

Response list to the Editor's comments

MS No.: bg-2016-372

MS Type: Research article

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**

Authors: Na Zhao, Ping Meng, Yabing He, Xinxiao Yu*

Dear Editor,

Thanks for your patiently help and constructive comments that provide scientific guidance for our writing and future research. 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

.....
Comments to the Author

Line 12 “occurred” to “occurs”

Response: Thank you for the careful review and constructive comments. We apologize for any inconvenience that we bring you for my carelessness in writing. Based on your helpful suggestions, we have changed “occurred” to “occurs” on Line 12, Page 1 of the revised manuscript.

Line 22 “leaf-exported” to “leaf-level”

Response: We appreciate your helpful comments and have changed “leaf-exported” to “leaf-level” on Line 22, Page 1 of the revised manuscript.

Line 33 “fractionations” to “fractionation”

Response: Considering your suggestions, we have corrected this plural noun “fractionations” into “fractionation” (on Page 1, Line 33 of revised manuscript).

Line 35 “measurement” to “measurements”

Response: In this study, there were several times of gas-exchange measurements. So we accepted your advice and changed the “measurement” to “measurements”.

Lines 59-60 “...and they will be recorded ...” to “..., recording...”

Response: According your helpful comments, we have simplified this sentence into a participles as attributive clause “..., recording...” on Lines 59-60, Page 2 of revised manuscript.

Line 69 remove the comma followed “(Gessler et al., 2008; Gessler et al., 2014)”

Response: Thank you for pointing the mistake and we have removed the comma on Line 69, Page 2 of revised manuscript:

Line 72 “during exportation” to “during export”

Response: We have changed “during exportation” to “during export” on Line 72, Page 2 of the revised manuscript:

Line 77 remove the article “the” before “Farquhar’s model”

Response: Thanks for your helpful suggestion and we have removed the redundant “the” before “Farquhar’s model” on Line 77, Page 2 of revised manuscript.

Lines 86-87 “The degree to magnitude of carbon fractionations is related to environmental variation that has yet to be fully investigated.” to ““The degree to which carbon fractionation is related to environmental variation has yet to be fully investigated.”

Response: According your helpful comments, we have revised this part as “The degree to which carbon fractionation is related to environmental variation has yet to be fully investigated.” on Lines 86-87, Page 3 of revised manuscript.

Line 89 “aid the accurate recording” to “aid in the accurate recording”

Response: Thanks for your suggestion and we have changed this part as “aid in the accurate recording” on Line 89, Page 3 of revised manuscript.

Line 96 “from these isotopic fractionations” to “from isotopic fractionation”

Response: We agree with your suggestion and have revised this sentence on Page 3, Line 96 in the revised manuscript.

Line 102 “sugars” to “sugar”

Response: According your helpful comments, we have revised this part on Page 3, Line 102 in the revised manuscript.

Line 102 “The other one” to “Another goal”

Response: Based on your suggestion, we have changed the ‘The other one’ to ‘Another goal’ on Line 104, Page 3 of revised manuscript.

Line 106 ‘fractionations respond’ to ‘fractionation responds’

Response: We accept your helpful suggestion and changed as ‘fractionation responds’ on Line 106, Page 3 of revised manuscript.

Line 113 ‘We chose saplings with similar basal diameters, heights, and growth classes’ to ‘We chose saplings of similar basal diameters, heights, and growth class’

Response: Thanks for your helpful advices. We rewrote this sentence as ‘We chose saplings of similar basal diameters, heights, and growth class’ on Line 113, Page 3 of revised manuscript.

Line 116 ‘30 d’ to ‘30-day’

Response: Based on your suggestion, we have changed the ‘30 d’ to ‘30-day’ on Line 116, Page 3 of revised manuscript.

Line 118 ‘controlled experiment studies were’ to ‘controlled experiment was’

Response: According your advice, we corrected this part as ‘controlled experiment was’ on Line 118, Page 3 of revised manuscript.

Line 119 ‘meteorological factors of different growth seasons’ to ‘meteorological conditions of different growing seasons’

Response: Thanks for your helpful suggestion and we have rewritten this part as ‘meteorological conditions of different growing seasons’ on Lines 119-120, Page 3 of revised manuscript.

Line 123 ‘The chamber control system can control and monitor [CO₂]’ to ‘The chamber system can both control and monitor [CO₂]’

Response: Based on your suggestion, we have changed ‘The chamber control system can control and monitor [CO₂]’ to ‘The chamber system can both control and monitor [CO₂]’ on Line 123, Page 3 of revised manuscript.

Lines 125-126 ‘The target [CO₂] in the chambers’ to ‘The target [CO₂] in each chamber’

Response: According your advice, we have represented this part as 'The target [CO₂] in each chamber' on Line 126, Page 4 of revised manuscript.

Line 127 'and it can avoid' to 'to avoid'

Response: Based on your suggestion, we have simplified this sentence as 'to avoid' on Line 127, Page 4 of revised manuscript.

Line 129 'components' to 'component'

Response: I am very sorry for my careless in writing grammar and have corrected the mistake on Line 129, Page 4 of revised manuscript.

Line 132 'Since timely SWC' to 'Since changes in SWC'

Response: Thanks for your helpful advices. We rewrote this sentence as 'Since changes in SWC' on Line 132, Page 4 of revised manuscript.

Line 135 remove 'combining [CO₂] gradient'

Response: Thanks for your helpful advices. We have removed 'combining [CO₂] gradient' on Line 134, Page 4 of revised manuscript.

Line 135 'we established the orthogonal treatments for' to 'we established orthogonal treatments of'

Response: We accept your helpful suggestion and changed as 'we established orthogonal treatments of' on Line 135, Page 4 of revised manuscript.

Line 137 'in the chambers.' to 'in the chambers;'

Response: We accept your helpful suggestion and changed as 'in the chambers;' on Line 136, Page 4 of revised manuscript.

Line 140 '7 d' to '7 days'

Response: Based on your suggestion, we have changed '7 d' to '7 days' on Line 140, Page 4 of revised manuscript.

Line 140 'in one [CO₂] × SWC treatment' to "in each of the [CO₂] × SWC treatments"

Response: According your advice, we changed 'in one [CO₂] × SWC treatment' into "in each of the [CO₂] × SWC treatments' on Line 140, Page 4 of revised manuscript.

Lines 140-141 'Pots in chambers were arranged to promote uniform illumination every two days' to 'Pots in the chambers were arranged every two days to promote uniform illumination'

Response: Thanks for your helpful advices. We have changed this part according your suggestion on Lines 140-141, Page 4 of revised manuscript.

Line 145 'per specie' to 'per species'

Response: We accept your helpful suggestion.

Line 147 'Based on the theories proposed by...' to 'Based on theoretical consideration of...'

Response: According your advice, we rewrote this part on Lines 147-148, Page 4 of revised manuscript.

Line 155 'Each leaf' to 'Each leaf sample'

Response: We accept your helpful suggestion on Line 155, Page 4 of revised manuscript.

Line 156 'per specie' to 'per species'

Response: We accept your helpful suggestion.

Line 157 'The tubes containing the above mixture' to 'The tubes containing the mixture'

Response: We accept your helpful suggestion on Line 157, Page 4 of revised manuscript.

Line 161 'mass spectrometer' to 'massspectrometer'

Response: We accept your helpful suggestion on Line 161, Page 4 of revised manuscript.

Line 162 'are' to 'were'

Response: We accept your helpful suggestion and revised this word on Line 162, Page 4 of revised manuscript.

Line 163 'Pee Dee Belemnite (PDB)' to 'Pee Dee Belemnite (PDB) standard'

Response: We accept your helpful suggestion and supplemented 'standard' on Line 163, Page 4 of revised manuscript.

Line 169 'sugars' to 'sugar'

Response: We accept your helpful suggestion and applied 'sugar' on Line 169, Page 5 of revised manuscript.

Line 170 '...developed by...' to '...of...'

Response: We accept your helpful suggestion and changed it as '...of...' on Line 170, Page 5 of revised manuscript.

Line 171 'is' to 'was'

Response: We accept your helpful suggestion.

Line 174 'is' to 'was'

Response: We accept your helpful suggestion.

Line 176 remove 'the' before 'growth chambers'

Response: Thanks for your helpful advices. We have removed the redundant 'the' on Line 176, Page 5 of revised manuscript.

Line 179 'gas-exchange measurements (WUE_{ge}) is calculated as' to 'gas-exchange measurement (WUE_{ge}) was calculated as'

Response: Based on your suggestion, we have changed this part on Line 179, Page 5 of revised manuscript.

Line 182 'between e_{lf} and e_{atm} that represent...' to 'between e_{lf} and e_{atm} , representing...'

Response: Thanks for your helpful advices. We have changed 'between e_{lf} and e_{atm} that represent...' to 'between e_{lf} and e_{atm} , representing...' on Line 182, Page 5 of revised manuscript.

Line 187 remove ' WUE_{cp} '

Response: Based on your suggestion, we have removed ' WUE_{cp} ' on Line 187, Page 5 of revised manuscript.

Line 191 'can be' to 'was'

Response: We accept your helpful suggestion and have changed 'can be' to 'was' on Line 191, Page 5 of revised manuscript.

Line 193 'is' to 'was'

Response: We accept your helpful suggestion.

Line 193 'Eqn. (2). The A_{model} can be determined by Eqns. (3 and 4) as' to 'Eqn. (2); A_{model} was determined by combining Eqns. (3 and 4) as'

Response: According your advice, we have integrated 'Eqn. (2). The A_{model} can be determined by Eqns. (3 and 4)' to 'Eqn. (2); A_{model} was determined by combining Eqns. (3 and 4) as' on Line 193, Page 5 of revised manuscript.

Note that you use both 'Eqn' and 'Equation'. Pick one be consistent in its use.

Response: Based on your suggestion, we have uniformed the expression of equation as 'Eqn' throughout the revised manuscript.

Line 199 'is' to 'was'

Response: According your advice, we have changed 'is' to 'was' on Line 199, Page 5 of revised manuscript.

Lines 200-201 'to that in the ambient environment surrounding plants (C_a)' to 'to the concentration in the outside air (C_a)'

Response: According your advice, we have rewritten this part as 'to the concentration in the outside air (C_a)' on Lines 200-201, Pages 5-6 of revised manuscript.

Line 204 'ambient environment' to 'ambient air'

Response: We accept your helpful suggestion and changed 'ambient environment' to 'ambient air' on Line 203, Page 6 of revised manuscript.

Line 211 'occurring' to 'across the'

Response: Based on your suggestion, it was presented more clearly in expression about Eqn. (11) and we have changed 'occurring' to 'across the' on Lines 210-211, Page 6 of revised manuscript.

Line 212 'can be shown as' to 'can be written as'

Response: We accept your helpful suggestion and rewrote it as 'can be written as' on Line 211, Page 6 of revised manuscript.

Line 216 'the value of b would influence' to ' b influences'

Response: According your advice, we have changed 'the value of b would influence' to ' b influences' on Line 215, Page 6 of revised manuscript.

Line 219 'diffusions' to 'diffusion'

Response: We accept your helpful suggestion and rewrote it as 'diffusion' on Line 217, Page 6 of revised manuscript.

Line 220 'could be simplified as' to 'may be simplified to'

Response: We accept your helpful suggestion and rewrote it as on Line 218, Page 6 of revised manuscript.

Line 222 'Equation 12' to 'Eqn. (12)'

Response: We accept your helpful suggestion.

Line 228 remove 'the' before ' P_n '

Response: We accept your helpful suggestion and removed redundant 'the' on Line 226, Page 6 of revised manuscript.

Line 233 'In calculation' to 'In the calculation'

Response: We accept your helpful suggestion and supplemented 'the' before 'calculation' on Line 231, Page 6 of revised manuscript.

Line 235 'can be transformed into' to 'can be rewritten as'

Response: We accept your helpful suggestion and changed 'can be transformed into' to 'can be rewritten as' on Line 233, Page 6 of revised manuscript.

Line 245 ' $(p < 0.5)$ ' to ' $(p < 0.05)$ '?

Response: I am very sorry for my careless in spelling and have corrected the mistake throughout the revised manuscript.

Lines 249-250 'Nevertheless, g_s of *Q. variabilis* in C_{400} , C_{500} , and C_{600} was significantly higher than in C_{800} at 50%–80% of FC ($p < 0.01$).' to 'Nevertheless, g_s in *Q. variabilis* for C_{400} , C_{500} , and C_{600} was significantly higher than for C_{800} at 50%–80% of FC ($p < 0.01$).'

Response: According your advice, we have changed the prepositions in this sentence on Lines 247-248, Page 7 of revised manuscript.

Lines 250-251 'the two species in C_{400} and C_{500} was significantly higher than in C_{600} and C_{800} except at ...' to 'the two species for C_{400} and C_{500} was significantly higher than for C_{600} and C_{800} , except at ...'

Response: According your advice, we have changed the prepositions in this sentence on Lines 248-249, Page 7 of revised manuscript.

Lines 251-252 ' P_n , g_s , C_i and T_r of *Q. variabilis* was significantly greater than the corresponding values of *P. orientalis* ($p < 0.01$, Fig. 2)' to ' P_n , g_s , C_i and T_r in *Q. variabilis* was significantly greater than the corresponding values in *P. orientalis* ($p < 0.01$, Fig. 2)'

Response: According your advice, we have changed the prepositions in this sentence on Lines 249-250, Page 7 of revised manuscript.

Line 259 'the two species reached maxima' to 'the two species, reaching their respective maxima'

Response: Based on your suggestion, we have changed this part as 'the two species, reaching their respective maxima' on Line 257, Page 7 of revised manuscript.

Lines 261-262 'the $\delta^{13}C_{WSC}$ of *P. orientalis* was significantly larger than that of *Q. variabilis* at any $[CO_2] \times SWC$ treatment ($p < 0.01$, Fig. 3)' to 'the $\delta^{13}C_{WSC}$ in *P. orientalis* was significantly larger than that in *Q. variabilis* at any $[CO_2] \times SWC$ treatment ($p < 0.01$, Fig. 3)'

Response: According your advice, we have changed the prepositions in this sentence on Lines 259-260, Page 7 of revised manuscript.

Lines 267-268 'Differing from variation in WUE_{ge} of *P. orientalis* with moistened soil, WUE_{ge} in *Q. variabilis* increased slightly at 100% of FC in C_{600} or C_{800} (Fig. 4b)' to 'Differing from variation in WUE_{ge} in *P. orientalis* with moistened soil, WUE_{ge} in *Q. variabilis* increased slightly at 100% of FC for C_{600} or C_{800} (Fig. 4b)'

Response: We have changed the prepositions in this sentence on Lines 265-266, Page 7 of revised manuscript.

Lines 268-269 'The maximum WUE_{ge} occurred at 35%–45% of FC in C_{800} among all orthogonal treatments for *P. orientalis* and this was also observed in *Q. variabilis*.' to 'The maximum WUE_{ge} occurred at 35%–45% of FC for C_{800} among all orthogonal treatments associated with both species.'

Response: Thanks for your helpful advices. We rewrote this sentence as 'The maximum WUE_{ge} occurred at 35%–45% of FC for C_{800} among all orthogonal treatments associated with both species.' on Lines 266-267, Page 7 of revised manuscript.

Lines 269-270 'Elevated $[CO_2]$ enhanced the WUE_{ge} of *Q. variabilis* at any SWC except at 60%–80% of FC.' to 'Elevated $[CO_2]$ enhanced the WUE_{ge} in *Q. variabilis* at any SWC, except at 60%–80% of FC.'

Response: Based on your suggestion, we have changed the prepositions in this sentence and made the expression more clearly on Lines 267-268, Page 7 of revised manuscript.

Lines 270-271 'Thirty-two saplings of *P. orientalis* had greater WUE_{ge} than did *Q. variabilis* in the same $[CO_2] \times SWC$ treatments ($p < 0.5$).' to 'Thirty-two saplings of *P. orientalis* had greater WUE_{ge} than did *Q. variabilis* for the same $[CO_2] \times SWC$ treatment ($p < 0.05$).'

Response: Based on your helpful suggestions, we changed 'in' to 'for' in the revised sentence and confirmed the level of significance was $p < 0.05$ throughout the revised article on Lines 268-269, Page 7 of revised manuscript.

Line 272 '... WUE_{cp} of *P. orientalis* in C_{600} or C_{800} ...' to '... WUE_{cp} in *P. orientalis* for C_{600} or C_{800} ...'

Response: Considering your helpful comments, we have changed the prepositions on Line 270, Page 7 of revised manuscript.

Line 273 'as well as that in C_{400} or C_{500} while SWC exceeded' to 'as well as that for C_{400} or C_{500} ,

while SWC exceeded'

Response: Thanks for your helpful advices. We changed 'in' to 'for' and divide the sentence into two parts on Line 271, Page 7 of revised manuscript.

Line 274 'SWC increased' to 'increasing SWC'

Response: According your advice, we changed 'SWC increased' to 'increasing SWC' on Line 272, Page 7 of revised manuscript.

Lines 274-275 'of' to 'in' and 'in' to 'for'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Lines 272-273, Pages 7-8 of revised manuscript.

Line 276 'of' to 'for', 'of' to 'in', and 'than *P. orientalis*' to 'than in *P. orientalis*'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Line 274, Page 8 of revised manuscript.

Line 278 'sugars' to 'sugar'

Response: We accept your helpful suggestion and changed 'sugars' to 'sugar' on Line 276, Page 8 of revised manuscript.

Line 280 'can track' to 'can help track'

Response: We accept your helpful suggestion and changed 'can track' to 'can help track' on Line 278, Page 8 of revised manuscript.

Line 282 'of' to 'in'

Response: Thanks for your helpful advices and changed 'of' to 'in' on Line 280, Page 8 of revised manuscript.

Line 283 'total fractionations' to 'total fractionation', 'of' to 'in', and 'were' to 'was'

Response: Thanks for your helpful advices and we changed 'total fractionations' to 'total fractionation', 'of' to 'in', and 'were' to 'was' on Line 281, Page 8 of revised manuscript.

Lines 283-284 'SWC increased' to 'increasing SWC'

Response: According your advice, we changed 'SWC increased' to 'increasing SWC' on Line 282, Page 8 of revised manuscript.

Line 284 'values that' to 'when SWC'

Response: Thanks for your helpful advices and we changed 'values that' to 'when SWC' on Line 282, Page 8 of revised manuscript.

Line 285 'total fractionations' to 'total fractionation'

Response: We accept your helpful suggestion and 'total fractionations' to 'total fractionation' on Line 283, Pages 8 of revised manuscript.

Lines 287-288 'of' to 'in'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Lines 285-286, Page 8 of revised manuscript.

Line 289 'than did *Q. variabilis*' to 'than it did in *Q. variabilis*'

Response: We accept your helpful suggestion and changed 'than did *Q. variabilis*' to 'than it did in *Q. variabilis*' on Line 287, Page 8 of revised manuscript.

Line 292 'trend of g_m occurred' to 'trend occurred in g_m '

Response: Thanks for your helpful advices and we changed 'trend of g_m ' to 'trend occurred in g_m ' on Line 290, Page 8 of revised manuscript.

Line 293 'reduced' to 'decreasing'

Response: We accept your helpful suggestion and changed 'reduced' to 'decreasing' on Line 291,

Page 8 of revised manuscript.

Lines 293-294 ' $(p < 0.5)$ ' to ' $(p < 0.05)$ '

Response: According your advice, we have confirmed the level of significance for orthogonal treatments was ' $(p < 0.05)$ ' throughout the revised article.

Line 294 'of' to 'in'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Line 292, Page 8 of revised manuscript.

Line 295 'significant except those' to 'significant, except those'

Response: Considering your helpful advice, we have divided this sentence into two parts on Line 293, Page 8 of revised manuscript.

Line 295 'of' to 'in'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Line 293, Page 8 of revised manuscript.

Lines 297-298 ' $(p < 0.5)$ ' to ' $(p < 0.05)$ '

Response: According your advice, we have confirmed the level of significance for orthogonal treatments was ' $(p < 0.05)$ ' throughout the revised article.

Lines 298-299 'increments of' to 'increment in'

Response: We accept your helpful suggestion and changed 'increments of' to 'increment in' on Line 296, Page 8 of revised manuscript.

Lines 299-300 'of' to 'in'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Lines 297-298, Page 8 of revised manuscript.

Line 305 'less contribution' to 'a smaller contribution'

Response: Based on your suggestion, we have changed 'less contribution' to 'a smaller contribution' on Line 303, Page 8 of revised manuscript.

Line 305 'that from post-carboxylation fractionation within any treatment' to 'did post-carboxylation fractionation irrespective of treatment'

Response: Based on your suggestion, we have changed 'that from post-carboxylation fractionation within any treatment' to 'did post-carboxylation fractionation irrespective of treatment' on Lines 303-304, Page 8 of revised manuscript.

Line 307 'SWC increased' to 'increasing SWC'

Response: According your advice, we changed 'SWC increased' to 'increasing SWC' on Line 305, Page 8 of revised manuscript.

Line 308 'in *P. orientalis*, yet, in *Q. variabilis*,' to 'in *P. orientalis*; yet, in *Q. variabilis*,'

Response: According your advice, we changed 'in *P. orientalis*, yet, in *Q. variabilis*,' to 'in *P. orientalis*; yet, in *Q. variabilis*,' on Line 306, Page 8 of revised manuscript.

Line 308 'in the two species, post-carboxylation fractionations in leaves' to 'in the two species post-carboxylation fractionation in leaves'

Response: Thanks for your helpful advices. We remove ',' and changed the 'fractionations' to 'fractionation' on Line 307, Page 8 of revised manuscript.

Line 310 'and these contributions all increased as soil moisture increased' to 'all increased as SWC increased'

Response: Based on your suggestion, we removed the redundant expression 'and these contributions' and uniformed 'soil moisture' as 'SWC' on Lines 307-308, Page 8 of revised

manuscript.

Line 312 'fractionations' to 'fractionation'

Response: We accept your helpful suggestion and changed 'fractionations' to 'fractionation' on Line 309, Page 8 of revised manuscript.

Line 312 'increase' to 'increases'

Response: We accept your helpful suggestion.

Line 312 'reached maxima' to 'reached a maximum'

Response: We accept your helpful suggestion and changed 'fractionations' to 'fractionation' on Line 310, Page 8 of revised manuscript.

Line 313 'were reduced' to 'declined'

Response: We accept your helpful suggestion and changed 'were reduced' to 'declined' on Line 310, Page 8 of revised manuscript.

Line 315 'from' to 'associated with'

Response: According your advice, we changed 'from' to 'associated with' on Line 312, Page 8 of revised manuscript.

Line 316 'values for' to 'in'

Response: According your advice, we changed 'values for' to 'in' on Line 313, Page 8 of revised manuscript.

Line 317 remove ', respectively'

Response: We accept your helpful suggestion.

Line 317 remove 'the' before ' g_s '

Response: We accept your helpful suggestion.

Line 319 'occurring after' to 'following'

Response: According your advice, we changed 'occurring after' to 'following' on Line 316, Page 9 of revised manuscript.

Lines 325-326 'caused a greater g_s reduction' to 'caused a reduction in greater g_s '

Response: Based on your suggestion, we have changed 'caused a greater g_s reduction' to 'caused a reduction in greater g_s ' on Lines 321-322, Page 9 of revised manuscript.

Line 326 'as was similarly reported' to 'as is previously reported'

Response: Based on your suggestion, we have changed 'as was similarly reported' to 'as is previously reported' on Line 322, Page 9 of revised manuscript.

Lines 326-327, Line 331 'of' to 'in'

Response: Thanks for your helpful advices. We have changed the prepositions 'of' to 'in' on Lines 322-323, Page 9 of revised manuscript.

Line 332 'was increased considerably while SWC exceeded...' to 'increased considerably, while SWC exceeded...'

Response: Based on your helpful comments, we have changed 'was increased' to 'increased' and divided this sentence into two parts to express better on Lines 322-323 Page 9 of revised manuscript.

Lines 335-336 'in potted plant experiments' to 'of potted plants'

Response: Based on your helpful comments, we changed 'in potted plant experiments' to 'of potted plants' on Lines 331-332 Page 9 of revised manuscript.

Line 338 'threshold (70%-80% of FC)' to 'threshold of 70%-80% of FC'

Response: Thanks for your helpful advices. We have changed 'threshold (70%-80% of FC)' to

‘threshold of 70%-80% of FC’ on Line 334, Page 9 of revised manuscript.

Line 342 ‘...of SWC below which’ to ‘...in SWC, below which’

Response: Thanks for your helpful advices. We have changed ‘of’ to ‘in’ and divided this sentence into two parts by ‘,’ on Line 338, Page 9 of revised manuscript.

Line 346 ‘severe drought and heavy irrigation,’ to ‘severe drought and the need for heavy irrigation,’

Response: Considering your suggestions, we have changed ‘severe drought and heavy irrigation,’ to ‘severe drought and the need for heavy irrigation,’ on Line 342, Page 9 of revised manuscript.

Line 347 ‘a lack, or excess, of water’ to ‘a lack or excess of water’

Response: We accept your helpful suggestion and removed the redundant ‘,’ on Line 343, Page 9 of revised manuscript.

Line 352 and 356 change ‘of’ to ‘in’

Response: We accept your helpful suggestion.

Line 352 ‘Comparing the P_n and T_r values of the two species,’ to ‘Comparing P_n and T_r in the two species,’

Response: We accept your helpful suggestion and removed the redundant ‘the’ and changed ‘of’ to ‘in’ on Line 350, Page 9 of revised manuscript.

Line 362 ‘that WUE_{cp} was more consistent with daily mean WUE_{ge} than WUE_{phloem} ’ to ‘that WUE_{cp} was more consistent with daily mean WUE_{ge} than with WUE_{phloem} ’

Response: Thanks for your suggestion and we added the ‘with’ before ‘ WUE_{phloem} ’ on Line 359, Page 10 of revised manuscript.

Line 364 ‘variation to those $\delta^{13}C_{WSC}$,’ to ‘variations to those in $\delta^{13}C_{WSC}$,’

Response: Thanks for your suggestion and we changed ‘variation to those $\delta^{13}C_{WSC}$,’ to ‘variations to those in $\delta^{13}C_{WSC}$,’ on Line 360, Page 10 of revised manuscript.

Line 364 ‘that’ to ‘those’

Response: Thanks for your suggestion and we changed ‘that’ to ‘those’ on Line 360, Page 10 of revised manuscript.

Line 365 ‘1-2 d’ to ‘1-2 days’

Response: We accept your helpful suggestion and changed ‘1-2 d’ to ‘1-2 days’ on Line 362, Page 10 of revised manuscript.

Line 367 ‘physiology’ to ‘physiological’

Response: We accept your helpful suggestion and changed ‘physiology’ to ‘physiological’ on Line 363, Page 10 of revised manuscript.

Line 367 ‘of’ to ‘in’

Response: We accept your helpful suggestion.

Line 368 not sure of the relevance of this statement ‘In addition, species-specific $\delta^{13}C_{WSC}$ were observed in the same environmental treatment.’

Response: This statement presented there was the difference in $\delta^{13}C_{WSC}$ between *P. orientalis* and *Q. variabilis* for each orthogonal treatment. Based on your suggestions, we removed this sentence from this paragraph on Line 364, Page 10 of revised manuscript.

Line 375 ‘(g_m) (Flexas et al., 2008)’ to ‘(g_m ; Flexas et al., 2008)’

Response: We accept your helpful suggestion and changed as ‘(g_m ; Flexas et al., 2008)’ on Line 370, Page 10 of revised manuscript.

Line 377 ‘7 d’ to ‘7-day’

Response: We accept your helpful suggestion and changed as '7-day' on Line 372, Page 10 of revised manuscript.

Line 379 'on' to 'in'

Response: We accept your helpful suggestion and changed 'on' to 'in' on Line 374, Page 10 of revised manuscript.

Line 382 'of' to 'in'

Response: Thanks for your suggestion and we changed 'of' to 'in' on Line 377, Page 10 of revised manuscript.

Line 383 'was significantly decreased' to 'significantly decreased'

Response: Thanks for your suggestion and we changed 'was significantly decreased' to 'significantly decreased' on Line 378, Page 10 of revised manuscript.

Line 383 '60%-80% of FC and these' to '60%-80% of FC; these'

Response: Thanks for your suggestion and we changed '60%-80% of FC and these' to '60%-80% of FC; these' on Line 378, Page 10 of revised manuscript.

Line 384 'of' to 'in'

Response: We accept your helpful suggestion and changed 'of' to 'in' on Line 379, Page 10 of revised manuscript.

Line 385 'comparing' to 'compared'

Response: We accept your helpful suggestion and changed 'comparing' to 'compared' on Line 380, Page 10 of revised manuscript.

Line 386 'followed carboxylation while...' to 'followed carboxylation, while...'

Response: We accept your helpful suggestion.

Line 388 '...may be simply considered, whereas the fractionation induced by mesophyll conductance from sub-stomatic cavities...' is something missing?

Response: I am very sorry for my careless in writing and have supplemented related contents as 'The ^{13}C fractionation of CO_2 from the air surrounding the leaf to sub-stomatal cavities may be simply explained by stomatal resistance, which also contains the fractionation derived from mesophyll conductance between sub-stomatic cavities and the site of carboxylation in the chloroplast that cannot be neglected and should be lucubrated (Pons et al., 2009; Cano et al., 2014).' on Lines 382-384, Page 10 of revised manuscript.

Line 393 ' $p=0.01$ or $p<0.01$ ' is this needed?

Response: According your advice, we removed the redundant 'or $p<0.01$ ' and corrected this as ' $p=0.01$ ' on Line 388, Page 10 of revised manuscript.

Line 393 'with that of g_m with' to 'with those in g_m with'

Response: Based on your suggestion, we have changed 'with that of g_m with' to 'with those in g_m with' on Line 389, Page 10 of revised manuscript.

Line 394 'on Table 2' to '(Table 2)'

Response: Based on your suggestion, we have changed 'on Table 2' to '(Table 2)' on Line 389, Page 10 of revised manuscript.

Line 403 remove 'processes'

Response: According your advice, we removed 'processes' on Line 398, Page 10 of revised manuscript.

Line 403 'twig fall within...' to 'twigs falls within...'

Response: Thanks for your helpful advices. We changed 'twig fall within...' to 'twigs falls within...'

on Line 398, Page 10 of revised manuscript.

Line 408 'sugars' to 'sugar'

Response: We accept your helpful suggestion and changed 'sugars' to 'sugar' on Line 403, Page 11 of revised manuscript.

Line 409 'of' to 'in'

Response: We accept your helpful suggestion and changed the preposition 'of' to 'in' on Line 404, Page 11 of revised manuscript.

Lines 413-415 'of' to 'in'

Response: We accept your helpful suggestion and changed the preposition 'of' to 'in' on Lines 406, 408-410, Page 11 of revised manuscript.

Line 415 'at' to 'for'

Response: Based on your suggestion, we have changed the 'at' to 'for' on Line 410, Page 11 of revised manuscript.

Line 417 remove 'the' before 'stomata aperture'

Response: According your advice, we removed 'the' before 'stomata aperture' on Line 412, Page 11 of revised manuscript.

Line 422 'leaf-exported' to 'leaf-level'

Response: Thanks for your helpful advices. We have changed 'leaf-exported' to 'leaf-level' on Line 417, Page 11 of revised manuscript.

Line 423 'ambient environment' to 'ambient air'

Response: Thanks for your helpful advices. We have changed 'ambient environment' to 'ambient air' on Line 418, Page 11 of revised manuscript.

Line 425 'sugars' to 'sugar'

Response: According your advice, we have changed 'sugars' to 'sugar' on Line 420, Page 11 of revised manuscript.

Line 426 'of two tree species' to 'in the two tree species'

Response: According your advice, we have changed 'of two tree species' to 'in the two tree species' on Line 421, Page 11 of revised manuscript.

Line 429 'of' to 'in'

Response: We accept your helpful suggestion and changed the preposition 'of' to 'in' on Lines 423-424, Page 11 of revised manuscript.

Line 431 'This was determined by gas-exchange and carbon isotopic measurements.' not needed we already know this.

Response: Considering your advice, we remove this redundant sentence on Line 425, Page 11 of revised manuscript.

Line 434 'in leaf' to 'in the leaf'

Response: Thanks for your helpful advice. We supplemented 'the' before the noun on Line 428, Page 11 of revised manuscript.

Line 436 remove 'the' before '¹³C fractionation'

Response: According your advice, we removed 'the' before '¹³C fractionation' on Line 430, Page 11 of revised manuscript.

Line 438 'worth evaluation.' to 'worth considering.'

Response: Thanks for your helpful advice. We changed 'worth evaluation.' to 'worth considering.' on Line 432, Page 11 of revised manuscript.

Lines 664-665 ‘...irrigation device’ to ‘...irrigation device used in this study; numbers...’

Response: Due to redundant expression in caption of Figure 1, we rewrote it as ‘...irrigation device used in this study; numbers...’ on Line 661, Page 17 of revised manuscript.

Line 666 ‘components’ to ‘component’

Response: We accept your helpful suggestion and changed ‘components’ to ‘component’ on Line 663, Page 17 of revised manuscript.

Figures needs improvement; considerably blurry.

Response: Considering your devices, we improved the resolution of Figures 1-8 in the revised manuscript.

Line 676 ‘of’ to ‘in’

Response: We accept your helpful suggestion and changed ‘of’ to ‘in’ on Line 666, Page 18 of revised manuscript.

Lines 677, 681, 686, 690, 693, 697, 700 ‘contents’ to ‘content treatments’

Response: We accept your helpful suggestion and changed ‘contents’ to ‘content treatments’ on Lines 667, 669-670, 673, 676, 678, 680, 683 Pages 18-24 of revised manuscript.

Line 684 ‘leaves of’ to ‘leaves from’

Response: We accept your helpful suggestion and changed ‘leaves of’ to ‘leaves from’ on Lines 671-672, Page 20 of revised manuscript.

Line 692, 696, 699 ‘of’ to ‘in’

Response: We accept your helpful suggestion and changed ‘of’ to ‘in’ on Lines 677, 679, 682, Pages 22-24 of revised manuscript.

In Figures 7-8, the coefficients of determination were reserved two decimal fractions while writing.

Response: Based on your suggestion, we kept coefficients of determination two decimals in Figures 7-8 of revised manuscript.

Line 703 ‘Orthogonal treatments of *P. orientalis* and *Q. variabilis* for four CO₂ concentrations × five soil volumetric water contents.’ to ‘Orthogonal treatments applied to *P. orientalis* and *Q. variabilis*.’

Response: According your advice, we changed ‘of’ to ‘applied to’ and simplified the caption of Table 1.

Line 706 ‘of’ to ‘in’

Response: Thanks for your helpful advices. We changed ‘of’ to ‘in’ on Line 688, Page 26 of revised manuscript.

Line 706 ‘for’ to ‘under’

Response: According your advice, we changed “for’ to ‘under’ on Line 688, Page 26 of revised manuscript.

Line 706 ‘contents’ to ‘content treatments’

Response: Thanks for your helpful advices. We changed ‘contents’ to ‘content treatments’ on Line 688, Page 26 of revised manuscript.