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Interactive comment on "Investigating effects of different evapotranspiration (ET) schemes on soil water dynamics and ET partitioning: a large lysimeter case of summer maize in a semi-arid environment northwest of China" *by* L. Yu et al.

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Received and published: 29 October 2015

The paper investigates the effects of two different methods to estimate ET (direct and indirect) on the output of the STEMMUS model. This model couples the transfer of heat, water, and vapor in the soil. Furthermore the authors look at the sensitivity of the STEMMUS model on the ET partitioning. The paper describes the STEMMUS model and compares the output with lysimeter results for a single growth cycle in a semi-arid region (China). The paper is well written and structured, except for the abstract which

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should be improved.

Considering the structure, I would change the order of presenting the results. Currently, the authors first show the model output for moisture content, water storage, and soil temperature. Thereafter the comparison of the ETdir and ETind are shown. Personally, I think it is more logical to first present the comparison of the two ET-methods and then show the soil water dynamics more as validation.

Furthermore, I am a bit puzzled why for some time scales the ETdir preforms better, and for other time scales the ETind (and v.v.). How is this possible? Does this mean that depending on the time scale of your model you should the one or the other ET-method?

Specific comments:

P9977: Title: personally, I am not happy with the term ET-schemes. I think 'method' or 'calculation' is a better term. This was one of the reasons I did not understand the abstract without reading the paper

P9978: abstract: I think the abstract should be rewritten. First of all the structure, but it also contains quite some typos/language errors:

L4: should be e.g.: "... and climates. The accurate understanding is crucial to determine effective irrigation schemes."

L10: ".. and uses LAI to.."

L19-21: I don't get this sentence.

P9980-L18: typo in partitioning

P9981-L5: The authors suddenly introduce that a lysimeter is uses. This is new information for the reader. I would write somewhere a general approach where you say that the model results are compared with observations of a lysimeter.

P9981-L8: description => drawing

P9981-L13-14: Unclear sentence. Please rewrite.

P9981-L14-15: why where there 2 extra irrigation moments applied?

P9981: more details on the lysimeter are required. How does the weighing systems works and what is the measuring interval, etc.

P9981-L17: Please provide details soil moisture and temperature sensors.

P9981-L2428: Please provide more details on the micro-lysimeter. How does this work? Why is the micro lysimeter representative for the soil evaporation?

P9983-Eq2: units LHS and RHS are not equal. Multiply RHS with rho_L??

P9984-Eq6: Twice is the subscript _L missing in the theta of the LHS (I think).

Section 2.3.3: Maybe make two subparagraph with the title "calculation of ETdir" and "Calculation of ETind".

P9986-L6: actual or potential transpiration?? Can not be both.

P9986-L10: add "Several research studies have related.."

P9987-Eq13: Are these equations correct? Not sure, but to me it seems that the lower two Es-estimations should be multiplied with Ep.

P9989-L24: "..see Fig. 2c..." (not 2b)

P9999-L7: symbol T is already used for soil temperature, and there for plant transpiration should get a different symbol.

P10013: caption: "Schematic drawing of the large..."

Figure 3-5: Re-scale y-axes, so the dynamics (and deviations) are better visible.

Figure 6a-b: to small. Improve. Maybe scatter plot?

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 9977, 2015.

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