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Max-Planck-Institut
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Editor in Chief
New Phytologist

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Dear Editor,

Please consider the manuscript entitled *Allocation of carbon from Net Primary Production in models is inconsistent with observations of the age of respired carbon* for publication as Viewpoint in New Phytologist.

In this manuscript, we attempt to bridge a gap between the plant modeling and empirical community working on autotrophic respiration and carbon allocation, by showing that current paradigms implemented in models are inconsistent with recent observations of the age of carbon in respiration. To our knowledge, this inconsistency has not been highlighted before despite important consequences for understanding plant physiological processes and for modeling interactions between plants and climate.

Regarding the main questions asked for submission to New Phytologist, we can answer

- What hypotheses or questions does this work address?
  This work addresses the question of whether the allocation of carbon from Net Primary Production, as currently implemented in vegetation models, is consistent with observations of the age of respired carbon from plant parts.
- How does this work advance our current understanding of plant science?
  It highlights a major disconnect between observations and representations of autotrophic respiration and carbon allocation in models. In addition, it recommends a way forward on how this issue can be solved that could lead to advances in modeling biosphere-atmosphere interactions.
- Why is this work important and timely?
  Terrestrial vegetation models are increasingly used for a variety of societal questions, and their representation of physiological processes needs improvement. Radiocarbon observations can help with this task, and we highlight here how it can be achieved.

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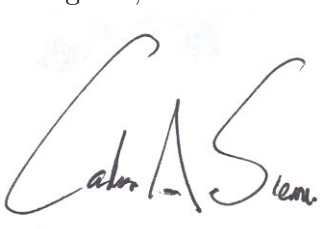
Best regards,



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