

## ***Interactive comment on “Area-averaged evapotranspiration over a heterogeneous land surface: Aggregation of multi-point EC flux measurements with high-resolution land-cover map and footprint analysis” by F. Xu et al.***

**F. Xu et al.**

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Dear Referee #2:

We deeply appreciate for your worthwhile comments and suggestions on our manuscript. According to your comments, and those from Referee #1 and Referee #3, we have carefully revised all sections of the paper (revisions and corrections are marked in red). The point-by-point response to your valuable comments and suggestions are as follows:

Major comments:

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1. While the authors' works are valuable, the size of paper is too large, with containing less-important information. I recommend authors to drop entire section 4.4 and the related descriptions available in other sections (section 3.3 etc.)

Response: Thanks for your comments. The major objective of this study is to refine an aggregation method for area-averaged fluxes based on our comprehensive dataset of the HiWATER. The results are also useful for the water balance study extended to the whole Heihe River basin. Thus, the results of area-averaged ET over the study area are still kept in Section 4.4. But some irrelevant parts have been deleted, according to the comments from you and other referees.

2. I could not find a purpose of Fig 8, and comparison with “remotely sensed ET data” (Table 5 and 6).

Response: The purpose of Fig. 8 is to show the spatial pattern of daily ET over the study area for readers. According to comments from yours and other referees, all the relevant statements about the comparison with “remotely sensed ET data” (including Table 5 and 6) and related descriptions in other sections have been deleted.

3. Also, including the comparison with remotely-sensed ET data in this paper might derive another problem on reviewing process because the procedure adopted in the paper is not well described in the paper, and the applied method may not be appropriate.

Response: Thanks. According to your comments and similar comments from other referees, we have dropped all of the relevant parts on the comparison with remotely-sensed ET data in the revised paper.

Minor comments:

Page 8 Line 10: Authors manually revised land cover map using high-resolution CCD images and Google Earth imagery. Do those images applicable for year 2012?

Response: Yes. The CCD images were acquired on 26 July 2012, while the Google

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Earth image used was collected on 3 September 2012. Both are in the HiWATER intensive observation period. We have added the acquisition dates of CDD images and the Google earth image in the revised manuscript.

By reviewing the results, the EC data used in the paper seems to be reliable. However, it is better to describe in the paper some more about the measurement accuracy of their EC data, for example, about the energy closure error.

Response: Thank you very much for your suggestion. We have added the descriptions on the data quality of EC and LAS used in HiWATER, as well as the energy balance closure rate, in the revised paper (section 2.2.1).

It is author's preference and authors do not need to change, but I might recommend changing Fig 2-b (ET) from bar-graph with mm/d, to line graph with W/m<sup>2</sup> like Fig 2-a, so readers can understand the energy balance condition of the sites by directly comparing Fig 2-a and 2-b.

Response: Accepted.

It's author's preference and authors do not need to change, but Fig.4 can be expressed not as figure but as table.

Response: Thanks for your kind suggestion. However, here, a figure is probably more obvious than a table to show the spatial representativeness of all EC sites. So the original figure is still kept.

In Fig. 6, I recommend authors to show the character "a" "b" "c" and "d" in the figure, because authors are referring the figure such as "fig. 6c" in the text.

Response: Accepted.

Thank you again for your valuable comments and suggestions on our manuscript. The revised manuscript is attached as supplement.

Sincerely yours,

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PS. After revising our manuscript and finishing the above responses to you, yesterday, we received the comments from Prof. Thomas Foken (as Referee #4). Some important revisions would be needed based on his comments. A new version might be uploaded within two weeks..

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Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-602/hess-2016-602-AC2-supplement.pdf>

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-602, 2016.

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