

Biogeosciences Discuss., author comment AC3  
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## Comment on bg-2022-63

Marina Corrêa Scalon et al.

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Author comment on "Contrasting strategies of nutrient demand and use between savanna and forest ecosystems in a neotropical transition zone" by Marina Corrêa Scalon et al., Biogeosciences Discuss., <https://doi.org/10.5194/bg-2022-63-AC3>, 2022

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The two sites are part of the Global Ecosystem Monitoring (GEM) network, where the standard site is a 1 hectare square (100 x 100 m), which "is considered an adequate size to sample a range of trees (typically 500-800 trees > 10 cm dbh) and not be overly influenced by individual tree gap dynamics, while also being a tractable area to sample at high frequency" (Malhi et al. 2021).

Obviously, GEM protocol has some limitations, such as the associated uncertainties to the multiple measurements/estimates that compose ecosystem carbon cycle. However, to overpass this limitation, each of these uncertainties are accounted for by rigorous error propagation during summation.

Finally, many different studies under the same protocol have largely contributed to our understanding in carbon fluxes and stocks in different system, especially in the tropics (Aragão et al. 2009; Doughty et al. 2014a, 2014b, 2015a, 2015b; Girardin et al. 2016; Kho et al. 2013; Malhi et al. 2017; Moore et al. 2018, among others).

We will add to the main text: "However, it is important to note that our results are based on two sites, and there may be potential misinterpretation due to any particularity of these studied sites. Even though we examined the only Cerrado and Cerradão established sites with intensive monthly data collection and monitoring, our findings would obviously benefit from further testing with more savanna and transition forest sites."

Aragão, L., Y. Malhi, D. Metcalfe, J. Silva-Espejo, E. Jiménez, D. Navarrete, S. Almeida, A. Costa, N. Salinas, and O. Phillips. 2009. Above-and below-ground net primary productivity across ten Amazonian forests on contrasting soils. *Biogeosciences* **6**:2759-2778.

Doughty, C. E., Y. Malhi, A. Araujo-Murakami, D. B. Metcalfe, J. E. Silva-Espejo, L. Arroyo, J. P. Heredia, E. Pardo-Toledo, L. M. Mendizabal, V. D. Rojas-Landivar, M. Vega-Martinez, M. Flores-Valencia, R. Sibling-Rivero, L. Moreno-Vare, L. J. Viscarra, T. Chuviru-Castro, M. Osinaga-Becerra, and R. Ledezma. 2014a. Allocation trade-offs dominate the response of tropical forest growth to seasonal and interannual drought. *Ecology* **95**:2192-2201.

Doughty, C. E., D. B. Metcalfe, M. C. da Costa, A. A. R. de Oliveira, G. F. C. Neto, J. A. Silva, L. Aragao, S. S. Almeida, C. A. Quesada, C. A. J. Girardin, K. Halladay, A. C. L. da Costa, and Y. Malhi. 2014b. The production, allocation and cycling of carbon in a forest on fertile terra preta soil in eastern Amazonia compared with a forest on adjacent infertile soil. *Plant Ecology & Diversity* **7**:41-53.

Doughty, C. E., D. B. Metcalfe, C. A. J. Girardin, F. F. Amezquita, D. G. Cabrera, W. H. Huasco, J. E. Silva-Espejo, A. Araujo-Murakami, M. C. da Costa, W. Rocha, T. R. Feldpausch, A. L. M. Mendoza, A. C. L. da Costa, P. Meir, O. L. Phillips, 1171 and Y. Malhi. 2015a. Drought impact on forest carbon dynamics and fluxes in Amazonia. *Nature* **519**:78-U140.

Doughty, C. E., D. B. Metcalfe, C. A. J. Girardin, F. F. Amezquita, L. Durand, W. H. Huasco, J. E. Silva-Espejo, A. Araujo-Murakami, M. C. da Costa, A. C. L. da Costa, W. Rocha, P. Meir, D. Galbraith, and Y. Malhi. 2015b. Source and sink carbon dynamics and carbon allocation in the Amazon basin. *Global Biogeochemical Cycles* **29**:645-655.

1181 *Biogeosciences* **122**:2952-2965.

Girardin, C. A. J., Y. Malhi, C. E. Doughty, D. B. Metcalfe, P. Meir, J. del Aguila-Pasquel, A. Araujo-Murakami, A. C. L. da Costa, J. E. Silva-Espejo, F. F. Amezquita, and L. Rowland. 2016. Seasonal trends of Amazonian rainforest phenology, net primary productivity, and carbon allocation. *Global Biogeochemical Cycles* **30**:700-715.

Kho, L. K., Y. Malhi, and S. K. S. Tan. 2013. Annual budget and seasonal variation of aboveground and belowground net primary productivity in a lowland dipterocarp forest in Borneo. *Journal of Geophysical Research-Biogeosciences* **118**:1282-1296.

Malhi, Y., C. A. J. Girardin, G. R. Goldsmith, C. E. Doughty, N. Salinas, D. B. Metcalfe, W. H. Huasco, J. E. Silva-Espejo, J. del Aguilla-Pasquell, F. F. Amezquita, L. Aragao, R. Guerrieri, F. Y. Ishida, N. H. A. Bahar, W. Farfan-Rios, O. L. Phillips, P. Meir, and M. Silman. 2017. The variation of productivity and its allocation along a tropical elevation gradient: a whole carbon budget perspective. *New Phytologist* **214**:1019-1032.

Moore, S., S. Adu-Bredu, A. Duah-Gyamfi, S. D. Addo-Danso, F. Ibrahim, A. T. Mbou, A. de Grandcourt, R. Valentini, G. Nicolini, G. Djagbletey, K. Owusu-Afriyie, A. Gvozdevaite, I. Oliveras, M. C. Ruiz-Jaen, and Y. Malhi. 2018. Forest biomass, productivity and carbon cycling along a rainfall gradient in West Africa. *Global Change Biology* **24**:E496-E510.