

Interactive comment on “Record mass loss from Greenland’s best-observed local glacier” by S. H. Mernild et al.

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This short paper presents a 15yr Mass Balance (MB) records of the Mittivakkat Glacier by highlighting the record 2009-2010 mass loss. The paper is well written and the TC journal is right for this kind of paper. However, after Tedesco et al. (2011), the interest of this paper is poorer. The explanation (winter/summer high temperatures + low winter accumulation) of the 2009-2010 melt record is already given in Tedesco et al.(2011). But the recorded MB time series and the discussion about the fact that the glacier is currently out of balance is interested for publication while they should be discussed/illustrated more in depth. I suggest therefore to accept this paper for publication with the suggested additions listed here and from Prof. M. Peltó if they do not ask a too big job for the authors.

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1. Some 2D figures showing the elevation bands listed in Table 1 and where the SMB measurements at the surface of the glacier are made is needed here as pointed out by Prof. M. Pelto.
2. The authors link the MB measurements to temperature/precipitation measurements made in Tasiilaq. A simple multiple regression explaining the MB variability with the Tasiilaq measurements could be interesting:

$$\Delta MB \sim a \times \Delta Temp_{summer} + b \times \Delta Temp_{winter} + c \times \Delta ACC_{winter} + d... \quad (1)$$

where *Temp* and *Acc* are the temperature and respectively the snow accumulation recorded at Tasiilaq.

3. The recorded ELA of each year should be plotted or given in a table for helping to interpret Table 1. In addition, the SMB measurements between each elevation bands could be listed in a table for each year. This will allow to compare the 2009/2010 anomalies with the other years and to show the zero AAR occurring some years.
4. A time series showing the mass gain from accumulation and mass loss from melt could help to better interpret the net MB time series (see Fig 3).
5. Title like *2009-2010 record mass loss from the 15yr observed Mittivakkat Glacier, South-East Greenland* is more adequate, I think.

Reference: M Tedesco, X Fettweis, M R van den Broeke, R S W van de Wal, C J P P Smeets, W J van de Berg, M C Serreze and J E Box (2011), The role of albedo and accumulation in the 2010 melting record in Greenland, *Environ. Res. Lett.*, 6, 014005.

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