

Interactive comment on “Determining irrigation needs of sorghum from two-source energy balance and radiometric temperatures” by J. M. Sánchez et al.

J. M. Sánchez et al.

juanmanuel.sanchez@uclm.es

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First, we would like to thank the reviewer for his/her positive comments. Appropriate changes have been made following each one of the reviewer's comments/suggestions. In the following, detailed and justified responses, as well as the corresponding modifications into the manuscript (with appropriate reference to particular page and line numbers) are given.

Answer to Comments:

Abstract Line 12 – Should “accumulated crop water” read “Estimated accumulated. . .”
C3165

This sentence has been modified in the new version of the manuscript (page 1, line 25): “Total accumulated crop water use during the campaign was underestimated by 5%.”

p. 3938 Line 23 – p.3939 Line 6 – The biofuel discussion seems to be a bit of a side-track. The discussion can likely be generalized to water use efficiency topics beyond local considerations.

We agree with the referee at this point, and the paragraph has been deleted. Specific reference to Castilla-La Mancha region has been also removed to avoid local considerations. In the new version of the manuscript biofuel crops are only mentioned to justify the selection of the sorghum for this work (page 3, line 22): “Necessity to explore water use of sorghum as a potential biofuel source motivated the selection of this crop for the present study”.

p. 3941 Line 3 – Extra parenthesis

This typing mistake has been corrected in the new version.

p. 3942 Line 29 – Adjacent here suggests directly adjacent to experimental field? Or ref Fig 1?

Thanks to this referee comment we realized that location of the weather station needed further clarification. In the new version of the manuscript the reader is referred to Fig. 1a, and explicit indication to the “reference” spot is included (page 6, line 5): “. . . placed over a reference irrigated fescue grass surface (Fig. 1a).”

p. 3946 Lines 17 – 20 – Incomplete sentence or should be reworded: “Thanks to the wide field of view of the Apogee radiometers, and the deployment configuration, sampled values of TR, and estimated values of Ts, weighted for the sunlit and shaded portions of the two components.”

This sentence has been rewritten (page 9, line 10): “Temperatures of the sunlit and shaded portions of a component (soil or vegetation) differ some degrees. Thanks to

the wide field of view of the Apogee radiometers, and their deployment configuration over the sorghum, measured values of TR, and estimated values of Ts, accounted for both sunlit and shaded portions of the soil and canopy.”

p. 3947 Line 23 – Compromising = compromised?

This typing mistake has been corrected.

p. 3947 Line 27 – p. 3948 Line 6 – Provide brief summary of the instantaneous results here.

Following this comment, instantaneous results discussion has been completed (page 11, line 5): “Figure 6a shows the overall good agreement between modelled and measured instantaneous ET values. STSEB model tended to slightly overestimate and underestimate highest and lowest ET values, respectively. However, on average STSEB model reproduced lysimeter hourly ET measurements with negligible systematic deviation, and a RMSD of ± 0.14 mm h⁻¹. Thus, a relative error of 22% was obtained for instantaneous ET.”

All hourly and daily data used in regression analysis or sampled?

We are not sure what the referee exactly means with this question. As stated in the text (page 10, line 30): “. . .hourly averages between 7 and 21 h were used for the quantitative test of the STSEB model. With this filtering we tried to avoid events such as irrigation (around midnight) or early morning dew. Rainfall events were also excluded from the hourly analysis. More than 1000 single observations were used for the comparison of the diurnal ET values. . .”

p. 3949 Line 18 – rephrase “and total cumulated ET for the study period was a 5% underestimated” e.g., was underestimated by 5%.

This sentence has been rephrased in the new version of the manuscript.

Fig. 8 – Can the line symbology be changed to provide more emphasis on the ET

C3167

STSEB and ET lys estimates and measurements?

According to this referee comment, symbology has been modified for a better view of the ET measures and results, over the irrigation/rainfall (see new Fig. 8).

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C3168