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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Components of near-surface energy balance derived from satellite soundings – Part 1: Net available energy" *by* A. Jarvis et al.

Anonymous Referee #2

Received and published: 25 June 2010

Evaluation of the manuscript:

"Components of near-surface energy balance derived from satellite soundings: i. Net available energy" by Mallick et al., submitted to Atmospheric Chemistry and Physics.

General Comments:

I think the paper is generally well written and structured and suggest in my view a novel methodology using routinely available remote sensing information (AIRS and MODIS) to extract global scale net radiation (or better net available energy) data. These estimates are compared to 30 FLUXNET sites with showing reasonably good results. Given the 9 issues raised by anonymous reviewer #1, I would like to draw some atten-

tion to the following points.

- I am not so much concerned about the "simplicity" of the used equations to derive Rn, on a monthly time scale they might be sufficient. However, I think a type of quantification of the impact of uncertainties in e.g tau and other parameters used in the approach would be a way of responding to this issue.

- An error analysis in general, considering the non-closure of the energy – balance at micromet. measurement sites and all individual components used in the approach would address also parts of issue 5-8 of #1.

- I also clearly see the scale issue when comparing RS derived information on Rn with FLUXNET scale measurements. What are the spatial variations of Rn to be expected within a 1*1° pixel? I would like to see some information/answers to that question.

- How do others groups/institutions (e.g. ECMWF) calculate those fluxes? ECMWF provides global for- and hindcasts for Rn? How do the here calculated monthly fluxes compare to those? How could authors argue that they "improve" results compared to e.g. ECMWF products?

In summary, I see - after thoroughly considering some of the issues above - this paper might be able to add some contribution to the atmospheric science community.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 14387, 2010.