

Interactive comment on “Flux measurements in the near surface layer over a non-uniform crop surface in China” by Z. Gao et al.

Z. Gao et al.

Received and published: 15 August 2005

The authors greatly thank the referee for the positive comments on the article and for the recognition of the importance of the topic. The comments made by the referee, highlighting the manuscript weakness and our carelessness in preparing our manuscript, are now discussed. The original comments in lines begin with a dash.

– The paper addresses relevant scientific issues within the scope of HESS and has presented some interesting data. The overall presentation is well structured and clear, except some missing details (see below). The description of experiments is presented as a summary and is not sufficiently complete (see below). After taking account of the specific comments listed below, it is potentially interesting for the community of HESS.

We accept these comments and have clarified our presentation and corrected our analysis.

– Although the percentage of the land uses was given, it is unclear how the measure-

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper

ment mast was situated in relation to these fields? On which surface was the mast situated (above water or above grass or else)?

We added a figure (Figure 1) to show the arrangement of sites. The mast was situated over the grassland.

– The sensor for CO₂ measurements should be mentioned.

We have double-checked the instruments and corrected my description of measurement parts.

– How was surface temperature measured?

We take the soil temperature measured at the depth of 0.002 m as the surface temperature.

– How many soil heat flux plates were used and how were they distributed in the field? What are the representivenesses of these measurements in relation to the heterogeneous surface?

Two soil heat flux plates were used, and they both were buried at the depths of 0.05 m under grass surface. They did not represent the entire heterogeneous surface at our site, but we failed to find a better measurement method.

– On the basis of Fig. 4, it does not appear that CO₂ flux behaved drastically differently than LE fluxes, thus the statement “In contrast to energy partition mentioned above, CO₂ flux (F_{CO_2}) absorbed by the canopy suddenly increased after thunderstorm events, as shown in Fig. 4. This was likely caused by quick growth of crop canopy which changed both leaf area index (LAI) and photosynthetically active radiation.” is not substantiated. In particular the latter on LAI and PAR is too much stretched, unless independent measurements of LAI and PAR would support the claim.

We added a figure (Figure 9) to show that energy partition almost did not change with crop growth. Latent heat flux almost did not change because the rice paddy was a main

[Full Screen / Esc](#)[Print Version](#)[Interactive Discussion](#)[Discussion Paper](#)

resource region of fluxes and it was flooded throughout our experimental period. CO₂ flux increased with time. We have improved our article by clarifying our presentation.

– The conclusion reached need to be updated after modifications by incorporating the comments provided here.

We have incorporated these comments and updated the conclusion.

– Please recheck the references, e.g., Gu et al. (1999) is missing in the list of references

We did that already. Sorry for the carelessness.

– It is strange to notice none of recent HESS publications is referenced in the manuscript, no any recent European field experiments.

We failed to find papers which were published in HESS and focused on the issues we concerned in this article. Because non-uniform surfaces are infrequent in Europe, we felt hard to refer the field experiments in our present work.

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 1067, 2005.

Full Screen / Esc

Print Version

Interactive Discussion

Discussion Paper