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Discussions

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Interactive comment on "Dominant process zones in a mixed fluvial-tidal delta are morphologically distinct" *by* Mariela Perignon et al.

Anonymous Referee #2

Received and published: 27 May 2020

The manuscript describes a data analysis workflow to classify regions of the Ganges-Brahmaputra-Meghna Delta (GBMD) based on island morphometrics. These island and channel morphometrics correspond to processes and process zones. I found the paper well written, clear, and interesting. I have mostly minor comments (listed below). Before I get to these minor, specific comments, I have one larger comment focused on the extensibility of the analysis. As stated on P4 L5-6, the GBMD is the largest subaerial delta in the world. The manuscript describes working with a dataset of 1200 features (P5 L31). I am wondering about applying this to other deltas around the world – how many deltas would work with this technique? The manuscript doesn't necessarily need to answer that question, but I think the paper would benefit from a paragraph where future use of this technique was specifically – specific ways in

which this analysis could be extended to understand other deltas on earth (which will therefore have smaller sample sizes of island/channel features). How can researchers who study other deltas use this technique? Is there a threshold sample size where it stops being useful? Could a researcher assemble a large dataset of features from many different deltas then use a modified version of the workflow to do inference on new delta islands (from random deltas) to determine if the random island is dominated by certain processes?

To be very clear – I like this work, it is interesting to me, I would just like an explicit moment where the manuscript steps back and looks at how this neat workflow could be used by others in other settings.

Specific Comments

P1 L2: Can you define 'resilient' in this context?

P1 L17-18: I think a more precise way to convey this idea is: the data, analysis techniques, and chosen morphometrics do able to detect human modifications to the system. This is said in a more defensible way in the discussion (P12 L24)

P2 L4: Can you define 'resilient' in this context?

P4 L1-2: this is a really neat idea, but i did not see this discussed in the discussion/conclusion.

P5 L15: this line is confusing because of the repetition of the words 'cluster and 'group':

"...island are clustered into groups... clusters are grouped'

Do I understand step 4 correctly that the groups are further combined and ordered?

P6 L6: I'm not sure I agree with this statement as it is written – can you provide a citation for this?

P7 L3: ClusterPy should be cited âĂŤ look at the 'readme.md' on the github page for

the details: https://github.com/clusterpy/clusterpy Also – if there are any other software packages you used i would cite them (software is often not cited in text, but should be).

P6 and P7, generally: are there any subjective hyperparameters that you set? thresholds for the clustering algorithms? If so, please point those out or mention them.

P8 L 20: To me, figure 4 displays the results of the correlation analysis, not the results from the PCA.

P9 L9: I suggest removing the scare quotes on 'sameness', since the dissimilarity metric is discussed in sect. 3.4.

P12 L4: I think the word 'proposed' can be deleted.

Data and Software repository: I see this on github https://github.com/csdms-contrib/DeltaClassification. I would recommend a 'Readme.md' file to help explain the code to make it reproduceable/ extensible for future work. i.e., telling folks where to find the data (i see some '.shp' files in the '_input' folder), and how they could use the code.. I would also provide a DOI for the code itsefl (via the Zenodo integration with Github) and provide the citation for the code in this manuscript.

Figure 1: I cannot tell the difference between all of the white outlines.