

Response list to the Editor's comments

Ref: doi:10.5194/bg-2016-372

Title: **Interaction of CO₂ concentrations and water stress in semi-arid plants causes diverging response in instantaneous water use efficiency and carbon isotope composition**

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Dear Editor,

Thanks for your patiently help and constructive comments that provide scientific guidance for our writing and future research. We commissioned the LetPub Company (belonging to ACCDON (US) that is the professional editorial team) to provide professional editing help in rewriting the manuscript. We have been carefully considering your suggestions and revising the manuscript in the revised manuscript (marked in red color) accordingly. In addition to the following issues, we have corrected other mistakes with grammar and expression in the revised manuscript (marked in red color). The following below in blue are our point-to-point responses for your questions and comments. We are appreciated for your kind help on writing.

We are looking forward to your further comments and a possible publication in the BG special issue (Ecosystem processes and functioning across current and future dryness gradients in arid and semi-arid lands).

Kind regards,
Xinxiao Yu

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Comments to the Author:

We changed “concentrations” to “concentration” on Line 18, Page 1 of revised manuscript.

Line 19 “contents” to “content”

Response: We appreciate your helpful comments and apologize for any inconvenience that we bring you for my carelessness in writing. Based on your helpful suggestions, we have changed “CO₂ concentrations...contents” to “CO₂ concentration...content” on Line 18, Page 1 of the revised manuscript.

Line 20 “determined for instantaneous water efficiency” to “determined for an assessment of instantaneous water efficiency”

Response: Thanks for your helpful comments and we have changed “determined for instantaneous water efficiency” to “determined for an assessment of instantaneous water efficiency” on Lines 19-20, Page 1 of the revised manuscript.

We changed “gas exchange” to “gas-exchange measurement” on Line 21, Page 1 of the revised manuscript.

Line 22 “of” to “in”

Response: According your helpful suggestions, we have changed “of” into “in” on Line 22, Page 1 of the revised manuscript.

Change the terms like “35%-45% of FC” to “35-45% of FC”; reduce the repetition throughout the article

Response: We have changed “35%-80% of ...” to “35-80% of ...” and similar problems throughout the revised manuscript.

Line 27 “trend” to “tendency”

Response: Thanks for your helpful comments and we have changed “trend” to “tendency” on Line 26, Page 1 of the revised manuscript.

Lines 45 “patterns, but will...” to “patterns, which will...”

Response: According your helpful comments, we have changed “patterns, but will...” to “patterns, which will...” on Line 45, Page 2 of revised manuscript.

Line 46 “arid regions, and lead to more frequent extreme events ...” to “arid regions and lead to more frequent extreme flooding events ...”

Response: We appreciate your helpful comments. We have removed the “,” and changed “extreme events” to “extreme flooding events” on Lines 45-46, Page 2 of revised manuscript.

Line 50 “their” to “its”

Response: We appreciate your helpful comments and apologize for any inconvenience that we bring you for my carelessness in writing. We have changed “their” to “its” on Line 50, Page 2 of revised manuscript.

Line 53 “that, in turn, are responding physiologically to changes” to “which, in turn, respond physiologically to changes”

Response: We have changed “that, in turn, are responding physiologically to changes” to “which, in turn, respond physiologically to changes” on Line 53, Page 2 of the revised manuscript.

We have changed “discrimination (^{13}A) of leaves” to “discrimination (^{13}A) in leaves” on Line 54, Page 2 of the revised manuscript.

We have changed “provide timely feedback about the ...” to “provide timely feedback to the ...” on Line 54, Page 2 of revised manuscript.

Line 55 remove “the”

Response: Thank you for pointing the mistake and we have removed redundant “the” on Line 55 Page 2 of revised manuscript:

Line 58 Change “[CO₂]s” to “[CO₂]”

Response: Thanks for your helpful suggestion and we have changed “[CO₂]s” to “[CO₂]” throughout the revised manuscript.

Lines 69-70 “... metabolism (Gessler et al., 2008; Gessler et al., 2014) fractionation in leaves” to “... metabolism fractionation in leaves (Gessler et al., 2008; Gessler et al., 2014)”

Response: According your helpful comments, we have changed this part as “... metabolism (Gessler et al., 2008; Gessler et al., 2014),” on Line 68, Page 2 of revised manuscript.

Line 76 “as used” to “as considered”

Response: Thanks for your suggestion and we have changed “as used” to “as considered” on Line 75, Page 2 of revised manuscript.

Line 82 “in two measurements” to “in the two measurements”

Response: We agree with your suggestion and have revised this sentence on Page 2, Line 81 in the revised manuscript.

Line 83 “..., but it tends to” to “..., but tends to”

Response: According your helpful comments, we have revised this part on Page 3, Line 82 in the revised manuscript.

Line 93 “1-2 day” to “1-2 days”

Response: Based on your suggestion, we apologized for mistake and have changed “1-2 day” to “1-2 days” on Line 91, Page 3 of revised manuscript.

Line 98 “the $\delta^{13}C$ of fast-turnover” to “the $\delta^{13}C$ of the fast-turnover”

Response: We accept your helpful suggestion and changed as “the $\delta^{13}\text{C}$ of the fast-turnover” on Line 96, Page 3 of revised manuscript.

Line 100 “controlled environment” to “controlled-environment”

Response: Thanks for your helpful advices. We rewrote this sentence as “controlled-environment” on Line 98, Page 3 of revised manuscript.

Line 101 take out “(FH-230, Taiwan Hipoint Corporation, Kaohsiung City, Taiwan)”, you address this below.

Response: Based on your suggestion, we have removed “(FH-230, Taiwan Hipoint Corporation, Kaohsiung City, Taiwan)” on Line 98, Page 3 of revised manuscript.

We have changed “in *P. orientalis* and *Q. variabilis*, that is” to “in *P. orientalis* and *Q. variabilis*, which is” on Line 100, Page 3 of revised manuscript.

Line 112 “...116°5'45”E in Beijing” to “...116°5'45”E, Beijing”

Response: According your advice, we corrected this part as “...116°5'45”E, Beijing” on Line 109, Page 3 of revised manuscript.

Line 123 “can both” to “is designed to both”

Response: Thanks for your helpful suggestion and we have revised this part as “is designed to both” on Line 120, Page 3 of revised manuscript.

Line 129 “and drip irrigation component” to “and a drip irrigation component”

Response: Based on your suggestion, we have changed “and drip irrigation” to “and a drip irrigation” on Line 126, Page 4 of revised manuscript.

Line 133 “can be regulated” to “could be regulated”

Response: According your advice, we have revised this part as “could be regulated” on Line 130, Page 4 of revised manuscript.

Line 135 “(Tab. 1)” to “(Table. 1)”

Response: Based on your suggestion, we have corrected the form of Tables presented in the text as “(Table. 1)”.

Lines 136-138 reduce the repetition

Response: I am very sorry for my careless in writing grammar and have rewritten this part throughout the revised manuscript.

Line 156 redundant expression

Response: Thanks for your helpful advices. We removed this sentence on Line 152, Page 4 of revised manuscript.

Line 161 “massspectrometer” to “mass-spectrometer”

Response: Thanks for your helpful advices. We have changed “massspectrometer” to “mass-spectrometer” on Line 156, Page 4 of revised manuscript.

Line 185 “the temperature and relative humidity on leaf surface” to “the leaf-surface temperature and relative humidity”

Response: We accept your helpful suggestion and changed “the temperature and relative humidity on leaf surface” to “the leaf-surface temperature and relative humidity” on Line 181, Page 5 of revised manuscript.

Line 186 “could be determined” to “was determined”

Response: We accept your helpful suggestion and changed “could be determined” to “was determined” on Line 182, Page 5 of revised manuscript.

Line 190 “sugars” to “sugar”

Response: Based on your suggestion, we have changed “sugars” to “sugar” on Line 185, Page 5 of revised manuscript.

We have changed “from Δ_{model} ” to “by Δ_{model} ” on Line 188, Page 5 of revised manuscript.

Line 197 “Method of estimation for mesophyll conductance” to “Method of estimating mesophyll conductance”

Response: According your advice, we changed “Method of estimation for mesophyll conductance” to “Method of estimating mesophyll conductance” on Line 192, Page 5 of revised manuscript.

Line 221 “actually measured...” to “measured...”

Response: Thanks for your helpful advices. We have changed “actually measured...” to “measured...” on Line 219, Page 6 of revised manuscript.

Lines 222-223 “...carboxylation that are the ^{13}C fractionation from mesophyll conductance” to “...carboxylation associated with ^{13}C fractionation from mesophyll conductance”

Response: We accept your helpful suggestion and have revised this part as “...carboxylation associated with ^{13}C fractionation from mesophyll conductance” on Lines 220-221, Page 6 of revised manuscript.

Line 224 “(Eqn. (12))” to “[Eqn. (12)]”

Response: Thanks for your helpful advices and we changed “(Eqn. (12))” to “[Eqn. (12)]” on Line 222, Page 6 of revised manuscript.

Line 229 “,” following “and”

Response: We accept your helpful advice on Line 227, Page 6 of revised manuscript.

Line 232 “...or to be cancelled out in ...” to “...or cancelled in...”

Response: We accept your helpful suggestion and changed “...or to be cancelled out in ...” to “...or cancelled in...” on Line 230, Page 6 of revised manuscript.

Line 243 “SWCs” to “SWC”

Response: We accept your helpful suggestion.

Line 247 “higher than for C_{800} ” to “higher than that for C_{800} ”

Response: We accept your helpful suggestion on Line 245, Page 7 of revised manuscript.

Line 249 “higher than for C_{600} ” to “higher than that for C_{600} ”

Response: We accept your helpful suggestion on Line 246, Page 7 of revised manuscript.

Lines 259-260 “was significantly larger than that in *Q. variabilis* at any $[\text{CO}_2] \times \text{SWC}$ treatment...” to “was significantly higher than that in *Q. variabilis* for most $[\text{CO}_2] \times \text{SWC}$ treatments...”

Response: We accept your helpful suggestion and revised this part on Lines 257-278, Page 7 of revised manuscript.

Line 263 “at any $[\text{CO}_2]$ ” to “for most $[\text{CO}_2]$ ”

Response: We accept your helpful suggestion and changed “at any $[\text{CO}_2]$ ” to “for most $[\text{CO}_2]$ ” on Line 261, Page 7 of revised manuscript.

Lines 263-264 “...as SWC increased, while values increased as $[\text{CO}_2]$ increased” to “...as SWC increased and increased as $[\text{CO}_2]$ increased”

Response: According your suggestion, we changed this part as “...as SWC increased and increased as $[\text{CO}_2]$ elevated” on Lines 261-262, Page 7 of revised manuscript.

Line 290 “(Eqns. (10-17))” to “[Eqns. (10-17)]”

Response: We accept your helpful suggestion and changed “(Eqns. (10-17))” to “[Eqns. (10-17)]” on Line 287, Page 8 of revised manuscript.

Line 297 “at all SWCs in...” to “at all SWC for...”

Response: We accept your helpful suggestion and changed “at all SWCs in...” to “at all SWC for...” on Line 294, Page 8 of revised manuscript.

Lines 309-310 “with [CO₂] increases in...” to “with increases in [CO₂] in...”

Response: We accept your helpful suggestion and changed “with [CO₂] increases in...” to “with increases in [CO₂] in...” on Line 306, Page 8 of revised manuscript.

Line 321 “exceeded this water threshold” to “exceeded this soil water threshold”

Response: Thanks for your helpful advices. We have changed “exceeded this water threshold” to “exceeded this soil water threshold” on Line 318, Page 9 of revised manuscript.

Line 322 “is” to “was”

Response: Based on your suggestion, we have changed “is” to “was” on Line 319, Page 9 of revised manuscript.

Line 323 “by” to “with”

Response: Thanks for your helpful advices. We have changed “by” to “with” on Line 320, Page 9 of revised manuscript.

Line 332 plus “the”

Response: Based on your suggestion, we have plus “the” before the noun on Line 329, Page 9 of revised manuscript.

Line 337 “of perennial *Leymus chinensis* and” to “of a perennial, *Leymus chinensis*, and”

Response: Based on your suggestion, we have changed “of perennial *Leymus chinensis* and” to “of a perennial, *Leymus chinensis*, and” on Line 334, Page 9 of revised manuscript.

Line 339 “Miranda Apodaca et al. (2015)” to “Micanda Apodaca et al. (2015)”

Response: Based on our investigation, “Miranda -Apodaca et al. (2014)” is the right citation and we have revised this part on Lines 335-336 and 342-343, Page 9 of revised manuscript.

Lines 341-342 “results from other C3 woody plants” to “results seen with other C3 woody plants”

Response: We accept your helpful suggestion and changed “results from other C3 woody plants” to “results seen with other C3 woody plants” on Lines 338-339, Page 9 of revised manuscript.

Line 348 “The increases” to “Increases”

Response: According your advice, we have changed “The increases” to “Increases” on Line 345, Page 9 of revised manuscript.

Line 354 “iWUE, at the leaf level,” to “iWUE at the leaf level,”

Response: According your advice, we have changed “iWUE, at the leaf level,” to “iWUE at the leaf level,” on Line 351, Page 9 of revised manuscript.

Line 359 “by” to “with”

Response: According your advice, we have changed “by” to “with” on Line 356, Page 10 of revised manuscript.

Line 362 “could respond to” to “responded to”

Response: We accept your helpful suggestion and changed “could respond to” to “responded to” on Line 359, Page 10 of revised manuscript.

Line 363 “is” to “was”

Response: Based on your suggestion, we have changed “is” to “was” on Line 360, Page 10 of revised manuscript.

We have changed “have” to “had” on Line 361, Page 10 of revised manuscript.

Line 370 “The latter procedure of diffusion is termed mesophyll conductance (g_m ; Flexas et al., 2008)” comes late in the text; should have been referred be earlier.

Response: We accept your helpful suggestion and have redefined “ g_m ” on Lines 194-197, Page 5 of revised manuscript.

We have changed the “ g_m ” to “Mesophyll conductance, g_m , ...” on Line 364, Page 10 of revised manuscript.

Lines 372-373 “7-day cultivations of SWC \times [CO₂],” to “7-day cultivations,”

Response: According your advice, we have changed “7-day cultivations of SWC \times [CO₂],” to “7-day cultivations,” on Line 366, Page 10 of revised manuscript.

Line 374 “in” to “by”

Response: We accept your helpful suggestion and changed “in” to “by” on Line 367, Page 10 of revised manuscript.

Line 380 “compared with” to “compared to”

Response: We accept your helpful suggestion and changed “compared with” to “compared to” on Line 372, Page 10 of revised manuscript.

Line 385 “should be lucubrated” to “should be elucidated”

Response: Thanks for your helpful suggestion, we apologized for our carelessness and changed “should be lucubrated” to “should be elucidated” on Line 377, Page 10 of revised manuscript.

Line 415 “four [CO₂]s \times five SWCs” to “four [CO₂] \times five SWC”

Response: We accept your helpful suggestion and changed “four [CO₂]s \times five SWCs” to “four [CO₂] \times five SWC” on Line 406, Page 11 of revised manuscript.

Line 570 “Mirandan Apodaca...”

Response: We accept your helpful suggestion and changed “Mirandan Apodaca...2015” to “Micandan-Apodaca...2014” on Lines 558-560, Page 14 of revised manuscript.

Line 632 “performed experiments” to “performed the experiments”

Response: We accept your helpful suggestion and changed “performed experiments” to “performed the experiments” on Line 619, Page 16 of revised manuscript.

Lines 632-633 “performed data analysis” to “analyzed the data”

Response: We appreciate your helpful comments and changed “performed data analysis” to “analyzed the data” on Line 619, Page 16 of revised manuscript.

Line 665 simplify the labels; also too small

Response: According your helpful advice, we have simplified the labels and increased the font size of the labels on revised Figures 2-6 of revised manuscript.

Line 666 “concentrations” to “concentration”

Response: Thanks for your helpful comments. We have changed “concentrations” to “concentration” on Lines 635, 638, 641, 644, 646, 649, 652 and 657, Pages 18-24 and 26 of revised manuscript.

Line 679 “Regression” to “Regressions”

Response: According your comments, we have changed “Regression” to “Regressions” on Line 648 and 651, Pages 23 and 24 of revised manuscript.

Line 680 “ $p = 0.01$ ” to “ $p < 0.01$ ”

Response: Based on your consideration, we have changed “ $p = 0.01$ ” to “ $p < 0.01$ ” on Line 649, Page 23 of revised manuscript.

Line 683 “ $p = 0.01$ ” to “ $p \leq 0.01$ ”

Response: Based on your consideration, we have changed “ $p = 0.01$ ” to “ $p \leq 0.01$ ” on Lines 684-652, Page 24 of revised manuscript.