

Interactive comment on “A model study of Abrahamsenbreen, a surging glacier in northern Spitsbergen” by J. Oerlemans and W. J. J. van Pelt

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This paper describes the application of a simple glacier model to a surging glacier in Svalbard. The authors nicely outline the capabilities (and limitations) of simple glaciers models, and argue coherently why their method is appropriate. The main points of the paper are that the model captures the feedback between a surge (and the subsequent lowering of surface elevation) and glacier length, and reproduces the limited observations of the glacier behaviour. Abrahamsenbreen is found to be very sensitive to changes in equilibrium line altitude, and has the potential to retreat or advance substantially depending on the climate forcing. I only have a few major comments (see attached). I have also included a list of minor comments, which should improve the readability of the manuscript. Once these changes have been

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implemented, I would be happy to recommend the manuscript for publication in The Cryosphere.

Please also note the supplement to this comment:

<http://www.the-cryosphere-discuss.net/8/C2788/2014/tcd-8-C2788-2014-supplement.pdf>

Interactive comment on The Cryosphere Discuss., 8, 5687, 2014.

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