

Review of: "Global variation in the fraction of leaf nitrogen allocated to photosynthesis"

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Potential competing interests: The author(s) declared that no potential competing interests exist.

Comments to the Author:

The subject of this article is very interesting as covers the global variation in the fraction of leaf nitrogen allocated to photosynthesis. In my opinion this article is well presented, the aim and method are clear, the analyses are appropriate and data well discussed. This study provides insight into the nitrogen-photosynthesis relationship of plants globally and an improved understanding of the global distribution of photosynthetic potential. However, there are also some problems.

Specific comments:

Abstract:

1. " ...a remote sensing product of leaf chlorophyll and ancillary climate and soil data"
It's best not to use "and" twice.

Introduction:

1. "In ecosystem models, fLNR is also often not explicitly considered⁴ but see¹³."
I think it would be better to give a brief summary of quotation 13.

Method

1. " ...that is, the maximum rate of RuBP carboxylation per unit RuBisCO protein (47.34 $\mu\text{mol CO}_2$ /g RuBisCO/s), LNC is..."
I think it would be better to give indicate the source of the parameter "47.34".

Result

1. However, we found none of the V25 cmax models captured the observed climate-fLNR relationship, as LUNA underestimated the sensitivity of fLNR to climate PC1, and EM5 and EO suggested the opposite direction of response (Fig. 2c). In Fig.2c, EO didn't suggested the opposite direction of response.

Discussion:

1. "Using the global dataset, we found a relatively small sensitivity of fLNR to LMA ($-0.19 \pm 0.001\%$ per 1 g/m²) when accounting for climate and soil (Fig. 3b)...."

I think it is better we to explain more about the reasons for the reduced sensitivity.