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Interactive comment on “Surface mass budget and meltwater discharge from the Kangerlussuaq sector of the Greenland ice sheet during record-warm year 2010” by D. van As et al.

Anonymous Referee #2

Received and published: 31 October 2011

I am omitting any summary of the paper as this was done already by previous comments and referees. I fully agree with other comments that the paper hides interesting results that have not been fully explored or properly explained. The runoff section is what makes this study interesting with respect to previous studies focusing on the 2010 melting record. The 2010 Arctic report card and other papers (mentioned in the study) already reported the analysis of the strong surface temperature anomalies in Greenland, extreme melting and the albedo feedback mechanisms. Those studies also use data from the K-transect and more sophisticated SEB models to address the causes of the 2010 melting record. Just focusing on a specific site can be potentially interesting if this really adds something new. In my opinion, half of the paper (as it is written

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now) does not add this information as it repeats what was previously mentioned in other studies. In this sense, the paper is more a report on a specific site and could be shortened to highlight local conditions at Kangerlussuaq.

I would have liked to see a more detailed description of the model. In particular, justifying how and why some parameters were tuned in one way or another. In general, however, the best and most interesting part is the runoff part. There are several issues that have been raised by other comments that need to be addressed before the paper can be accepted for publication. I tend to disagree with the comment from one of the reviewers that a data set should be used only once a paper is published: there are many data sets that are based on technical documentations without going through a full peer reviewed process. However, it is important to provide a robust and scientific support to the quality of the data reported and the associated methods.

My recommendation is to shorten some sections that are repeating from previous papers and focus more on trying to provide new insights on the 2010 melting record or on the combination between modeled and measured runoff.

Interactive comment on The Cryosphere Discuss., 5, 2319, 2011.

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