



Interactive comment on “Mass-conserving subglacial hydrology in the Parallel Ice Sheet Model” by E. Bueler and W. Van Pelt

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Prof Bueler

There are now 3 very helpful and insightful reviews from 3 very qualified and industrious referees. I think that all their major concerns have merit, and I ask that you make efforts to address these concerns. There maybe a couple of typos in reviewer 3's review, and i disagree that W_{eng} is unaccounted for (it just may need to be added to some early equations) – but there are some very good points made about the difference between your model and the Schoof 2012 model with respect to the regions where pressure is either overburden or zero.

I want to highlight something that Dr Bartholomaus mentioned, offhand that the cou-

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pling is essentially one-way, because melt rate affects N_{til} , and thus yield stress, locally and P/W do not in any way feed back on it. This is why I asked initially if there was some way of allowing conduit pressure to influence till storage. I don't remember this being emphasized anywhere in the text, and that it should be. (this also bears on Dr Bartholomaeus's comment on the mixing it is indeed odd for the ice flow to be opening up cavities, and yet the normal stress of the asperities not affecting basal velocity.)

I hope that you can address all of these concerns, as I expect this to be a very valuable addition to GMD.

Interactive comment on Geosci. Model Dev. Discuss., 7, 4705, 2014.

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