Biogeosciences Discussions

Interactive comment on "An integrated model of soil-canopy spectral radiance observations, photosynthesis, fluorescence, temperature and energy balance" *by* C. van der Tol et al.

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The paper bg-2009-115 has now been assessed by three reviewers. One of them recommended minor, the other two major revisions will be necessary before the paper becomes acceptable for publication in BG.

An issue two reviewers picked upon is the lack of a thorough validation of the model. While I personally understand the authors strategy to make most (in terms of number of papers) out of their work and thus their intent to publish the validation of the model in a separate paper, I agree with the reviewers that we will need at least some attempt of validation of a few key outputs of the model which goes beyond the current (not very

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convincing) presentation of a few simulation results.

Should the authors decide to submit a revised manuscript, it should be line-numbered and accompanied by a point-by-point reply to the reviewers and my comments. Please find below further comments from my side:

Detailed comments:

p. 6027, l. 13: remote sensing measures reflectance, not some biophysical variables; these are inferred by inverting some model - in my view here the problem rather seems to be that different models are used for the same biophysical variable

p. 6027, l. 19: what about the SVAT model published by Goudriaan 1977 ?

p. 6034, l. 22: "Direct and diffuse radiation fluxes"

p. 6041, section 2.6: what is not clear to me is which closure scheme is used for the scalar profiles within the canopy? Are they assumed constant at the values measured at the reference height (half-order closure) or is some first-order closure (K-theory) approach used?

p. 6052, l. 7: "soil surface"

Fig. 1: I wonder whether a step-by-step processing scheme which shows the various steps in modelling in a consecutive fashion and also shows the various iteration loops would not be more valuable; the current representation is not self-explanatory and in fact also conveys very little information (could be dealt with just in the text too)

Fig. 4: what do the lines stand for - needs to be mentioned in the legend

Fig. 6: legend is incomplete

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