

Interactive comment on “Leaf area controls on energy partitioning of a mountain grassland” by A. Hammerle et al.

Anonymous Referee #1

Received and published: 5 November 2007

Comments to the Author Review of Manuscript bgd-2007-0115-1-0-0-ms

The manuscript “Leaf area controls on energy partitioning of a temperate mountain grassland” by Hammerle et al. provides an interesting analysis of inter-seasonal variation of energy partitioning over a managed temperate mountain grassland by using six-year eddy flux measurements. These data are novel information and very important for understanding the degree of coupling between the land and the atmosphere and eco-hydrological processes in terms of energy partitioning in the grassland ecosystem. The instrumentation and methods used are well described and state-of-the-art. The paper is an original, significant for the BG readership with interpretations and conclusions reasonably supported by the evidence presented in its present form. In particular, the paper provides very useful information on how manage-

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ment (cutting) affects the energy partitioning in terms of ground area index (GAI). I find that the paper can be published with some minor revisions as shown below.

Suggestions for some minor revision: 1. In some places throughout the paper, 'cut' is better replaced with 'cutting'; if possible. There seems no p values throughout ($p = 0.00$). 2. Page 3608, line 20: rewording in order to name a few;. 3. Page 3608, line 20-21: rewording 'Since the planetary boundary layer is where humans spend most of their lives;. 4. Page 3609, line 7-9: 'neglecting yields;. How is the heat storage in the soil considered? The heat storage in the soil is negligible in the long-term (e.g. on the daily or seasonal scale) but here needs a clarification. 5. Page 3614, line 9-10: The 'specific ranges' should be quantified for each variable. 6. Page 3616, line 7: insert 'from' between 'the period' and 'April until September'; 7. Page 3617, line 15-18: consider of rewording the sentence 'With $p < 0.001$;. Both -70 W m^{-2} and 520 W m^{-2} occurred in the vegetation period? Are they mean of maximum values of R_{net} ? 8. Page 3617, line 8-10: 'During Figs. 2 and 3)'. It seems usually that albedo increases with a decrease of green leaf area. This result requires a further clarification. 9. Page 3617, line 18: 'absent insulation'? 10. Page 3620, line 7-8: rewording 11. Page 3621, line 22-24: 'The albedo increased with GAI in a saturation type fashion';. Please show in what conditions this conclusion is hold. In general, higher bareness of the ground will lead to a higher reflectance of direct solar radiation received, while an increase in vegetation cover may increase absorbance of the radiation suggesting a decrease in albedo. 12. Page 3623-24: Summary and conclusion section: this is only the repetition of the abstract. Please consider rewording and highlight the importance of this study.

Interactive comment on Biogeosciences Discuss., 4, 3607, 2007.

BGD

4, S1796–S1797, 2007

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