Report #2 (Review Response)

Reviewer's Comments: *I've previously reviewed this manuscript in the preprint stage and have no major issues with this version*.

Response: Thank you for your continued engagement with our manuscript. We appreciate your feedback in improving the paper.

- **Reviewer's Comments:** *My only suggestion is to redo figure 4 as it is very redundant, especially the presentation of each DEM, which each look the same. Perhaps you can include the observed DEMs in figure 3 and only keep either the DoD maps or 3d plots in figure 4*.

Response: Thank you for your suggestion. We have now updated both the Figures 3 and 4. We have included the observed DEMs in Fig.3 and removed it from Fig.4.

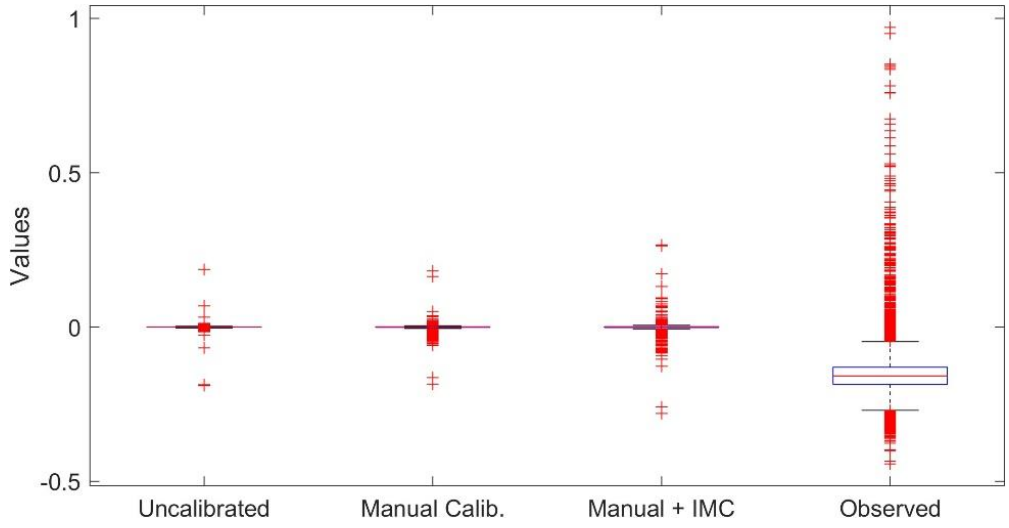
We have decided to retain both the DoD maps and 3-D plots in the Fig.4, since each visualization technique contributes unique insights and enhances the interpretative power of the data, thereby offering a more complete picture of landscape dynamics than either method could provide alone.

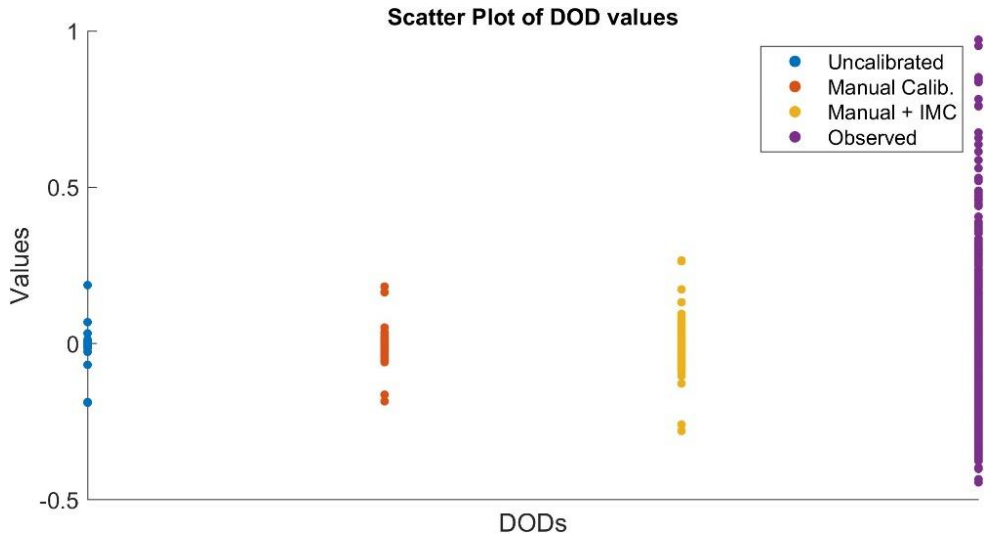
- **Reviewer's Comments:** *I'd also be interested in seeing scatterplots of the observed and simulated elevation values or the distributions of DoD values and some discussion on this*.

Response: Thank you for your suggestion.

We have now added a plot comparing the distribution of DoD values from all calibration approaches with the observed DoD. We have also included a discussion (see lines 298 to 312) to explain this comparison. We chose a boxplot for its concise visual summary of central tendencies, spread, and outlier behaviour across calibration settings, enabling us to assess alignment with the observed DoD and identify systematic biases or deviations.

To effectively summarize statistical variations in DoD, we use boxplots representing 1D vectors derived from flattened 2D DoDs. We present both the scatter and the boxplot below.





- **Reviewer's Comments:** *Lastly, in figure 4 why are you only plotting erosion values, don't you have deposition too somewhere on the landscape?*

Response: We focus on plotting erosion values since erosion processes often dominate landscape evolution, leading to clearer and more measurable outcomes. This approach allows us to establish precise calibration targets and identify critical areas at risk of degradation. While deposition is indeed present in the landscape, it can be more diffused and challenging to quantify and be used in the calibration process. By emphasizing erosion, we enhance model performance and address data limitations, as there are typically more available observational data on erosion.