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Hydrology and Earth System Sciences Discussions

Interactive comment on "Evaluation of Penman-Monteith model applied to a maize field in the arid area of Northwest China" *by* W.-Z. Zhao et al.

W.-Z. Zhao et al.

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Dear Prof. D. Smith, Thank you for your comments on our manuscript named "Evaluation of Penman-Monteith model applied to a maize field in the arid area of Northwest China" by Zhao et al. On behalf of co-author, I wish to reply to your comments as follows:

PS: My response to comments was marked by blue style.

The authors expressed the bulk canopy resistance in two different approaches, and evaluated which one was better fitting for evapotranspiration estimation with Penman-Monteith model. It is helpful to improve the performance of P-M model to simulate

evapotranspiration in the cropped fields. But there are several questions need to be made clear or revised in the manuscript.

1. Keywords should be added unless the journal does not need it.

The journal of "Hydrology and Earth System Sciences" doesn't need the keywords, in the light of "the guideline for author" of this journal.

2. In the conclusion, it is necessary to explain how to increase water use efficiency in the cropped field according to the simulation results.

In this paper, the major objective is to evaluate the Penman-Monteith model with two types of bulk canopy resistance approaches to modeling evapotranspiration of the irrigated maize fields under arid climate. To a certain degree, water use efficiency is beyond of field of this paper. In this paper, additional water use efficiency discussion seems to be redundant.

3. In the site description, soil fertility should be described, which has a great impact on crop growth.

Thank you for reminding me, for soil fertility in the maize field, soil organic matter and pH value are 0.72% and 8.86, respectively. In addition, fertilizes were applied at a rate of 708 kg N per hectare, 179 kg P per ha and 75 kg K per ha during the growing season in 2008, respectively.

4. P470, "The surface irrigation districts account for 95% of the total irrigated area, and mainly by means of the border irrigation". P474, "From the MBE given in Fig.5, it can be seen that the J-D approach overestimated the bulk canopy resistance. Therefore, the N-P approach is more suitable than the J-D approach to simulate the bulk canopy resistance of the irrigated 20 maize filed under the arid climatic condition." These sentences are difficult to follow.

At lines 5-6 in Page 470, the sentence "the surface irrigation districts account for 95% of the total irrigated area, and mainly by means of the border irrigation" means "Sur-

face irrigation account for 95% of the total irrigated area and consists mainly of border irrigation"

At lines 17-20 in Page 474, the sentence "From the MBE given in Fig.5, it can be seen that the J-D approach overestimated the bulk canopy resistance. Therefore, the N-P approach is more suitable than the J-D approach to simulate the bulk canopy resistance of the irrigated 20 maize filed under the arid climatic condition" should be changed to "From the MBA values given in Fig. 5, it can be seen that the J-D approach overestimated the bulk canopy resistance. Therefore, the N-P approach is more suitable than the J-D approach in the simulation of bulk canopy resistance of the irrigated maize field under the arid climatic conditions of the study."

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/7/C397/2010/hessd-7-C397-2010-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 461, 2010.