

Dear Graham,

On behalf of my co-authors, we thank you very much for giving us an opportunity to revise our manuscript and making many thoughtful suggestions.

Here are our point-by-point responses that generally contain (1) comments from Editor, (2) the author's response (in blue), and (3) author's changes to the manuscript (in red):

P1 L24 concluded

Response: Thank you for this suggestion. We have revised this word to “concluded”.

P2 L16 arise primarily

Response: Thank you for this suggestion. This part was revised as suggestion.

P2 L22-23 are based on single values

Response: Thank you for this suggestion. This part was revised as suggestion.

P3 L13 upscaling of

Response: Thank you for this suggestion. This part was revised as suggestion.

P3 L14 estimates

Response: Thank you for this suggestion. This part was revised as suggestion.

P4 L23 Surely used the remote sensed images as input, rather than simulating them?

Response: Thanks for your thoughtful suggestion. We used HJ-satellite images as input and used some feasible models to simulate ET-related variables as the parameters of IPUS in this study. However, in my opinion, some remote sensed products such like land surface temperature (LST) and leaf area index (LAI) can also be the input of IPUS. Therefore, we have revised this part to “simulate the remote sensed images or products”.

P7 L3-4 Rather include this information in the caption. That way, any reader can understand the figure without having to read the whole paper.

Response: Thanks for your reminder. The caption of Fig.1 was rewritten as follows:

Figure 1: A sample graph of sub-pixel in a mixed pixel and its nearest pure pixel(s) of the same land cover type. There are two land cover types: Yellow and Red. The centre pixel, which is a mixed pixel, contains a red sub-pixel and a yellow sub-pixel. The red pixels with blue centres are the nearest pure pixels of the red sub-pixel and the yellow pixel with blue centre is the nearest pure pixel of the yellow sub-pixel for this mixed pixel.

P7 L4 is the nearest?

Response: Thanks for your reminder. The sentence was rewritten as follows:

Hypothesis 2 examines which pixel is the nearest neighbour.

P7 L8 By a computer programme

Response: Thanks for your suggestion. This part was revised as suggestion.

P11 L8 nine

Response: Thanks for your suggestion. This part was revised as suggestion.

P22 L6 this is not clear - rephrase.

Response: Thanks for your thoughtful suggestion. This statement was adjusted to “each pure-pixel EF of whole image”.

P26 L33-34, P27 L1 This sentence is not clear to me..

P27 L2 considering scale effects that arise from the use of atmospheric temperature - or scaling of atmospheric temperature??

P27 L3 Needs rephrasing - not clear.

P27 L4 has

P27 L5 Here and throughout this paragraph - surely, you mean the scale effect(s) that arises or results from the surface variable or land cover etc - it is not "the scale effect of the land cover type" - it's a minor, but important difference.

Response: Thanks for your thoughtful comments. According to above all your good suggestions, we have rewritten this paragraph as below:

(5) Mixed land cover types in a pixel are the major source of scaling errors in ET estimates (Chen, 1999). However, spatial patterns of other surface variables, such as land surface temperature, surface albedo values, downward shortwave radiation and other factors, are also inherently heterogeneous, which cannot be ignored. For example, Norman et al. (2003) proposed the DisALEXI model to increase the accuracy of estimating surface ET considering scale effects that arise from the use of atmospheric temperature. And Peng et al. (2016) proposed a temperature-sharpening and flux aggregation scheme (TSFA) model to capture the influence of land surface temperature of subpixel for ET estimates. EFAF has increased the accuracy of ET estimates by considering the scale effects that arise from land cover types. The scale effects caused by the heterogeneity of the surface variables for ET estimates require further investigation in EFAF. Addressing these issues forms the foundation of our ongoing work.

P27 L27 arise from a single study site

Response: Thank you for this suggestion. This part was revised as suggestion.

P28 L5 However, the

Response: Thank you for this suggestion. This part was revised as suggestion.

Best regards

Fugen Li