

## ***Interactive comment on “Estimation of Evapotranspiration and Other Soil Water Budget Components in an Irrigated Agricultural Field of a Desert Oasis, Using Soil Moisture Measurements” by Zhongkai Li et al.***

**Anonymous Referee #2**

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ET is very important in water resource management. This manuscript presented an experimental study combining with soil water balance modeling and mathematical modeling. The research is worthy, well structured and written. But I do not recommend to publish it in present form. The main reasons include; (1) The irrigation amount is the most important component in this study and needs to accurately measured. Unfortunately the manuscript did not provide reliable information on it. 1) two irrigation amounts were used in this study, one calculated from the difference between  $S_{max}$  and  $S_{ini}$ , the other estimated from power consumption. But I do understand which is

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the real value and which is the measured value (L272). The definition of  $S_{max}$  was not clearly given. 2) according to the text, the irrigation was delivered at a rate of 2250L/ha/min (L264) and each irrigation event lasted 20-30 min, therefore the irrigation amount was about 6 mm for each time and total irrigation amount was about 60 mm for the growing season. If it is not mistake, it is much lower than the estimation and is not acceptable. 3) I think it is possible to make accurate measures with water meter in such small experimental plot. (2) About the mathematical model, the setting is quite important. In section 2.3, 2), equation (7) shows that the lower boundary was defined by soil matric potential (L175), which in section 2.3 3), it was set to free drainage (L202). It is not acceptable. Moreover, root uptake is also an important factor in water redistribution simulation, but the manuscript did not give the information about the root distributions of the crops. (3) About the location of the TDR systems in the experimental plots. Because the irrigation method is furrow irrigation, the soil water contents are different with location. From table 2, the saturate water content is about 34% and the field capacity is about 20%. If the preferential flow is limited, as suggested in the manuscript, the water content should be higher than 20%, even 24h after the irrigation event. But the measured value is only 21.9% for  $S_{max}$  and 14% for  $S_{24}$ . Therefore I doubt the TDR systems were not in the suitable location. Therefore the information is not sufficient and correct.

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