

Interactive comment on “The influence of leaf photosynthetic efficiency and stomatal closure on canopy carbon uptake and evapotranspiration – a model study in wheat and sugar beet” by A. Schickling et al.

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We would like to thank the anonymous reviewer 3 for his valuable comments on this manuscript. At this point we would like to comment on one conclusion.

“It has long been known that many plant canopies are tightly coupled to the atmosphere, and exert a direct control on canopy scale fluxes. The modelling community has been focused on this question for decades, and the need for physiological realism has long been acknowledged.”

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This problem has been addressed for decades but a satisfying solution has not been found yet (Gerbig et al., 2009). Global and mesoscale models often use empirical formulations, where photosynthesis is modeled as a function of plant functional group, temperature and light. As Ustin and Gamon (2010) pointed out, a more precise definition of plant functional types would improve different applications. In upcoming works we intend to include a model approach to test our hypothesis that fluorescence measurements will improve CO₂ and H₂O modeling on canopy or ecosystem scale.

Literature:

Gerbig, C., Dolman, A.J. and Heimann, M.: On observational and modelling strategies targeted at regional carbon exchange over continents. *Biogeosciences*, 6, 1949-1959, 2009

Ustin, S.L. and Gamon, J.A.: Remote sensing of plant functional types. *New Phytologist*, 186, 795-816, 2010

Interactive comment on *Biogeosciences Discuss.*, 7, 7131, 2010.

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