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The Cryosphere Discussions

Interactive comment on "Record mass loss from Greenland's best-observed local glacier" *by* S. H. Mernild et al.

Anonymous Referee #3

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There have already been a number of comments to this paper and the authors have already addressed some of the points so I will be very brief in my comments here.

In conclusion I think the authors in this paper present an interesting time series of mass balance measurements that should be published. Data from the small glaciers surrounding Greenland is lacking and we need more of these observations. With the corrections added and announced by the authors already I think the paper can be published nearly as it is.

The main message from this paper is the long time series of 15 years of mass balance measurements showing the steady trend towards more negative mass balance (Fig.3). That could have been addressed in the title of the paper more like: "Increasing mass loss from Mittivakkat glacier in Greenland". The current title does not focus on the main

content, which is the long time series, and not the last year record high loss.

I missed figures about the stake locations and elevation contours but I see now that such a figure will be added. I also really missed the added information in the long time series of the summer mass balance and the winter mass balance. Such data would have added much information to the discussion about the net mass changes. However, since this data is not available, at least for many of they years, it helps to have the time series of temperature and precipitation as given in Figure 3b. The long-time series of air-temperature anomalies is given in fig. 4, but why not also give, if available, the long-time series of precipitation? We see (a bit surprising) from Fig. 3 a decreasing trend in precipitation since 1996. Is this consistent with long time series and also a regional trend?

For a wider use of the data it is not the total mass balance of this glacier that is interesting, but rather the mass balance gradient, the trend in the data and the mass change in each elevation band. That information can probably be used for larger regional estimates of mass changes. The overall mass balance for this glacier will of course be a direct result of the hypsometry and thus the discussion about the AAR and future possible volume changes is valid only for Mittivakkat Glacier.

P 462, l 25: a misprint: should be Dyurgerov (not Dyugerow)

Interactive comment on The Cryosphere Discuss., 5, 461, 2011.