

Medellín, 11 December 2017

## Regional Studies in Marine Science

ELSEVIER

Dear Sir or Madame,

Please find enclosed a manuscript entitled “Carbon stocks in aboveground biomass for Colombian mangroves with associated uncertainties” which I submitted for exclusive consideration for the publication as a Regional Studies in Marine Science journal article.

This submission includes the comments and considerations of the two reviewers of the manuscript. Please, find below the answer to the comments, including in some cases the number of the paragraph where you can confirm the inclusion of the considerations.

Reviewer 1	
Reviewer comment	Answer
1. Resolutions and sampling – more info is required to give readers confidence in the validity of results. E.g., distribution of plots (do they encompass a range of mangrove types? Are they representative of all mangroves?). I'm also confused about how small plot-based studies can be linked to a very coarse resolution remote sensing product. I think an honest discussion about methodological issues such as this would benefit the reader.	Clarification in paragraph 85.
Table 3 – I'm confused here with the rationale for the area estimates. Why take an average of all estimates, when they are not of the same quality? You are averaging estimates from different methods and with differing levels of data quality. You are averaging methodological error, not real mangrove area, so I'm not sure this Table is really showing what you mean it to show.	One of the goals of our study is to estimate the uncertainty associated with different data (area and biomass) from different sources of information. In that sense, we did not look only for studies developed under the same methodology. We wanted to show that the differences in estimation methods could lead to an uncertainty in the carbon estimation.
3. You are making comparisons with global scale models, which by definition of their scale are not going to be accurate at smaller scales such as the national scale. Isn't it to be expected that they will be different? This could be added to the Discussion. Be careful that you don't set up a straw man argument.	In paragraph 3980 is discussed the limitation of those global scale models.
4. The Discussion discusses the policy implications of this study, but never really discusses the results derived, why these patterns are observed etc. A section early in the Discussion that talks about this would be beneficial. Perhaps could extend current Section 4.4	365-390 paragraphs, mention more in detail the recommendations to reduce the current uncertainties.
5. More generally, the Discussion section order seems the wrong way round. Perhaps 4.4 should be first, and the policy implications e.g., the earlier sections should be last?	Discussion section follows the same order that Results section. This is so that the same idea development order is kept.
6. The Conclusion is very methodological – should be ending on the broader implications e.g., the policy arguments you set up in this manuscript.	Conclusion included in paragraph 430-235.
L18 needs a problem statement before going into the study. Why is it important to do this?	Included in first three lines of Abstract.
L67, Yee is a non-peer reviewed document. Several other refs exist which are better to use e.g., McLeod et al. 2011 Frontiers in Ecology and the Environment 9, 552-560; Donato et al. 2011 Nature Geoscience 4, 293-297.	Yee changed by Donato et al. 2011.

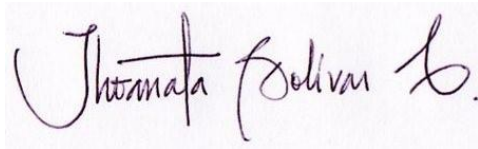
L73, since your whole paper is about storage, I would remove mentions of sequestration.	Change included.
L124, Tiers should be clearly defined since they become important later on.	Tiers definitions included in paragraph 315.
L199, not sure how this in prep manuscript can be included here, please look at the journal guidelines	In prep, manuscript changed for another source.
L202, so it's only these 4 studies? How did you find them? Was a systematic literature review undertaken? If so then you need to describe the method. I would certainly recommend a more systematic review approach, it ensures the reader that you did a robust study to capture all possible data, not just cherry-picked studies that you have personal knowledge of.	See clarification in paragraph 90.
L202, needs a Table describing each study – methods, time period, number of plots etc. Not in the detail of the supplementary information, but still enough to give the reader some info.	It is not possible to present an abstract of Table 1 of supplementary information as all the data contained on it is important for the reader.
L211 needs more info on what aspects of the database, resolution, scale, potential errors etc.	Additional information about WorldClim was included in paragraph 100.
L241, please describe the issues these marginal pixels may cause. I wonder if there is also some uncertainty analysis that can be done around this?	Explanation in paragraph 400 (discussion).
L287, the FAO should not be used. It is aspatial (so how is it used?), inaccurate and based on literature reviews with different and inconsistent methods.	We wanted to include all kind of available sources, not only spatial, given our goal to estimate the uncertainty associated with different sources of information.
L287, Giri et al. 2010 should be Giri et al. 2011. Giri et al. 2013 is really the Giri et al. 2011 dataset.	Change included.
L291, haven't described how these data are used. Were they used for mapping? How? How do you deal with the fact that Giri, Hutchison (which used the Spalding 2010 World Mangrove Atlas) and INVEMAR will all give different estimates of areal extent?	In paragraph 120 was clarified the different sources of the area used different methodological approaches for its calculation.  The goal of our study is to estimate the uncertainty associated with those different sources of information, and of course, the different methodological approaches are one of the meaning sources of uncertainty.
L342, it's not surprising these were poor models – mangrove carbon is controlled by many things other than climate and latitude. These are global-scale models, and you are applying them too much smaller scales.	N.A.
L437, surprising to start out with a look at mangrove area, considering this is not explicitly talked about in your aims and objectives.	Considering one of our objectives is to estimate the current uncertainty in the estimation of the national carbon stock in AGB for mangrove ecosystems in Colombia, identifying sources of uncertainty and proposing possible ways to reduce it, the estimation of mangrove area is an essential step.
L455, there is a much more update dataset that might be worth also incorporating into this analysis: Hamilton & Casey 2016, Global Ecology and Biogeography 25, 729-738. These data are freely available online: <a href="http://faculty.salisbury.edu/~sehamilton/mangroves/">http://faculty.salisbury.edu/~sehamilton/mangroves/</a>	It could be really interesting, but in, unfortunately, in this step of the research, it is almost impossible to include another set of data.

Table 10, Figure 4 – why are these in the Discussion section and not the Results section?	Table 10 and Figure 4 are referenced in the Results section, but the organization of the document shows them between the text of Discussion section.
Figure 4 – no need to show the whole of Colombia, can zoom into the shoreline. Also needs north arrow, scale etc	The map was updated as was required for both reviewers.
L1239, I'm confused. So Giri is Tier 1? It was my impression that Tier 1 was very coarse global averages. It's the scale of the data, not the scale of whoever created the data. Giri gives national level data, so is Tier 2?	The reviewer consideration is correct. Change in the document was included.
L1295, since you have a whole section on this in the Results, I'm surprised that you don't have a greater discussion on why these area estimates differ so much. Be clear to the reader that these are methodological differences, not real differences in the area. The following paper discusses causes of mangrove area uncertainty and the implications for ecosystem services such as carbon: Friess & Webb 2014. Global Ecology and Biogeography 23, 715-725.	365-390 paragraphs, mention the differences in the area in terms of differences in methodological approaches, as well as some recommendations to reduce it.
L1303, discuss why this isn't set up in Colombia already? Especially because many other Latin and South American countries do have such a system in place through their forestry or environment departments etc.	365-390 paragraphs include some recommendations in terms to reduce the current uncertainties and considering the current scenario for its implementation in Colombia.
<b>Reviewer 2</b>	
<b>Reviewer comment</b>	<b>Answer</b>
Abstract requires modification including the methodology sentence. Conclusion could be complemented by recommendations for decision-makers and scientists (ex. what we can expect or not for mangrove coastal planning process)	Conclusion included in paragraph 430-235.
I strongly recommend to use the recent and peer review literature for citations (including the DOI). Some recommendations below.	All recommendations were considering the changes
Lines 102-104/123-124: Use the recent literature from IPCC (current citations, only include years 2003, 2006; most of the relevant information about blue carbon vs mangrove are improved in recent literature and scientific papers).	These citations were used focused on IPCC definitions that are currently valid.
Lines 146-151/198-199: Miss some other studies in Colombia (such as Cispata pilot REDD+ project) that is the pioneer on this issues, require to complete here as well as to review the data and analysis in case of this information were omitted. Ex. Yepes, A., Zapata, M., Bolivar, J., Monsalve, A., Espinosa, S.M., Sierra-Correa, P.C., Sierra, A. 2016. Ecuaciones alométricas de biomass aérea para la estimación de los contenidos de carbono en manglares del Caribe Colombiano. Int J Trop Biol 64 (2): 913-926.	Change included
Lines 149-150: Avoid reference: Carbono & Bosques 2015. The correct one is: Monsalve, A., Ramírez, G. 2015. Caracterización de la estructura y contenido de carbono de los bosques de manglar en el área de jurisdicción del consejo comunitario la plata, bahía Málaga, Valle del Cauca. INVEMAR y Carbono & Bosques. 80.	Change included
Lines 405-408: If the citation is for CEU, is better to use a paper peer review than local document CNT-MIZC and CCO, 2010; such as: López Rodriguez, A, Sierra-Correa, P.C., Lozano, P. 2013. Criteria for Incorporating the Guidelines of the Integrated Coastal Zone Management (ICZM) in Territorial Land Use Planning: Study Case for the Colombian Pacific Coastal Area. International Journal of Marine Science 2013, Vol.3, No.29, 225-237. <a href="http://ijms.sophiapublisher.com">http://ijms.sophiapublisher.com</a>	Document CNT-MIZC and CCO, 2010 was changed by López Rodriguez, A, Sierra-Correa, P.C., Lozano, P. 2013.
Line 405-408: If the citation is for national policy point of view prefer to use the PNAOCI (MMA, 2001, Ministerio del medio ambiente. Política nacional ambiental para el desarrollo sostenible de los	The suggested document does not include the classification of

espacios oceánicos y las zonas costeras e insulares de Colombia-PNAOCI).	Coastal Environment Units that we used in our analysis.
Figures: Use the official map of Colombia (IGAC, 1993) or use a note that indicates the figure is only a geographical representation and don't represent the official cartography matters. Don't forget San Andres Islands (if the study don't include this area, please clarify because the line 20-21 said "and mangrove area for the whole country"; the expression "all country" should be including the Archipelago)	The map was updated as was required for both reviewers.

The article was written using LaTeX. Following the journal instructions, all sources files, as well the generated PDF are uploaded.

Best regards,



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