

The last paragraph of the introduction is a summary of the study findings. It should be

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modified to reflect study goals instead.

RESPONSE: We thank the reviewer for the good suggestion. We will revise this paragraph and make our research objectives more clear.

Flow routing was performed using D8 algorithm (line 213) but often it has been found that D-infinity algorithms provide more realistic flow characteristics.

RESPONSE: We agree with the reviewer that D-infinity algorithms might provide more realistic flow characteristics. In our study, the flow direction raster was generated and used as an intermediate dataset to derive wetland catchments. For delineating catchments/watersheds, we tried the ArcGIS Hydrology Toolbox (<https://goo.gl/GhmFId>) and the open-source Whitebox Geospatial Analysis Tools (<https://goo.gl/dqV4cE>). Both software packages use D8 algorithm for watershed delineation. Since our data processing flow was built on the ArcGIS Hydrology Toolbox, for the sake of simplicity, we used the D8 algorithm available in ArcGIS to derive flow directions. Nevertheless, we believe that both flow direction algorithms should lead to the same watershed delineation results.

When reporting numerical results consider the errors associated with the underlying model used to produce the values. The number of nonzero digits should generally reflect the uncertainty. For example see lines 347 and 348 with values reported with 4 significant figures whereas it is known that these estimates have substantial uncertainty. Also in tables with data reported with up to 8 significant digits (Tables 1 to 4).

RESPONSE: We appreciate this concern. In the revised manuscript, we will reduce the number of significant digits to no more than two throughout the manuscript.

Figure 7 needs to be reworked. Labels on figure are very difficult to read

RESPONSE: We have revised Figure 7. We made the lines thicker. In addition, we switched the line colors to make them consistent with those shown in Figure 9. Yellow line and blue line represent NWI wetlands and LiDAR-derived inundation areas,

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respectively.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2017-1/hess-2017-1-AC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-1, 2017.

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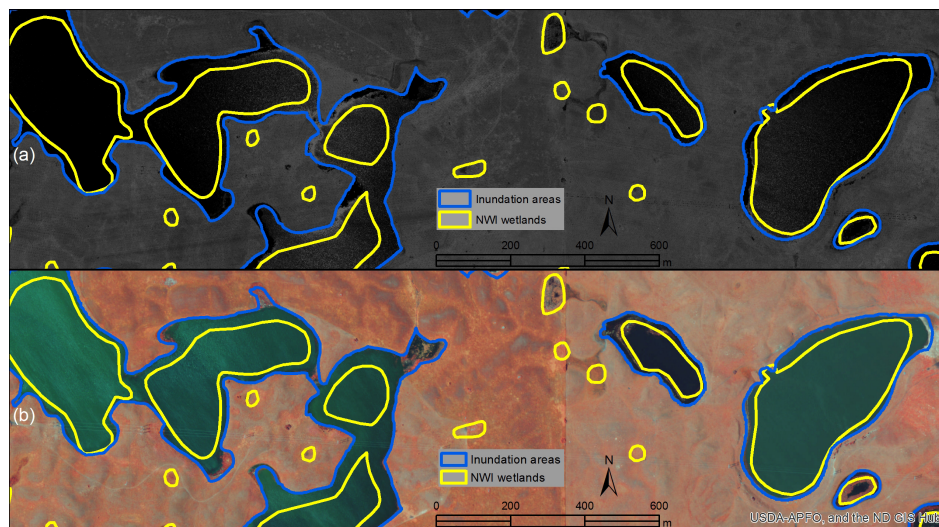


Fig. 1. Figure 7. Comparison between inundation areas (derived from LiDAR intensity data) and NWI wetland polygons

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