

Interactive comment on “Analyzing influence of spatial resolution on the estimated evapotranspiration by using remote sensing data over an oasis area in Northwestern China” by H. Tian et al.

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Response to Anonymous Referee #3 (Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, C617-C618, 2009)

The authors greatly acknowledge the constructive work of the reviewer which allowed us to submit an improved and partly more comprehensible version of the original manuscript.

Details:

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Comment #1: In the introduction, there is no literature review on the study of the effects of the spatial resolution on regional ET, which is very important, as it is the topic of the study. Actually there are lots of study foci on it, please see for example the review in Mo, et al. Hydrological Sciences Journal, 2009, 54(1): 160-173.

Reply: Thanks! The comment points out one of the major drawbacks of this manuscript. We have found the literature referred to by the reviewer. We shall add a literature review of existing methods/studies on modeling ET in the introduction and discussion sections and update our reference list in the revised manuscript.

Comment #2: Many abbreviations, such as LST, PAM, AWSs, et al. when they appear the first time in the text, should be explained.

Reply: Good suggestion. We shall provide simple explanations about these abbreviations in our revised manuscript.

Comment #3: The analysis in the result part is weak and not very clear.

Reply: Good suggestion. We shall provide a more clear interpretation of our proposed methodologies and present a more in-depth statistic analysis of the effect of spatial resolution on ET derived from remote sensing data.

Comment #4: The author should display the comparison of ET between the estimated and the measured over the region and over the whole of the experiment. What I can read is the results at only one or two of the eight sites shown in Fig. 4 and Fig. 5. How about for other sites?

Reply: In our revised manuscript we shall use more Landsat and Modis images to assess the effect of remote sensing spatial resolution on ET modeling. However, ground-based methods for estimating ET such as Bowen ratio and eddy covariance flux technique can only provide accurate point-scale measurements and they can not provide results for regional scale. As there were only two eddy covariance systems placed in the JTEX2004 study area, they provided the only in-situ ET data available for the direct

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validation of our remotely sensed derived results. Therefore, we can only compare remotely sensed derived ET to ground reference data at limited "points". But we shall combine remote sensing data with routine meteorological data to estimate ET across different scales assuming that ET derived from remote sensing data are accurate.

Comment #5: Why just show only one day (4 July 2004) 's result, how about for other days?

Reply: The reason is that there was only a cloud-free Landsat-5 TM imagery during the whole experimental period of JTEX2004. Several Landsat-7 ETM+ SLC-off (gap-filled) imageries in the same period inconvenienced the practical applications of them. We shall use more Landsat and Modis images outside the period to assess the effect of remote sensing data spatial resolution on ET modeling with the help of routine meteorological data.

Comment #6: Fig 7 is hard to understand.

Reply: Sorry! We shall present a more in-depth analysis to make the corresponding figures easy to understand.

Comment #7: Fig. 1 has Chinese characters on it.

Reply: We intend to re-draw a new figure without Chinese characters.

Comment #8: It is hard to see the difference between Fig. 4b and Fig. 4c. Seems to me, the only difference is the unit. The same as for Fig. 6 and Fig. 7.

Reply: We think that the way to overcome this problem is to present more quantitative statistical indices on these figures and we shall do so.

Please also note the Supplement to this comment.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 1321, 2009.