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Hydrology and Earth System Sciences Discussions

Interactive comment on "Research on evaporation of Taiyuan basin area by using remote sensing" *by* X. Jin et al.

Anonymous Referee #1

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General comments:

In spite of the relevance of the argument and the growing interest in the application of surface energy balance from remote sensing, the paper is grossly inadequate and it should be straight rejected. The authors do not show a complete understanding of the theoretical concepts underlying the processes they want to describe. The applied methodology is poorly described, without any accent to important problems or limitations that may arise in the proposed approach. Conversely, too much emphasis is given to procedural aspect of minor importance i.e. the elaboration of meteorological data in Section 4.3. Since the results are not compared with any kind of measurements, any validation or accuracy assessment can be produced. As a results, the reader will find little interest in a case-study poorly documented and not validated.

Specific comments:

The limited knowledge of basic hydrology is evidenced in the confusion between the concept of evapo-transpiration (which is a mass term) and latent heat flux (energy), as demonstrated since the first sentence of the Introduction. The description of the SEBS algorithm in the second paragraph of Section 3 (pag.2) is too concise and confuse. There is no mention to the (known) limitations in the proposed procedure, especially in the case of composite terrain and heterogeneous surfaces, as the authors say about the study area in the Introduction. The flowchart in Fig.1 contains abbreviations and acronyms (probably belonging to the source code of the algorithm) which do not help the comprehension of the elaboration performed. The authors mention in the beginning of section 4 that they have been using daily NOAA/AVHRR images. Are temporal series of images being analysed? Why the authors present only results for July 4th, 2003? The section 5 on Results and Discussion is very incomplete. There is no explanation of the variability range for each estimated variable. For example, is it possible that the instantaneous surface temperature values over the area can vary from 0.2 to 40° C ? There is no demonstration that the proposed procedure is "useful" since there is nothing more than a qualitative check of the results, without any independent validation or accuracy assessment.

Technical corrections:

The description of variables Hwet and Hdry should immediately follow Eq.(2) where such terms are introduced. The last factor on the right side of Eq.(3) should be the integral over 24 hours of the available energy (Rn-Go).

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