

Dear Authors,

Thank you so much for replying to previous comments and uploading the revised version of the manuscript. I am grateful for your hard work and dedication in responding to all the comments raised. However, there are still some major issues that need to be critically addressed. Please find the following major and minor comments that should be taken into account with detailed explanations.

Major Comments:

- i. Thank you for explaining the limitations of this method raised in comments #2 and #3. Please indicate where you modified your manuscript (indicate line numbers).
- ii. I am still not convinced about the discussion part of this manuscript. I expect more consultation on the previous research findings here. See the presentation quality of similar studies, e.g., <https://doi.org/10.1029/2022WR032031>.
- iii. I couldn't find any suggestions for future research in the manuscript
- iv. Please explain the scale of applicability of your methodology with a detailed explanation of why it is limited to that specified scale (if limited to some small or large scale).
- v. Please explain how you deal with backwater effects in the complex floodplain. Both HAND and TSA can't consider the effect of backwaters due to artificial structures like canals, bridges, road embankments, levees, etc. Because your DEM never accounts for such infrastructures. Using recently developed high-resolution DEM can help to resolve these problems. However, it might be computationally expensive if you have a large study area. One useful suggestion for this is to manually superimpose these artificial structures on your existing DEM and continue the analysis.
- vi. Most of the measurements are only taken from/near the main rivers, which are not representative of the complex floodplains. The main rivers are less dynamic than the floodplain in terms of water depth. Probably, you may not have measurements other than these locations, however, you can use indirect methods like interviewing the local community about the water levels of those flood events with reference to flood marks on known fixed objects/locations like permanent trees, buildings, etc. Please provide limitations if you cannot do this due to specific reasons.
- vii. On line 235, you mentioned as you implemented a first-degree polynomial TSA. In my view, the first-degree polynomial is a big simplification for a natural flood plain with diverse topography. The first-degree polynomial assumes a smoothly sloped topography which is way far from your case. Please justify why you chose a first-degree polynomial for TSA. For example, why not a higher-degree polynomial which is more representative?

Minor comments

- i. Check subtitle **3.1** on line 140, I believe either you forgot the conjunction word 'and' or have a typo.
- ii. Please check editorials like missing spaces (lines 46, 114, 252, 264, 265, 270, 283, 286, 346)
- iii. Check for grammatical sentence restructuring (line 275)
- iv. Some readers might not be familiar with ERDAS Imagine software (line 288), better to cite a reference for this.
- v. Figure 8(e) and its description from lines (346 – 347) is not needed.

- vi. Please be consistent with cross-referencing figures e.g., line 289 (Fig 6), line 344 (fig 8), line 375 (fig 10)
- vii. The visual quality of Figure 10 is still blurred