

Supplementary Materials

Table S1. October 2020 snowfall event in Fort Collins Colorado USA and used for Figure 3.

Location Around the House	Snow Depth [cm]	SWE [mm]
north 1	22.6	22.7
north 2	22.2	22
east 1	22.2	22.5
east 2	22	23
west 1	25.4	25.5
west 2	25	27
south 1	30	31
south 2	29	30.5

Table S2. (a) Preferential snowmelt snow depth and SWE snow core data for several layers/intervals at 11 locations shown in Figure 4e. These data were used to estimate the bulk measurements shown in Figures 4b–d. Data were collected on 18 April 2020 in Fort Collins Colorado USA; (b) Preferential snowmelt snow depth and SWE trench data shown in Figures 4b–d. Data were collected on 18 April 2020 in Fort Collins Colorado USA.

(a)				
Distance From South Edge [cm]	Lower Height Above the Ground for Interval [cm]	Higher Height Above the Ground for Interval [cm]	Interval Snow Depth [cm]	Interval SWE [mm]
175	13.4	15.7	2.3	9.9
	2.9	13.4	10.5	15.3
	1.2	2.9	1.7	2.9
	0	1.2	1.2	4.6
177.5	12.8	15.5	2.7	9.6
	1.5	12.8	11.3	20.0
	0	1.5	1.5	4.4
148	15.8	17.8	2	6.4
	1.4	15.8	14.4	21.7
	0	1.4	1.4	4.8
130	18.3	20	1.7	3.7
	1.1	18.3	17.2	25.4
	0	1.1	1.1	2.9
116	12.5	23.8	11.3	14.7
	1	12.5	11.5	18.0
	0	1	1	3.1
99	1.5	22.9	21.4	31.6
	0	1.5	1.5	4.2
87	15.8	17.8	1.6	5.7
	1.4	15.8	14.4	20.2
	0	1.4	1.4	4.6
74	15.6	17.4	1.8	7.9
	1.4	15.6	14.2	20.0
	0	1.4	1.4	4.4
60	18.4	20	1.6	5.5
	1.4	18.4	17	24.6

	0	1.4	1.4	5.3
47	21.9	23	1.1	3.9
	12.9	21.9	9	10.3
	1.4	12.9	11.5	17.8
	0	1.4	1.4	5.3
23	1.4	23	21.6	36.2
	0	1.4	1.4	5.5

(b)

Start Distance From the South Edge [cm]	End Distance From the South Edge [cm]	Trench Depth [cm]	Trench SWE [mm]
138	128.5	19.3	33.8
128.5	117.5	22.4	32.9
117.5	109.5	23.5	39.0
109.5	95	22.8	33.8
95	84.5	16.9	32.3
84.5	71.5	16.2	31.1
71.5	57	19.4	34.4
57	45	21.9	36.5
45	31.5	23.1	45.9
31.5	23	21.6	58.4
23	15	21.3	52.0



Figure S1. Preferential snowmelt snow depth image shown in Figure 4a and presented as data in Figures 4b–e. Image was taken by the author with an Olympus Tough TG-3 (Tokyo, Japan) on 18 April 2020 in Fort Collins Colorado USA.

Table S3. NRCS snowcourse and additional snow depth measurements collected adjacent to the individual Federal Sampler measurements along the Cameron Pass snowcourse on 1 April 2009.

Snowcourse Point	NRCS Depth [in]	Additional Snow Depth Along Snowcourse [cm]				
		(−5m)	(−2.5m)	center	(+2.5m)	(+5m)
1	76.5	211	205	195	180	177
2	82	186	187	183	196	205
3	75.5	206	203	210	215	224
4	82	183	184	182	179	180
5	82	234	233	204	199	166
6	85	192	216	235	254	269
7	105.5	230	232	224	201	174
8	89	208	227	235	176	245
9	75	229	210	221	221	220
10	81.5	229	219	200	207	180

Table S4. Directional snow depth measurements taken around the Joe Wright SNOTEL snow pillow (station number 05J37S/551) on (a) 2 June 2011 and (b) 4 June 2011.

(a) 2 June 2011 Measurements			
Direction	3m Away	2m Away	1m Away
N	202	219	231
NE	199	219	240
E	232	238	244
SE	204	220	229
S	234	236	231
SW	227	240	232
W	241	235	230
NW	213	213	231
SNOTEL sonic depth sensor [in]			90.5
(b) 4 June 2011 Measurements			
N	230	209	196
NE	215	207	191
E	235	226	223
SE	229	207	190
S	215	214	223
SW	218	229	215
W	217	225	228
NW	218	202	202
SNOTEL sonic depth sensor [in]			86