

## ***Interactive comment on “Comparison of the meteorology and surface energy balance at Storbreen and Midtdalsbreen, two glaciers in southern Norway” by R. H. Giesen et al.***

**M. Pelto**

mspelto@nichols.edu

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This paper provides a thorough and valuable examination of the methods, model and results for an energy balance study of two glaciers in Norway. The length and validity of the data record for an energy balance study is exceptional. The resulting data provide an excellent opportunity to explore the variations in energy balance between glaciers and their role in ablation. The care given to the description of the study methods and model development provides the reader with confidence in the important results.

The main focus of this paper is on energy balance and I acknowledge that ablation should be secondary in terms of detail, but now it is peripheral. Ablation is the output

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we seek. A table or figure relating observed ablation to specific heat balance conditions would be useful. What I would find valuable is specific ablation rates for days with Rnet dominant, Hsen and or Hlat dominant. In addition how does the Rnet dominant day ablation rate change from May to August. I am not suggesting an examination based on all the days just some group of days where the energy balance has a distinct pattern, compared to other groups of days.

Figure 10 indicates a rising importance of Hlat and Hsen versus Rnet during the ablation season. Given the amount of ablation per month, how much more critical is the role of the Hlat and Hsen in overall ablation than the line graph would suggest for the whole period of potential melt? Is the energy balance or ablation different on katabatic wind dominated days versus westerly wind dominated days on Midtdalsbreen? The fraction of melt for a month is evident, what about for the season? In the end I am left with a very clear impression of the energy balance and the underlying causes of its variations on the two glaciers, but not a clear impression of the resultant ablation of the two glaciers.

Specific Comments:

882-6: How important and valid is the subsurface heat condition term?

883-24 How much smaller is lapse rate during melt?

884-15 how much higher is specific humidity in the summer.

885-5 to 15; This level of detail on wind observations is of great value. I encourage the authors to provide the same of some other parameters.

887-8 seldomly...seldom

887-10 It would be valuable to see the range of values for Hlat and Hsen for wet and windy conditions, versus dry and windy periods, versus katabatic driven periods on Midtdalsbreen.

Figure 3: A view of the larger setting of the AWS on both glaciers is more important than a closeup of the AWS. I recommend both be included.

Figure 9 a useful addition would be a third panels showing the difference between the stations in energy balance.

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Interactive comment on The Cryosphere Discuss., 2, 873, 2008.

**TCD**

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