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Comment

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

**A. Hammerle et al.**

Received and published: 7 February 2008

Leaf area controls on energy partitioning of a mountain grassland: Reply to referee comments

We are very thankful for the critical notes, useful remarks and advise of the two referees with respect to the contents of our manuscript. In particular we want to thank Adam Wolf for his very constructive criticism from which our final version of the article has benefited very much. As detailed below, we were able to address most of the comments raised by the two reviewers and thus hope that the manuscript will now be acceptable for publication.

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## Comments by Referee 1:

1. as suggested cut has been replaced by cutting wherever appropriate; p-values have been added to the manuscript
2. section removed
3. here we do not see the need to reword this section
4. the way we accounted for heat storage in the soil layer above the soil heat flux plates is described in section "2.3 Ancillary data" with appropriate references
5. the specific ranges for the quoted variables have to be varied seasonally in order to account for changing environmental conditions; due to the long measuring period and the large number of variables a detailed listing of these ranges would be far too comprehensive in comparison to the additional information obtained from such a detailed listing
6. changed as suggested
7. we reworded the sentence in order to clarify that the given values are the minimum and the maximum value of the mean monthly diurnal courses over the vegetation period
8. we found literature sources which indicate both an increase and a decrease of albedo with increasing GAI and have included an appropriate discussion of these contrasting findings
9. reworded the sentence
10. reworded as suggested
11. see reply to comment 8
12. we agree and decided to remove the conclusion section

## Comments by Referee Adam Wolf (Referee 2): General comments:

1. Tightening of manuscript: In order to achieve the tightening the paper we removed

**BGD**

4, S2602–S2604, 2008

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the analysis on  $\omega$  and  $LE_{eq}$  as suggested, which makes the manuscript more concise and considerably improves the legibility of Fig. 5. In contrary to the suggestion by referee 2 we have not analysed  $g_s$  and  $g_a$  instead, as we felt that this too would not substantially add to the manuscript.

2. Fig. 7: We cannot follow the referee's interpretation of Fig. 7, as in our study low bowen-ratios occur during times with high VPD; the suggested feedback mechanism of high evapotranspiration (i.e. low bowen-ratio) leading to a moistening of the atmosphere thus does not seem to hold in our case; we have included a new paragraph discussing this finding

3. saturation-type response of  $LE/R_{net}$  with  $GAI$ : this is addressed in a new paragraph (see reply to comment 2); with this addition we feel that the discussion of  $G$  is not disproportionate extensive

Specific comments:

1. correct - equation 2 was corrected as suggested

2. radiation was measured with a 4-component net radiometer (CNR-1, Kipp Zonen, Delft, The Netherlands) which measures the up- and downward long- and short-wave radiation separately. Albedo was calculated by dividing the upward shortwave radiation by the downward shortwave radiation; an appropriate explanation has been added to the manuscript (section 2.3)

3. we do not intend to promote the Twine-correction as a standard practice; but in order to eliminate one source of error we decided to remove the imbalance in the energy balance; as our work mainly deals with ratios this correction does not affect the results essentially, as you mention correctly

4. sentence was reworded as suggested

5. sentence deleted as suggested

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

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