

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.

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Mauri Pelto's review of 20 April questions the accumulation rates used at elevations over 2000 m, and he supplies examples from other relatively nearby locations (e.g. Bagley Icefield, Seward Glacier, Hubbard Glacier) that suggest a maximum value of 3 m; the comments culminate with "We have no good examples of retained accumulation consistently exceeding 3 m on the upper reaches of any Alaskan glacier."

Whatever observations may indicate elsewhere, Prince William Sound is very wet place, and the numbers used here seen to be about right. There's not a lot of data to go on, but there is some. Shad O'Neil's "Surface Mass Balance of the Columbia

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Glacier, Alaska, 1978 and 2010 Balance Years" (USGS Data Series 676, now available, but not released when this manuscript was in final preparation) shows measured surface mass balance on Columbia Glacier for the 1978 and 2010 balance years (no mass balance measurements were carried out between these times), with observations made from just above sea level to about 2600 m. The observed balance values at higher elevations ranged from ca. 3.6 m w.e. at 2000 m elevation to 5.2 m w.e. at 2650 m elevation. An exponential best fit through the 2010 observations (with an R^2 of 0.94) puts the mass balance at 3000 m (nominally the top of the glacier) at 5.4 m w.e. See <http://pubs.usgs.gov/ds/676/> for the report. Figure 2 from that report is shown here.

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

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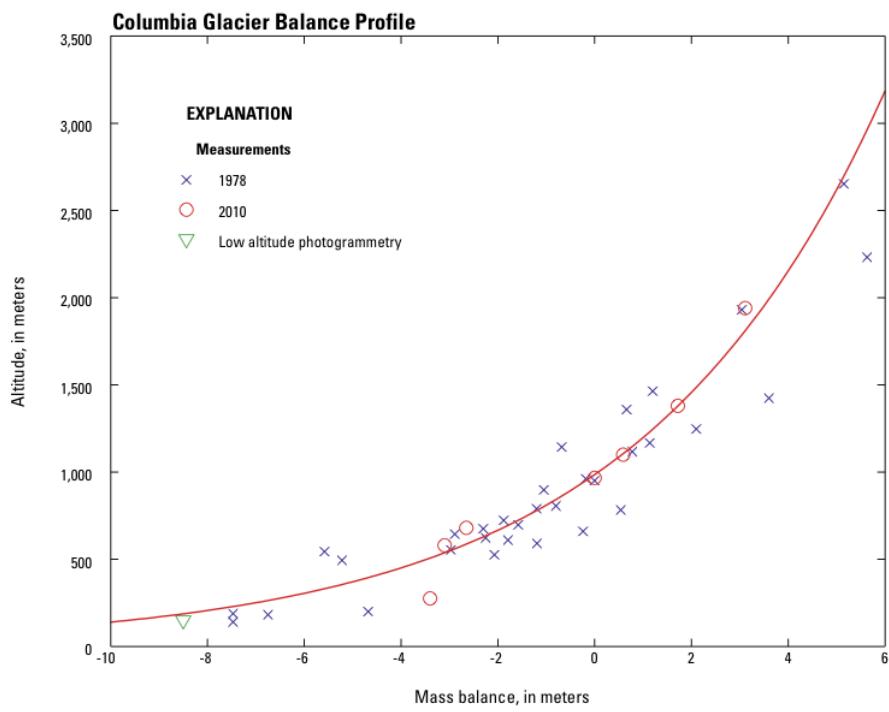


Fig. 1. Figure 2 from USGS Data Series 676

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