

## ***Interactive comment on “A note on the water budget of temperate glaciers” by J. Oerlemans***

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Received and published: 20 August 2013

### GENERAL

All reviewers are very positive about the approach to estimate meltwater production in temperate glaciers by considering the release of potential energy. They like the conceptual transparency and accuracy of the method. It is inspiring to see that colleagues appreciate my attempts to derive bulk characteristics of glaciers by using basic ideas and simple models, and regard this as useful complementary work to the standard of massive calculations with numerical glacier models.

The reviewers request only minor adjustments (mostly technical concerning typos or improvement of formulations); the response to a few more pertaining remarks is given below.

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## RESPONSE TO SOME SPECIFIC COMMENTS

### Ref. 1

- Here the issue of the microphysics of the dissipative melt process is mentioned. The referee raises a number of questions which are all very interesting, but I don't think he expects me to answer them !

### Ref. 2 (Johannesson)

- I agree with the remark on R (flux of rain) and will adjust the text accordingly.

### Ref. 3 (Brinkerhoff)

- This referee mentions that 'one of the best uses for this type of procedure in the future will be as a check on more spatially explicit models of glacial hydrology; do the results of these models correspond well to the constraints set forth by conservation of energy?' I fully agree with this and will mention this more explicitly in the revised manuscript.

- The algebraic manipulations are indeed spelled about more extensive than is normally done. I will reduce and make the derivations more in line with the standard.

- The referee raises the question of how the theory can be applied to non-surgingly glaciers that are not in a steady state. This is a good question of course, and will be the subject of further work. In this paper I wanted to focus on the basic concepts and orders of magnitude, and did not consider transient situations (apart from surging).

- I don't think it is possible to measure the dissipative meltwater production in one way or another. The discharge of water at the terminus also contains the contributions from ablation and rain (possibly also from surrounding terrain), and to me it appears impossible to separate the contributions accurately.

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Interactive comment on The Cryosphere Discuss., 7, 2679, 2013.

TCD

7, C1493–C1494, 2013

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