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Hydrology and Earth System Sciences Discussions

Interactive comment on "Estimating surface fluxes over the north Tibetan Plateau area with ASTER imagery" *by* W. Ma et al.

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General comments

The presented manuscript deals with a remote sensing (ASTER) driven approach to assess large scale energy fluxes and land surface parameters over the northern Tibetan Plateau. Thus, it covers a broad and interesting field of spatial data provision and validation for various possible applications, and merits publication if a number of setbacks are considered in a major revision. This should be mainly targeted to some weaknesses in the applied validation scheme and especially in the lack of link being made to hydrological sciences. It is understood that the presented parameter retrievals are important and necessary for hydrological sciences (esp. with regard to potential

spatial parameterizations for distributed hydrological models or SVAT schemes), yet this should be more pronounced. In its current state, the paper reads more like a contribution to an atmospheric/boundary layer journal. Given a thorough revision, it could then become a valuable contribution to this Special Issue.

Specific comments

- The paper is, in principle, comprehensively structured and written. However, it is recommended to thoroughly revise the manuscript for grammar and syntax. Mathematical understanding and equations are correct and generally presented well.

- Figures and tables are suitable, but need some refinement for legibility. Please consider that figures 3 and 5 should be interpretable in black-white as well. Axis descriptions, especially in Fig. 6, must be increased.

- The extensive list of references is of high quality. Quotations are well-placed in the text.

- Abstract: ASTER basics should not have to be explained here

- Abstract and conclusions: it is argued that a parameterization method has been proposed and tested for NDVI, MSAVI etc. Where do these vegetation parameters reappear in the manuscript? It is simply missing except for a small indication in chap. 2.2.2. Please include substantial results and explain the procedures behind the derivation of vegetation coverage and LAI or skip this part.

- the retrieval technique for land surface temperature should be presented in more detail, as it is a crucial parameter for both, following parameterizations and final results of this study.

- In some parts, it is not clear to me, how you are accounting for the spatial heterogeneity of some crucial parameters (soil texture, friction, roughness length etc.). Please provide a little more detail on this important issue.

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Interactive Comment

- How many AWS were actually available for this study? Were you able to differentiate AWS used for parameterization schemes and product validation? If yes, please explain in more detail. If no, please give us your critical opinion about the validity and independence of your results.

- It would be very helpful, if you would include a more thorough discussion about the issue of scale. What scale are you aiming at with your procedure? Is it really necessary to work on the ASTER scale, when you are looking at regional land surface-atmosphere interactions? Please discuss the benefits you are expecting from your high resolution approach in a little more detail. Especially, since you (surprisingly) include low resolution sensors in your concluding remarks Your conclusions are generally a little too generic and un-specific. Please try to place your approach in a wider context, highlight its potentials (especially with regard to hydrological sciences) and discuss its limitations in more detail.

For technical corrections, I refer to the precise comments of Anonymous Referee #2. I kindly ask you to perform a major revision of your manuscript with regard to the recommendations given in this discussion.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 5, 1705, 2008.