Reviewer #1 comment:

This study presents a novel yet low-cost bottom-mounted float Mini Buoy that can be used to monitor tidal inundation characteristics and current velocities based on the single-axis equilibrium acceleration principle. As far as I know, the facility is particularly useful for deriving the key parameters such as submersion time and current velocities, which can further be used for hydrodynamics analysis and mangrove restoration planning. Generally, this is a good study and I read it with great interests.

Author reply: We would like to thank the reviewer for their time and valuable comments. We have addressed them individually below.

1) I would suggest the authors to reshape the paper structure in order to improve the readability. Specifically, the different subsections in the Introduction part can be integrated to highlight the studied topic, the existing problem and the solution etc.

Author's reply: In this manuscript we have tried to achieve a balance between introducing a new method and discussing two case studies which may have led to a less integrated structure in the introduction. We have addressed this by restructuring the introduction and adding a new section 1.2 more specifically on mangrove restoration and aquaculture ponds LL 46-58.

'1.2 Hydrological and hydrodynamic bottlenecks to mangrove restoration

Assessing the the local hydrology prior to mangrove restoration is needed to determine whether conditions are too harsh for seedlings to survive and need to be mitigated (Albers and Schmitt, 2015) or whether insufficient flooding may lead to hypersalinity or succession towards terrestrial plant communities (Lewis, 2005). One of the main reasons for mangrove deforestation in the past, and hence one of the major opportunities for mangrove restoration today, are aquaculture ponds (Dale et al., 2014; Primavera and Esteban, 2008). Breaching the embankments of such ponds, built within previous mangrove forests, is an effective way to restore mangrove forests. However, previous excavation of sediment and altered tidal channels and remaining weirs may have altered the hydrology. Hence spatially explicit monitoring of inundation durations are required prior to attempting mangrove restoration (Dale et al., 2014). Especially stagnant water and inhibited drainage can locally create restoration bottlenecks in abandoned tidal pond complexes. At hydrodynamically exposed sites, where current velocities are able to dislodge recently rooted mangrove propagules, inundation free periods of several days provide a Window of Opportunity (WoO) to surpass critical establishment thresholds (Balke et al., 2011, 2014). WoO are particularly important to assess in unassisted restoration projects to predict suitability for natural colonization by mangrove pioneer species.'

With regard to the Method part, I would suggest the authors to separate the 'Field sites', while the rest parts were used to detail the adopted facility and how the results were generated.

Author reply: We have now explicitly separated the Indonesian field sites into 'Short-term deployment sites' and 'Long-term deployment sites'.

Finally, the Discussion part is rather long, while the Conclusions part is missing.

Author reply: We have moved the final part of the discussion into a separate conclusions paragraph and further changed the text to provide more relevant closing statement as suggested by reviewer #2 LL 640-651.

'4 Conclusions

With this study we were able to show that low-cost monitoring of hydrological conditions in intertidal environments (inundation and current velocities) across multiple spring-neap tidal cycles is possible using single axis accelerometer technology and readily available materials for an underwater float (i.e. the Mini Buoy). Whereas this approach can be a useful tool in coastal research, we especially highlight the Mini Buoy as a stand-alone tool for easy-to-implement hydrological site suitability assessments prior to mangrove restoration. The Mini Buoy can be globally implemented as a standard for mangrove restoration site assessments as it is low cost, easy to transport across borders, difficult to spot on the tidal flat, not prone to storm damage as it is close to the ground and does not require specialist knowledge in coastal engineering or data analysis. Especially in the complex hydrological networks of abandoned aquaculture ponds in SE Asia, the Mini Buoy has the potential to efficiently assess site and pond specific conditions with only a few Mini Buoys rotated around the site. Learning from past mistakes in mangrove restoration, where a lack of hydrological site assessments has led to very low restoration success rates (Dale et al., 2014; Kodikara et al., 2017; Zaldivar-Jimenez et al., 2010), this new affordable and easy to implement technology will be able to assist urgently needed upscaling of future mangrove rehabilitation efforts (Worthington and Spalding, 2018).'

2) Subsections 2.3 and 2.4: it appears that the authors include some results in the method section. I would suggest the authors to move these parts to the Results section.

Author reply: We agree and have moved the description of the Rshiny application into the results section under 3.2.1. L463ff.

3) It is worth noting that the deployment period of the Mini Buoys in both field sites are less than a typical spring-neap cycle (approximately 15 days). What's the potential influence of deployment period on the calibration against the observed current velocities? In general, if one would like to use the Mini Buoys in their own studied sites, suitable calibration against observed velocities using ADCP is rather critical. The longer the measurements of current velocities, the better the calibration of the Mini Buoys, am I right?

Author reply: Successful calibration of the Mini Buoy against current velocities would benefit from 'as long as possible calibration' but does not necessarily require a full spring-neap cycle as current velocities vary between slack and flood/ebb tide even within a single tidal cycle to create a calibration curve against the dip of the Mini Buoy. We would recommend, however, to create a calibration data set that covers parts of the spring tide though as this will produce the highest ebb and flood currents in addition to the calibration nearer the slack tide. In our case we the maximum storage capacity of the current meter determined the maximum calibration duration.

4) The Bay of Fundy Mini Buoys were fitted with a temperature and light logger. What's the purpose? And Does these additional parameters help to set a scientific guidelines for mangrove restoration planning?

Author reply: Light availability under water may be important for mangrove seedlings that are flooded for long durations. This will depend on water depth and turbidity, but the effect is not well studied so far, for example compared to light requirements for seagrass. We tested this application mainly to highlight the potential for further research purposes in relation to water quality, sediment concentrations and light availability. Added L580' for example in water quality studies'

5) Appendices: some of the materials can be moved to the supplemental material. In addition, the arrangement of each figure can be improved to have a better readability. For instance, in Figure A1, the authors mixed the Figure and Table together.
Author reply: We agree and have extracted the Table from Figure A1 to Table A2 and moved the Mini Buoy app example screenshots (previously A4) to the supplementary material deposited at zenodo.

Some minor comments:
1) Line 53: Here you only need define the "Windows of Opportunity (WoO)" once, for the rest you could directly refer to "WoO" (such as Lines 363 and 412).

Author reply: We have removed this now after first mention.

2) Lines 280-285: the format of the equations should follow the journal's requirements. Such as the "Yacc^3" should be replaced by "Yacc3", the "R2adj." should be replaced by "R2adj." etc.

Author reply: Thank you, done.

3) Figure 3A: It is difficult to immediately understand the key points.

Author reply: We have changed parts of the caption to clarify: 'Linear Discriminant Analysis (LDA) with prediction of flooded and non-flooded time steps of L2-L5 (Bay of Fundy, left) and B9, B11, B12, B14 (North Sumatra, right) based on acceleration data and validated against measured water levels.'

4) Figure 4: legends can be added.

Author's reply: We have added the legend for flood and ebb tide.

5) Figure 6: It is better to separate the Table from the Figure. In the table, it is not necessary to show the numerical data of "Average high tide duration (min)" and the "Average flooding duration (min/d)" with too much accuracy (i.e., integral would be enough).
Author reply: Agreed and done.