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Interactive comment on "From Doktor Kurowski's Schneegrenze to our modern glacier equilibrium line altitude (ELA)" *by* R. J. Braithwaite

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Dear prof Braithwaite,

I've found it an interesting manuscript and think it will be a useful contribution for future glacier-climate evaluation studies. There are comments on our earlier study at two places and I'd like to add short notes here on these comments.

-at the bottom of page 3172. Where you argue for the term 'balance budget' instead of 'steady state'. I share your view in this respect. Since the submission of our corresponding manuscript I've read and learnt more and I agree that 'balanced-budget' is a more appropriate qualifier for the multiannual accumulation area sustaining a certain glacier geometry. 'Steady-state' suggests additional characteristics which should not

be necessarily true for an equilibrium glacier.

-at the penultimate paragraph of the discussion section where you wrote 'Kern and László (2010) relate their "steady-state accumulation-area ratio" to glacier size but there is no physical reason for this.' However, we tried to link the observed size-related tendency to the topoclimatic effects. If we consider a cirque then the avalanche paths and the footwall zone of terrain shading is practically fix. Assuming a large glacier these topoclimatic effects are insignificant the system dominated by the climatic equilibrium. However, as the glacier is receding the avalanche surplus & terrain shaded zone take larger and larger portion of the remaining glacier surface. This avalanche 'overfed' & terrain shaded zone is obviously characterised by a significantly more positive annual balance than the rest of the accumulation zone. Therefore, I found it plausible that at smaller glacier size (where the topoclimatologicaly biased marginal zone could take larger portion of the accumulation area) balanced-budget AAR can be smaller.

My impression is that both our 'apparent relation between AAR0 and glacier size' and the dependence of ELA0-Hmean on primary classification show somehow the above described situation from different aspect. If I undesrtand well the paragraph in your interactive comment posted on 28th of July about the 'effective' precipitation and the surrounding topography you simlarly explain your findings. It might be an interesting exercise to plot the ELA0-Hmean value for the 42 valley glacier and 34 mountain glacier of this study over their size. I expect a similar size specific tendency what we've found for AAR0.

I look forward to read the final version of your paper in TC!

best regards, Zoltan Kern

Interactive comment on The Cryosphere Discuss., 9, 3165, 2015.