

Figure S1. Figure showing correlation between each station's August – May accumulation and trendline shown as a dashed line. R^2 is reported at the top of each figure.

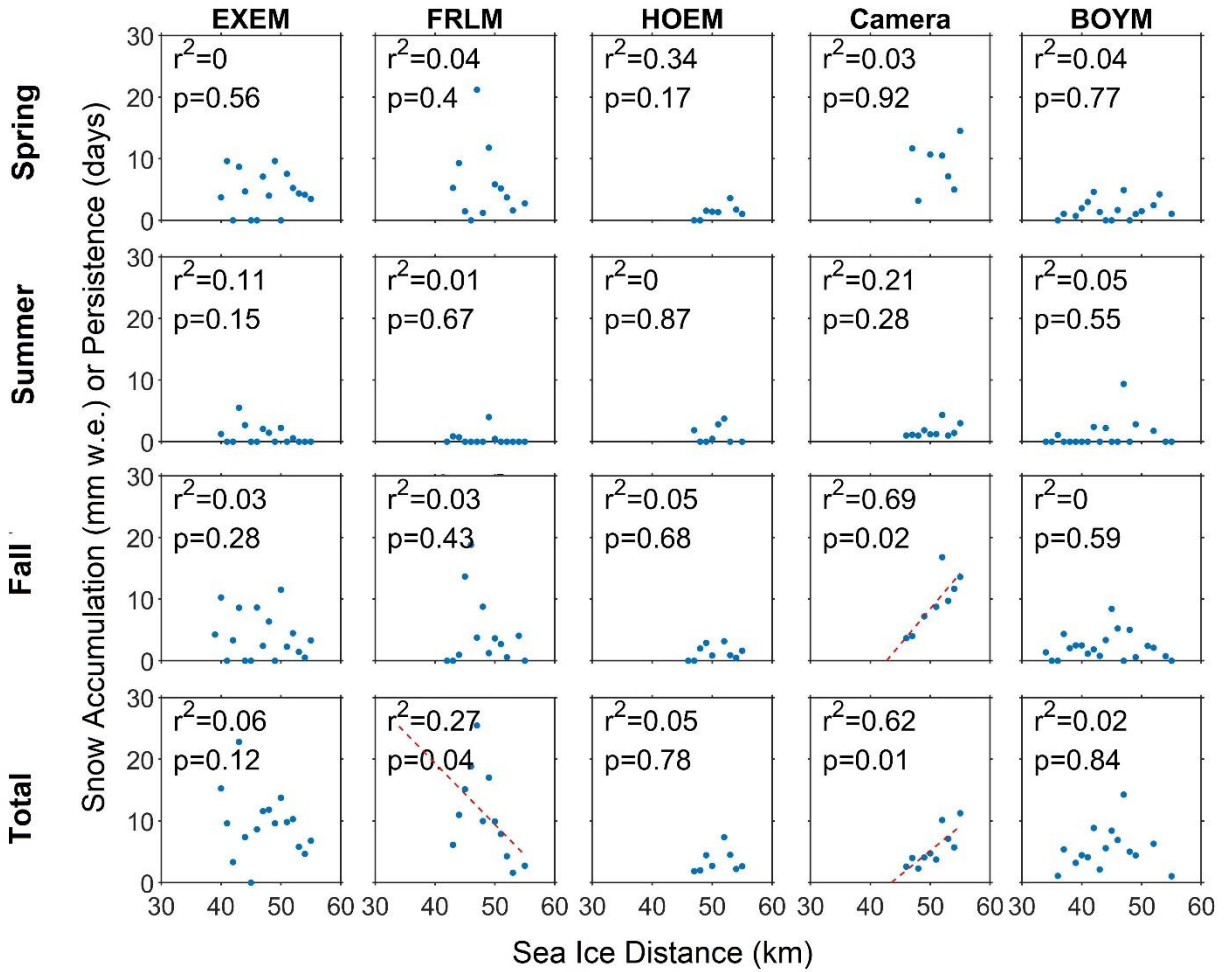


Figure S2. Figure showing snow accumulation reported by weather stations Explorer’s Cove (EXEM), Lake Fryxell (FRLM), Lake Hoare (HOEM), and Lake Bonney (BOYM) and snow persistence recorded by the camera at Lake Hoare plotted against distance to the sea ice edge by season and total for all seasons. R-squared and p-values are reported for all relationships and significant relationships show the best-fit line as a red dash.

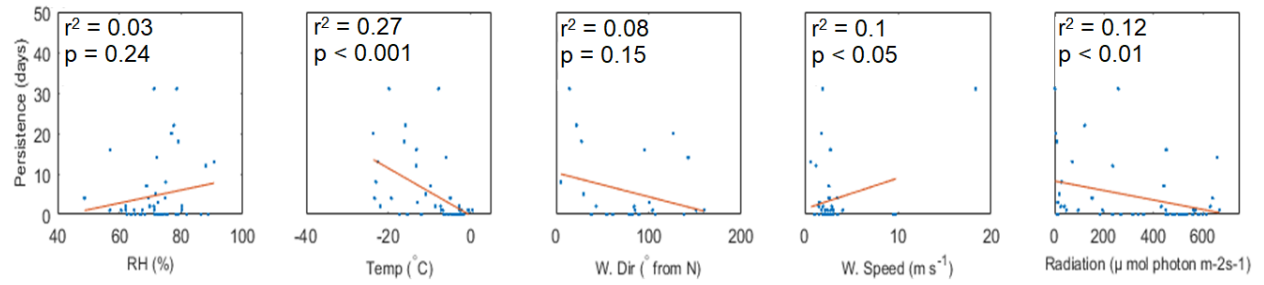


Figure S3. Snow persistence for each snow event recorded by the camera at Lake Hoare plotted against the average meteorological condition while the snow was still present in the photos for that persistence event.

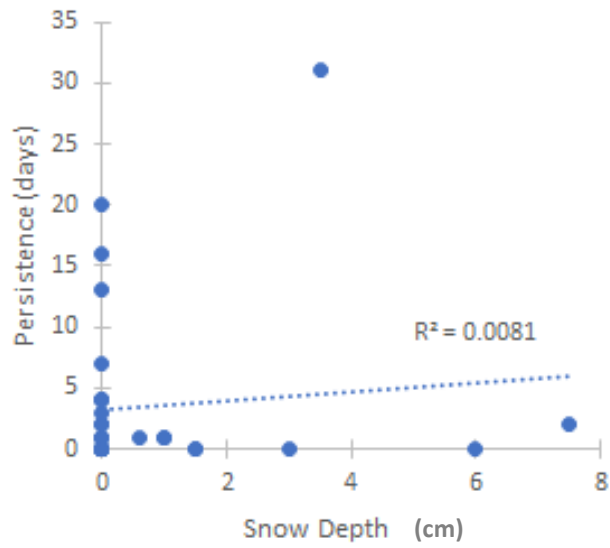


Figure S4. Snow persistence for each snow event recorded by the camera at Lake Hoare plotted against snow depth recorded by the sonic ranging sensor at the start of the snow event. The r^2 value is reported for the line shown.

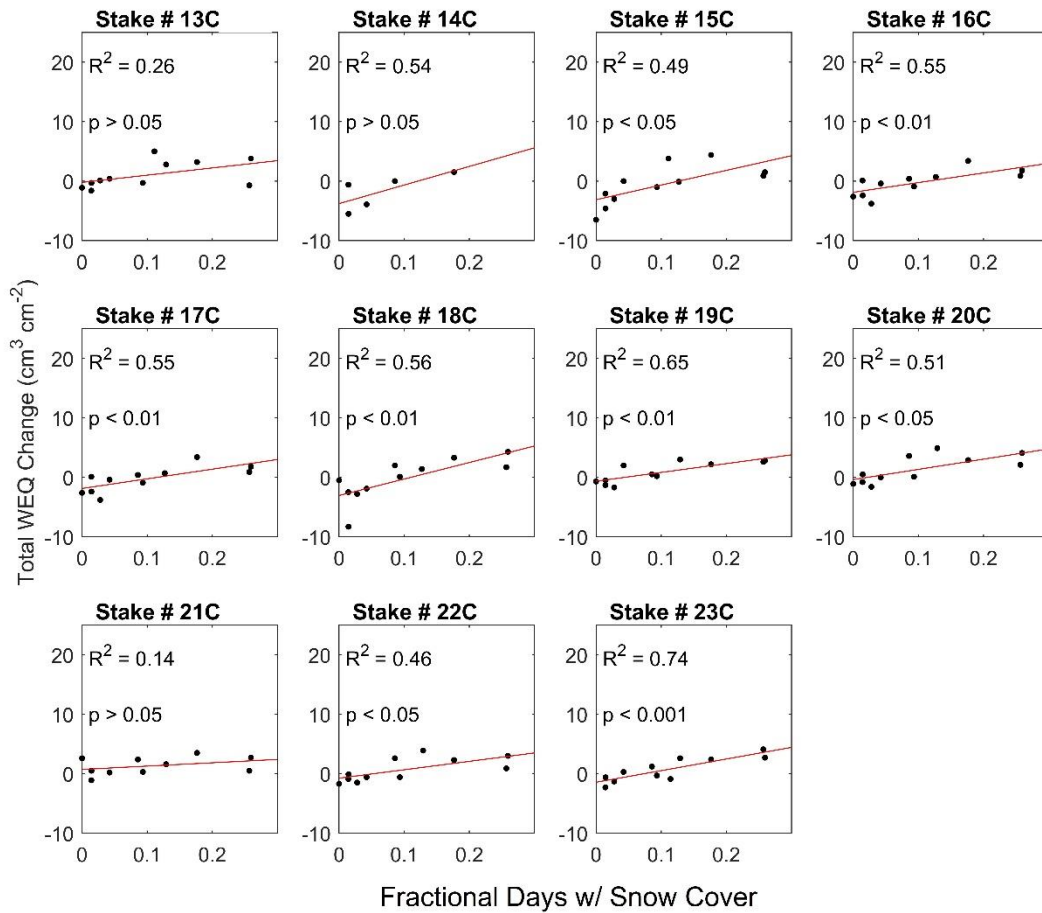


Figure S5. Correlation matrix of the fraction of days with snow cover recorded in the camera at Lake Hoare plotted against the total water equivalent (WEQ) change for ablation stakes on Commonwealth Glacier. R-squared and p-values are shown for each stake.

Table S1. Values with errors shown in Figure 4. EXEM and BOYM are data from the weighing bucket gauge. FRLM and HOEM are data from the ultrasonic distance ranger. Errors are based on 0.5 mm w.e. error for each snowfall.

Snow Year	Spring				Summer				Fall			
	EXEM	FRLM	HOEM	BOYM	EXEM	FRLM	HOEM	BOYM	EXEM	FRLM	HOEM	BOYM
1994								0 ± 0				1.4 ± 1
1995								0 ± 0				0 ± 0
1996				0 ± 0				1.1 ± 0.5				0 ± 0
1997				1 ± 1				0 ± 0				4.4 ± 1
1998								0 ± 0				2.1 ± 1.5
1999				0.7 ± 0.5				0 ± 0	4.3 ± 1.5			2.5 ± 1
2000	3.7 ± 2.5			2 ± 1.5	1.3 ± 1			0 ± 0	10.3 ± 5			2.5 ± 1.5
2001	9.6 ± 2			3 ± 1.5	0 ± 0			0 ± 0	0 ± 0			1.2 ± 1
2002	0 ± 0			4.6 ± 1.5	0 ± 0	0 ± 0		2.4 ± 0.5	3.3 ± 1.5	0 ± 0		1.8 ± 1
2003	8.7 ± 2.5	5.3 ± 3.5		1.4 ± 0.5	5.5 ± 3	0.9 ± 1.5		0 ± 0	8.6 ± 3	0 ± 0		0.8 ± 0.5
2004	4.7 ± 1	9.3 ± 5.5		0 ± 0	2.7 ± 1	0.7 ± 0.5		2.2 ± 1	0 ± 0	1 ± 1		3.4 ± 2
2005	0 ± 0	1.5 ± 1.5		0 ± 0	0 ± 0	0 ± 0		0 ± 0	0 ± 0	13.7 ± 8.5		8.4 ± 3
2006	0 ± 0	0 ± 0		1.7 ± 1	0 ± 0	0 ± 0		0 ± 0	8.6 ± 2.5	18.8 ± 11.5	0 ± 0	5.2 ± 1.5
2007	7.1 ± 3	21.2 ± 9.5	0 ± 0	4.9 ± 2	2.1 ± 1	0 ± 0	1.9 ± 1	9.4 ± 1	2.4 ± 1.5	3.8 ± 3.5	0 ± 0	0 ± 0
2008	4 ± 2	1.2 ± 1	0 ± 0	0 ± 0	1.4 ± 1	0 ± 0	0 ± 0	0 ± 0	6.4 ± 2	8.8 ± 5	2 ± 1	5 ± 2
2009	9.6 ± 3.5	11.8 ± 7	1.5 ± 1	1 ± 0.5	0 ± 0	4 ± 1	0 ± 0	2.8 ± 1	0 ± 0	1.2 ± 1	2.9 ± 2	0.6 ± 0.5
2010	0 ± 0	5.8 ± 2.5	1.4 ± 1	1.5 ± 1	2.2 ± 1.5	0.4 ± 0.5	0.5 ± 0.5		11.5 ± 2.5	3.6 ± 1	0.9 ± 0.5	
2011	7.5 ± 4	5.2 ± 2.5	1.3 ± 0.5		0 ± 0	0 ± 0	2.8 ± 1.5		2.3 ± 1	2.7 ± 1.5		2.4 ± 0.5
2012	5.2 ± 2	3.7 ± 3		2.4 ± 1.5	0.6 ± 0.5	0 ± 0	3.7 ± 1	1.8 ± 1	4.5 ± 2	0.6 ± 0.5	3.2 ± 1.5	2.1 ± 1
2013	4.4 ± 1	1.6 ± 1	3.6 ± 1.5	4.2 ± 1	0 ± 0	0 ± 0	0 ± 0		1.4 ± 1		0.9 ± 0.5	
2014	4.1 ± 1.5		1.7 ± 1		0 ± 0	0 ± 0		0 ± 0	0.5 ± 0.5	4.1 ± 4.5	0.5 ± 0.5	0.7 ± 0.5
2015	3.5 ± 1	2.7 ± 3	1 ± 0.5	1.1 ± 0.5	0 ± 0	0 ± 0	0 ± 0	0 ± 0	3.3 ± 1	0 ± 0	1.6 ± 1	0 ± 0
2016	0.5 ± 0.5		6.1 ± 3.5		0 ± 0	1.9 ± 1	0 ± 0	0 ± 0	3 ± 1.5	0.7 ± 0.5	0 ± 0	0 ± 0
2017	5.8 ± 1	1.2 ± 1	0 ± 0	3.5 ± 2	2.1 ± 0.5	0 ± 0	1.7 ± 0.5		2.3 ± 1	7.1 ± 8	1.2 ± 1	1.2 ± 0.5

Table S2. Number of days with snow cover recorded on the camera at Lake Hoare separated by season. Average percentage of days is based on 106, 92, and 84 days in the Spring, Summer, and Fall respectively.

Snow Year	Spring	Summer	Fall	Total
2006	0	2	11	13
2007	35	9	28	72
2008	19	4	0	23
2009	0	13	36	49
2010	32	6	0	38
2011	0	10	35	45
2012	42	26	84	152
2013	57	3	68	128
2014	40	10	70	120
2015	58	9	68	135
2016	31	19	32	82
2017	18	23	77	118
Average (days)	28	11	42	81
Average (% of days)	26	12	50	29

Table S3. Snow accumulation errors from this study. Error based on ± 0.5 mm w.e. for each daily measurement.

Calendar Year	EXEM weighing gauge	FRLM ultrasonic	HOEM weighing gauge	HOEM ultrasonic	BOYM weighing gauge	BOYM ultrasonic
1996					0.5	
1997					2	
1998						
1999					2	
2000	2.5				3.5	
2001	8.5				3.5	
2002					3	
2003	2				1	1
2004	8.5	10			3	
2005					3	
2006		17			2.5	
2007	2.5	18			3	
2008	7	13.5		1	2	0.5
2009	5.5	9		3.5	2	
2010		4		2	1	
2011	4	6	0.5	2		
2012	7	4.5			4	
2013	5	1	2	2	1	
2014	2.5		2	1.5		
2015	2		0.5	2.5	1	0.5
2016	3			3.5	0.5	
2017	2	9			3	

Table S4. Annual accumulation by calendar year for all stations and measurement techniques. Errors provided in Table S2.

Calendar Year	EXEM weighing gauge	FRLM ultrasonic	HOEM weighing gauge	HOEM ultrasonic	BOYM weighing gauge	BOYM ultrasonic
1994						
1995						1.4
1996						1.1
1997						1.0
1998						4.4
1999						2.8
2000	14.9					5.0
2001	24.9					6.0
2002						8.0
2003	23.3	7.9			3.1	5.6
2004	20.0	37.8			1.2	3.0
2005		20.5				6.9
2006		33.7				12.9
2007	16.5	57.9				10.1
2008	14.3	24.2	1.9		1.8	9.4
2009	18.8	47.6	3.5			8.9
2010		9.7	6.3			2.1
2011	26.2	11.4	6.0	4.8		
2012	18.2	10.3				8.9
2013	13.6	6.5	12.4	11.5		8.7
2014	8.1		2.6	1.9		
2015	7.2	21.1	1.5	3.8	1.0	2.4
2016	10.1		14.2			2.5
2017	10.5	3.2				3.5