

***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.**

Anonymous Referee #2

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The manuscript aims to describe the leaf level processes on canopy carbon uptake. While well known relationships between leaf scale carbon exchange (and parameteres derived from modulated fluorescence studies) and environmental driving variables are reported, the link between the leaf and canopy scale processes are not discussed in detail. This is lacking from the paper, since the title offers this relationship to be explored. While leaf and canopy level water use efficiencies are shortly compared, the contributing processess are not. Statements about the possible causes of species level differences in stomatal responses are containing speculations (about the pos-

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sible role of root structure, leaf angle distribution), not supported by the data (P20. L17-25). Canopy CO₂ uptake dynamics should be compared to leaf level processes directly. This may led to show better, how the diurnal dynamics of the processes at different scales (leaf scale, stand scale) are changing. Involvement of leaf inclination (and time course of this variable) in canopy scale responses could be investigated form LAI measuerements (if happened several times during a day). Similarly direct correlation btween ETRmax and NEP should be investigated. This may also serve as a test when considering ETR may serve as a proxy for the physiological status of the plants. Perhaps not, as sink relations may well have been included in the observed responses. In conclusion leaf and stand scale CO₂- and H₂O exchange repsonses should be correlated directly to explore the subject suggested by the title in detail.

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