

***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.***

**A. Schickling et al.**

a.schickling@fz-juelich.de

Received and published: 31 December 2010

We appreciate the comments provided by the anonymous reviewer 1 on this paper although we disagree with the critics in one point.

“We have known for several decades now that "stomatal resistance may have a large impact on the canopy resistance" or that "evapotranspiration mainly depends on incoming radiation" or that photosynthesis or stomatal conductance respond very rapidly to rapid changes in light or vapour pressure deficit.”

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The conclusion, that it has been known “for several decades that the evapotranspiration mainly depends on incoming radiation” is not entirely true. Pieruschka et al. (2010) recently introduced an alternative concept of how the transpiration of leaf and canopy transpiration is regulated by the radiation load. In contrast to the mostly empirical based models that predict stomatal conductance, the model introduced in this paper is a mechanistic based model. It states that the stomatal control of transpiration is also linked to the radiant energy received inside the leaf, which influences stomatal conductance in order to control a radiation load dependent rate of transpiration.

Literature:

Pieruschka, R., Huber, G. and Berry, J.A., : Control of transpiration by radiation. Proceedings of the National Academy of Sciences, doi:10.1073/pnas.0913177107, 2010

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

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