**The Cryosphere Discussions**

Interactive
Comment

*Interactive comment on* **"Testing hypotheses of the cause of peripheral thinning of the Greenland Ice Sheet: is land-terminating ice thinning at anomalously high rates?"** *by* **A. Sole et al.**

**Anonymous Referee #1**

Received and published: 18 September 2008

I reviewed a previous version of this ms for a different journal, and recommended acceptance with major revisions, so my comments will be brief. The authors have done a good job resolving most of the issues with this work. The only point I would raise is that the assumption underpinning hypothesis 2, that marine-terminating and land terminating outlet glaciers should show the equivalent response to enhanced surface melting, isnt necessarily valid. As the authors point out, the fact that tidewater glaciers have ocean connections means that they should have lower effective pressures than land terminating margins. Therefore, an increase in meltwater penetration the bed shouldnt necessarily effect them the same way. Anyways, Joughin et al, 2008, Science, has already clearly shown the answer, so it's not a big deal. As I stated in my previous

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review, the results of this paper are largely redundant in the light of previous work, but it is nice to have one more nail in the coffin of the idea that the "Zwally Effect" is the cause of recent dynamic changes. I would just ask the authors to explain their logic behind hypothesis 2 a bit more clearly - why should these systems respond the same way to meltwater penetration? - and then the paper should be accepted.

Interactive comment on The Cryosphere Discuss., 2, 673, 2008.

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