

Interactive comment on “The equilibrium flow and mass balance of the Taku Glacier, Alaska 1950–2006” by M. S. Pelto et al.

Anonymous Referee #2

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This paper presents a long data record of an atypical glacier (with positive and more recently moderately negative mass balance in a general context of negative mass balance) coupled with a continuous advance since 1950 while other glaciers of the region are retreating. Among the presented glaciological/geophysical series, surface mass balance is the most questionable. The main problems are the lack of continuous ablation measurements in the lower part of the glacier and the lack of accumulation data for the higher part of the accumulation zone.

The presented results mainly based on measurements around and above the ELA are very interesting but have to be considered with caution when used to calculate mass balance on the entire glacier. I would limit the analysis to the directly measured data itself (ELA and mass balance of a determined zone of the glacier around ELA).

Considering surface elevation change on one profile as a measure of mass balance on a whole glacier is dangerous even if the limits of the method are clearly presented in the paper. The comparison of surface flux and volume flux on a given area of the glacier (around ELA), confirmed by thickness variations is encouraging and confirm the quality of the data in this part of the accumulation zone. I recommend the publication of this work provided that no conclusion about the whole glacier mass balance is presented.

P276, line 19: observed mean surface flux: precise the period

P277, line 15: surface mass balance: it is not direct surface mass balance but reconstructed mass balance or may be upper part surface mass balance

P277, line 19: ELA of 925m: I would expect a graph with the ELA, which is an important parameter and directly and well measured on this glacier.

P278, line 10: 82 % or 0,82

P279, line 28 and 29: here it is stated the major source of error for mass balance of this glacier even if the AAR is 0,82

P281, line 20: place these transects on map (fig 1)

3 “Data observations”: I would replace this title by “Results”

P283, line 3: replace “mean” by “cumulative“

P283, line12-16: not clear for me “both ? missing some word?”

P284, line 12: 2 decimals are enough

P285, line 2: “then” instead of “than”

P287, line 2: profile 7, place it on the map,
profile 4 or IV, be consistent

P287, line 9: replace “volume flux” by “surface flux”

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Fig 1: scale missing, place profile 7, feet instead of meters (confusing, at least precise it), figure not big enough

Fig 3: trace line with 0 mass balance corresponding to the right y scale

Fig 5: selected year, what is the criterion?

Interactive comment on The Cryosphere Discuss., 2, 275, 2008.

TCD

2, S190–S192, 2008

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