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Interactive comment on "Typhoons exert significant but differential impact on net carbon ecosystem exchange of subtropical mangrove ecosystems in China" *by* H. Chen et al.

H. Chen et al.

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Response to Anonymous Referee #3:

General comments

#1 The submission by H. Chen et al. entitled, Typhoons exert significant but differential impact on net carbon ecosystem exchange of subtropical mangrove ecosystems in China, is appropriate for publication in Biogeosciences once minor changes below are addressed. Their paper is of interest to several groups including mangrove ecologists, ecologists studying ecosystem response to disturbance, and to interdisciplinary groups studying coastal carbon cycling.

Our reply: We thank the reviewer for the positive evaluation and thoughtful comments. We have revised our manuscript according to the comments as shown below.

#2 General comment: Adding an additional figure or table presenting monthly and/or annual NEE, GEP, and RE for the two mangrove forest sites would improve the quality and broader interest in the paper. Such results will provide some context regarding the importance of these forests for carbon cycling and of the productivity of these forests relative to mangrove forests elsewhere.

Our reply: We added an additional table (Table 4) presenting the mean annual NEE, GEP and RE for the two mangrove forest sites. We also added the corresponding text in the Results (3.3) and Discussion (4.2) sections.

Specific comments

#1 p.9423 l.3-4 – Change text to, "...in China have been greatly lost since the 1980s with only 22700 ha remaining..." l.6 – Change text to something like, "...of tropical cyclones are likely to change in ..." l.12 – Change "ecology" to "ecological". l.23 – Change "ecosystem" to "ecosystems".

Our reply: We changed these sentences or phrases as suggested.

#2 p.9425 l.24 – Change text to, "...has been included in the Ramsar List..." p.9426 l.26 – Change "tripping" to "tipping". p.9430 l.12 – Are these units in g of dry biomass? Specify here. p.9431 l.26 – Change "litter" to "little".

Our reply: We changed the text accordingly.

#3 p.9432 l.8 – Why did strong winds result in lower daily RE? What is the mechanism (or mechanisms)? The statements that follow (p.9433 l.1,2) seem to contradict this result by suggesting that wind results in litter production and increased RE following typhoons. Are there other processes that may have contributed to reduced RE following disturbance? For instance, could lowered leaf area index following high winds contribute to lower dark respiration of foliage (and therefore lower RE)?

Our reply: Sorry for not providing enough explanations for this phenomenon. Intensive rainfall and reduction in leaf area index (LAI) during typhoons may contribute to lower daily RE following typhoons. Though the rainfall did not show significant correlation with RE directly, the monthly total rainfall was positively related to the maximum wind speed for our study sites. The reduced respiration was observed during the summer monsoon which mainly caused by the intensive and consecutive rainfalls (Kwon et al. 2010). Li et al. (2007) also reported that lower soil respiration was best explained by the reduction in LAI following the hurricane disturbance. We added these explanations in the revised manuscript.

#4 p.9434 l.25 – Change text to "They interact with each other, . . ." p.9435 l.1 – Change "ecosystem" to "ecosystems". l.4 – Should read, "Hurricane disturbance has. . ." l.7 –Change "who" to "which". l.9-10 – Reword sentence to begin something like, "However, a significant increase in NEE was observed at our study site. . ." l.15 – Change "typhoon" to "typhoons".

Our reply: We made these changes as suggested.

#5 Table 2 – Could p-values be added to this table to indicate significant differences in parameters comparing before and after disturbance?

Our reply: We added the p-values to Table 2.

#6 Figure 5 – The figure caption should provide some details regarding how NEE residuals were computed. Or, refer the reader to the methods section.

Our reply: We revised the figure caption to add this info as suggested.

Please also note the supplement to this comment:
http://www.biogeosciences-discuss.net/11/C4240/2014/bgd-11-C4240-2014-supplement.pdf

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