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The Cryosphere Discussions

Interactive comment on "Monte Carlo ice flow modeling projects a new stable configuration for Columbia Glacier, Alaska, by c. 2020" *by* W. Colgan et al.

Dr. Colgan

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Dear Dr. Truffer – Thank you for taking the time to review our work. I believe we can incorporate all of your comments and suggestions.

I agree that our most significant a priori assumption is limiting the alpha value in the basal sliding parameterization. This stems from the notion that the basal sliding regime of a tidewater glacier is fundamentally different from that of a land-terminating glacier. We can be more explicit in saying that once Columbia Glacier retreats from the over-deepening downstream of km 50, we are assuming it that will behave more akin to a land terminating glacier, as the water depths influencing basal sliding are relatively

small ($\sim$ 50 m) in comparison to the pre-retreat water depths influencing Columbia's basal sliding (up to 500 m). I suppose a sensitivity run with a different bound on alpha would be the most reasonable way to explore this assumption.

Regarding the final portion of the discussion, I was previously unaware of Will Harrison's timescale work, and I will seek it out.

Thanks, Liam Colgan

Interactive comment on The Cryosphere Discuss., 6, 893, 2012.