

Response to Anonymous Referee #2 (Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, C339-C341, 2009)

We like to thank Referee #2 for his/her helpful and constructive as well as very extensive comments on our submitted manuscript. We appreciate the suggestions for improving the paper, which will be included in the upcoming revised manuscript.

### General

I found the paper to be poorly written and thus hard to read. As a result I could not fully assess the quality of the paper in its current form. I therefore recommend that the paper be rewritten and that the co-authors pay attention to the writing so that the reviewers do Not have to do the editing.

Also I think the figures are too small to be easily read as currently presented.

Reply: We are grateful to the anonymous referee#2 for his/her time and effort in providing the constructive comments. We admit that our original submitted manuscript is not well written and the grammar needs improvements. We shall rewrite this paper and try our best to improve its readability. And we shall modify our originally presented figures and make them easy to read.

### Specific comments:

Page 1322 Abstract: Needs to be rewritten. Line 1: estimates of what Line 4 remove “by” Line 5 TM-based fluxes are compared with what?? daily ET estimates (From what source??) or with in situ measurements?? How were the latter made?? Line 10 “syncretized” is not used properly in this case, my dictionary gives the meaning: “To combine or reconcile differing beliefs? You need to find a more appropriate word, as it is the sentence does not make sense. Line 13 This last sentence needs rewriting. Line 19 What is the atmospheric cycle? Ln 25 “ Over the last few..

Reply: We shall reword Abstract in our revised manuscript. Line1: We refer to estimates of instant and daily ET. Line 4: We shall remove “by”. Line 5: We mean that remotely sensed derived instant and daily ET estimates are compared with in-situ ET observations from eddy covariance system. In-situ daily ET values refer to the integral values of instant ET values recorded by eddy covariance system. Line 10: We accept the suggestion and “syncretized” will be replaced with “incorporated” or “integrated”. Line 13: The existing text will be amended to read, “Our results indicate that MODIS data may result in rough estimates of ET over an inhomogeneous landscape, compared to that derived from TM data. But when used in conjunction with in situ meteorological forcing data the MODIS-based ET estimates can effectively depict the basic spatial distribution trend of ET process.” Line 19: To avoid confusion, the text referred to by the reviewer will be removed from the manuscript. Ln 25: The text referred to by the reviewer should be corrected as “In

the recent decades...”.

Page 1323 Ln 16 This sentence is too long, break it up Ln 28 & 29 switch few and little

Reply: Ln 16: We admit that this sentence is too long. But we have rewritten Abstract and the sentence referred to by the reviewer has been removed from the revised manuscript. Ln 28 & 29: Thanks! We shall switch “few” and “little”.

Page 1324 Ln 11 What is ET fraction? Ln 15 types is the wrong word, both Landsat and Modis produce the same type of data

Reply: Ln 11: ET fraction in our paper refers to the ratio of the actual ET (observation values or estimates values) to potential reference crop ET. Please see our reply for RC28 in our response to the comments from referee #1. Ln 15: We admit that “type” is the wrong word and the main difference between Landsat and Modis data is spatial resolution. We have rectified this point in our revised manuscript.

Page 1325 Ln 10 A more complete description of ground stations is needed, e.g how was surface temperature measured? With an IR radiometer, thermistors, thermocouples,.. What other measurements were made? Ln 18 Be more specific about the wavelengths of the bands discussed, I am sure that MODIS band 1 does NOT cover the entire visible wavelength range as implied in their statement. Ln 22 Not clear, is 12 AM noon or midnight?

Reply: Ln 10: In the revised manuscript, the description of the deployed equipments and a list of the available data in our study will be provided in a newly added table, which will give more information about the procedure of data collection. Ln 18: Thanks! To avoid confusion, we shall rewrite the text referred to by the reviewer. Ln 22: Here it should be “12:00 AM noon local time”. Please see our reply for RC12 in our response to the comments from referee #1.

Page 1327 Ln 13 Remove “It should be mentioned Ln 14 by is the wrong word try “with” Ln 20 What do you mean by “parameterization model”?

Reply: Ln 13: The authors accept this opinion and we shall remove the text from our revised manuscript. Ln 14: Thanks! “by” will be corrected as “with”. Ln 20: To avoid confusion, “this parameterization model” will be corrected as “this model”

Page 1329 Ln 17 MODIS is misspelled, Improvement over what? Ln 18 Give wavelengths, again “syncretized” is not used properly as a result I do not know what they are trying to say here.

Reply: Ln 17: Deeply sorry! This spelling mistake will be rectified in our revised manuscript. Ln 18: We accept the suggestion and “syncretized” will be replaced with

“incorporated” or “integrated”.

Page 1330 Ln 6-10 It is not clear how they get 250 m LST values? Why should that improve the performance of the LST algorithm??

Reply: In our Modis LST retrieval method, spectral information from Modis bands 1, 2, 19, 31 and 32 serve as input information. We resize the pixel size of MODIS TIR bands 31 and 32 to 250 m × 250 m, which is equivalent to the pixel size of MODIS RED and NIR bands 1 and 2. Therefore, in our simplified LST retrieval process higher resolution RED and NIR spectral information from bands 1 and 2 can be integrated with lower resolution TIR spectral information from bands 31 and 32. Thus we can get the pseudo 250 m resolution LST using Eq. (9) and (10) and the accuracy of LST retrieval can be improved for inhomogeneous land surface.

Page 1331 Ln 15 They need to explain more fully how they get 250 m LST from the 1 km MODIS TIR data. Their Fig 2b shows considerable improvement of the 250 m LST versus the 1 km. For the reader to believe this result some physical basis must be given to justify the improvement. Also this figure is poorly drawn, the symbols are too faint to be easily read?? How were the ground measurements made?

Reply: Please see our reply for the reviewer’s previous comment. We shall modified figures and corresponding symbols in the revised manuscript for readers comfort. With regard to the procedure of collecting ground reference data, a newly added table about the deployed equipments and the available data in our study will be provided, which will give more information about the procedure of data collection.

Page 1339 & 1341 In the captions for Figure 2 & 4 replace “The discrepancy” with Comparisons

Reply: Thanks! We have revised our manuscript as you suggest.

In the caption for Fig 5 Deletle “Cases of “

Reply: Thanks! We have modified the caption for original Fig. 5 as you suggest.