Hydrol. Earth Syst. Sci. Discuss., 6, C279–C280, 2009
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Hydrology and Earth System Sciences Discussions

Interactive comment on "A Bayesian approach to estimate sensible and latent heat over vegetation" *by* C. van der Tol et al.

Anonymous Referee #1

Received and published: 13 April 2009

The paper presents a method to combine remote sensing and modeling to estimate latent and sensible heat fluxes. Although basically the idea is good, there are at present a number of shortcomings in the paper, which prevent it from being publishable.

My major comments are:

- The major problem with the paper is that it is written rather sloppily. When reading the paper, I get the impression that the writing has been done in a rush, to get the paper written by a deadline.

- For example, the introduction immediately starts by referring to equations 1, 2, and 3, which are explained in a later section. This does not read easy and should be rewritten.

- Page 2339, line 24-25: In the paper by Reichle, soil moisture is not retrieved from mi-

crowave remote sensing. In this paper, a synthetic experiment is performed, in which modeled soil moisture is converted into brightness temperature using a radiative transfer model. These are then used in a synthetic data assimilation study. This should be corrected.

- Page 2341, line 14-19: I do not agree with the statement that there are seven unknowns in the Penman equation. Besides the conductances, all variables in this equation are usually measured. Either I understand it wrong, or this should be further explained.

- In general, the explanation on the Bayesian approach is rather unclear. For somebody (like me) who has not yet applied this, this is very difficult to understand. Please provide more explanation.

Minor comments:

- Abstract, line 4-5 : weather stations on the ground. Please rephrase.

- Page 2344, line 1: does "squiggly" mean a tilde ? This also comes back on page 2345, line 23.

- Page 2346, line 16: What is a "contact temperature" ?

Taking everything into account, I think a thorough major revision is needed before the paper can be published.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 2337, 2009.