Response to community comment (CC) posted by Dr. Md Nabiul Islam Khan

We would like to thank Dr. Khan for his interest in our manuscript and for his valuable comments. Please see our answers to the provided comments below.

CC: Figure 7. Comparison of field-measured and modeled (a) mean DBH and (b) AGB of *R. stylosa* and *B. gymnorrhiza* along with soil salinity gradient. How to confirm that the observed pattern is ONLY due to salinity? What about other driving force to make this pattern?

Response:
We do not intend to argue that the observed patterns in the forest structures were shaped only by the salinity gradient. Actually, the observed AGB and mean DBH showed some variations even at the same salinity levels, and such variations may have been due to other abiotic and biotic factors.
We thought that the spatial variations in nutrient availability (porewater dissolved inorganic nitrogen concentration, DIN) may explain such variations. However, as shown in the Fig. S5 of the "plot-wise simulation", the spatial variations in DIN did not improve the predictions of the forest structures. Please see Ln. 548–557 for the discussion about this point.
There are some other possible factors that may have affected forest structures (e.g., hydroperiod, historical disturbances, forest ages, phosphorus availability), but we cannot assess those effects because of lack of information and knowledge for the site. These effects would be examined in future studies.
Nevertheless, salinity is clearly the major factor that have shaped the forest structural patterns as shown in Fig. 7, and the model predicted well the general patterns observed across the salinity gradient, which is the primary scope of this study.
As an action for manuscript revision, we will include sentences to make this point clear.

CC: Figure 6. Temporal dynamics in above-ground biomass (AGB). The scenario (d) shows a low AGB but still showing a reasonable LAI in 100 years simulation. This low AGB doesn't correspond to Figure 5, where vegetation cover indicates a high AGB.

Response:
The results shown in Figs. 5 and 6 are consistent.
First, we assume that this comment is about the model results of *Rhizophora stylosa*.
We think this comment came out because of the axis scaling of Fig. 6, which made it difficult to see the small variations of AGB in short time scale (e.g., 50 years). We provide below the temporal dynamics of AGB, LAI, and mean DBH for 34‰ salinity magnified for the first 200 years (Fig. R1).
This figure shows more clearly the substantial increase in AGB of *R. stylosa* from 50 years to 100 years, which corresponds to the results shown in Fig. 5.
Because Fig. 6 was intended to show long-term dynamics and compare among different salinity conditions, we would like to keep the axis scaling as it is.
About the point "The scenario (d) shows a low AGB but still showing a reasonable LAI in 100 years simulation.", we cannot assess the accuracy of the predicted LAI at this moment because of the lack of observed/field data during study site, which we would like to consider as one of the future tasks through monitoring. Nevertheless, we compared the simulated relationship between AGB and LAI with published data from other mangrove forests (Fig. R2). Although these may not be comparable

due to the different environmental settings and species, the simulation showed reasonable prediction of the general trend of AGB–LAI relationship. Therefore, we consider that the predicted LAI and AGB are reasonable.

We hope this clears the question given for Figs. 5 and 6.

As an action for manuscript revision, we will include the statement that the simulated LAI has not been validated and will be considered for future study.

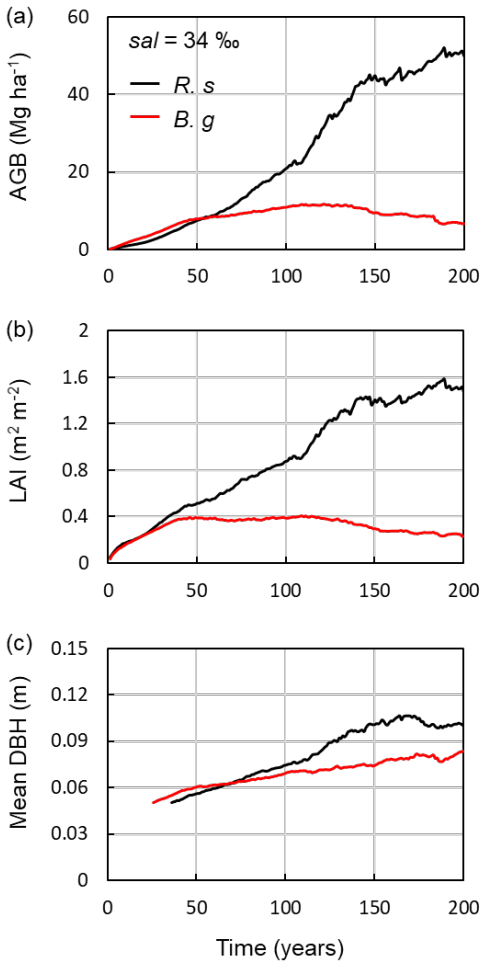

Figure R1: Temporal dynamics in (a) above-ground biomass (AGB), (b) leaf area index (LAI), and (c) mean diameter at breast height (DBH) of *Rhizophora stylosa* (*R. s*) and *Bruguiera gymnorrhiza* (*B. g*) in soil salinity (*sal*) condition 34 ‰. Trees with DBH < 0.05 m were not included in the calculation of mean DBH. The results are from a simulation corresponding to the one shown in Figure 5.

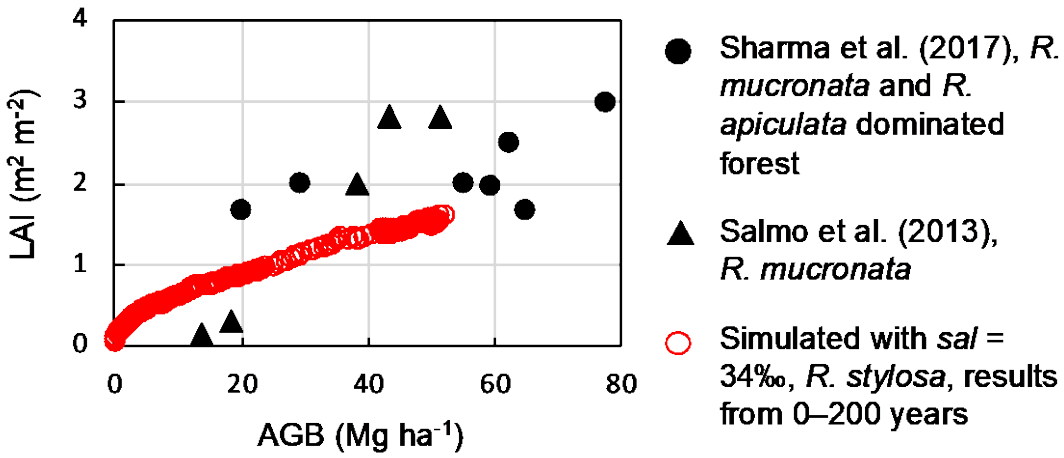

Figure R2: Simulated yearly trajectory of the relationship between AGB and LAI of *R. stylosa* under the soil salinity 34 ‰ for the first 200 years, which corresponds to the results shown in Fig. R1a-b (red circles). Data from Sharma et al. (2017) (black circles) and Salmo et al. (2013) (triangles) are also shown as reference.

References

Salmo, S. G., Lovelock, C., & Duke, N. C. (2013). Vegetation and soil characteristics as indicators of restoration trajectories in restored mangroves. Hydrobiologia, 720(1), 1-18.

Sharma, S., Nadaoka, K., Nakaoka, M., Uy, W. H., MacKenzie, R. A., Friess, D. A., & Fortes, M. D. (2017). Growth performance and structure of a mangrove afforestation project on a former seagrass bed, Mindanao Island, Philippines. Hydrobiologia, 803(1), 359-371.