Interactive comment on "Basal buoyancy and fast moving glaciers: in defense of analytic force balance" *by* C. J. van der Veen

C. Van der Veen

cjvdv@ku.edu

Received and published: 4 May 2016

Reply to Reviewer 2.

Line 33: I will take the analogy out. Line 45: corrected. Line 99: done. Section 3: Interesting question. One can argue that eq. (10) represents the transition from inland-style flow to ice-shelf spreading. However, the way that phi is calculated in eq. (12) is incorrect, at least according to my interpretation. Line 128: changed. Line 139: done. Line 142: Leave out: "The achievement here is that" Line 173: The finding that longitudinal stress gradients act in cooperation with the driving stress over a distance of more than 30 km is surprising and there is no credible evidence that can explain this. Line 208: eq. (7) has been changed to include the expression (3) for the driving stress explicitly on the left-hand side. I added: with the term on the left-hand side describing

C1

the driving stress. Line 227: yes, that should be equation (2) Line 235: added a sentence on why this term enters into eq. (17) Line 248: I don't understand the reviewer's comment. Line 273: Replace with: As shown in this contribution, the geometric force balance as presented by Hughes in a series of papers cannot be applied successfully to ice streams and outlet glaciers. Line 280: delete "phantom" Line 290: deleted

Interactive comment on The Cryosphere Discuss., doi:10.5194/tc-2016-44, 2016.