

# ***Interactive comment on “Glaciological Measurements and Mass Balances from Sperry Glacier, Montana, USA Years 2005–2015” by Adam M. Clark et al.***

## **Anonymous Referee #2**

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The research paper 'Glaciological Measurements and Mass Balances from Sperry Glacier, Montana, USA Years 2005–2015' of Adam M. Clark et al. presents the results of a mass balance monitoring in a so far unobserved setting in Glacier National Park, US. This program fills a gap in national glacier monitoring, and the measurements are well documented and stick to highest standards in the field. The supplementary material contains a wealth of data, so that the research results are fully transparent. I suggest only minor corrections/additions, which might help the reader to get some additional information on the setting of Sperry glacier. It might be worth thinking of adding a geodetic balance at least for one longer subperiod to compare with direct measurements. I would really appreciate to read a short statement on climate at Sperry glacier

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(seasonal and annual mean precipitation, seasonal and annual mean temperatures).  
Is any material of the Sperry expedition existing/available?

Detailed comments:

54: Here it would be nice to read the approx. area/altitude.

128: here again the reader not familiar with the glacier might benefit from some size information (although this comes later on in the results section).

132: full stop. I am not a native speaker, is gage the same as gauge?

137: What is heavy precipitation in this region? (I would benefit from some information on annual and seasonal precipitation, as well as some numbers on events, if feasible and important).

163: I suppose these are high quality DEMs, but it would be nice to read on the vertical accuracy of the DEMs (do they capture annual elevation changes?) If they represent short time elevation changes: Did you think about comparing geodetic and direct mass balances, at least for the full period?

268: Any estimate of densification during summer?

324: Fig. 3

Figures: I would prefer the labels without decimal zeros, and two labels per axis (suggestion).

Figure 2: Please add the date to caption.

Figures 7,8,9,: I find it hard to distinguish for example 2008/9 and 2009/10 by colors only ( and I am definitely not color blind. . .). Maybe use different line types?

Supplementary material:

I did not find the legend or caption explaining the white broken line on pages 25, 29, 30, and 33? I suppose it is the snow line, and maybe there is a reference in the method

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section? Anyway, it would be nice to have it somewhere in a legend. . .

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