Supplemental information for Characteristics and fate of isolated permafrost patches in coastal Labrador, Canada

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Table S1. Parameters for ground temperature modelling with NEST at Cartwright and Blanc Sablon.

Parameter	Cartwright (WJD02)	Blanc Sablon (WJD03)
Latitude	53.7°N	51.45°N
Peat thickness	1.20 m	1.75 m
Degree of decomposition	Increased from 0.1 to 0.4	Increased from 0.1 to 0.4
Organic matter content	100% at the bottom of peat to 1% near the bedrock	100% at the bottom of peat to 1% near the bedrock
Degree of decomposition	Increased from 1.0 to 2.5 with depth	Increased from 1.0 to 2.5 with depth
Sub-peat stratigraphy	Silt 1.2-3.2 m	Silt 1.75-3.2 m
	Sand 3.2-10 m	Sand 3.2-10 m
Depth to bedrock	10 m	10 m
Fraction of quartz in mineral soil	0.1	0.1
Thermal conductivity of rock	0.015 W/cm·K	0.015 W/cm·K
Geothermal heat flux	1.02 W/m^2	0.54 W/m^2
Lateral surface water outflow	Water table reduces 10% when above ground surface	Water table reduces 10% when above ground surface
Lateral surface water inflow	0	0
Lateral ground water inflow/outflow	0	0
Vegetation type	Shrub	Shrub
Leaf area index (peak growing season)	0.5	0.2
Snow wind-scouring factor (fraction of snowfall blown from the site)	0.83	0.85
Surface albedo	0.1	0.1

Table S2. Characteristics of peatland permafrost mounds surveyed using ERT.

ERT Profile	Mound ID	Frost table depth (cm)	Maximum mound height (m)	Inferred permafrost depth (m)	Calculated permafrost thickness (m)	Excess ice fraction[a]
1	P1	60	0.9	3.4	2.8	0.33
1	P2	57	1.2	4.5	3.9	0.31
1 & 2	P3	60	1.4	6.5	5.9	0.23
1	P4	62	0.4	4.3	3.7	0.12
3	P5	58	0.4	2.5	1.9	0.22
3	P7	54	1.1	4.5	4.0	0.28
3	P8	41	0.5	1.2	0.8	0.58
4	P9	61	0.5	3.4	2.8	0.16
4	P10	65	0.8	2.3	1.7	0.50
4	P11	63	0.7	5.2	4.6	0.15
5	P12	47	0.6	2.3	1.9	0.34
5	P13	49	0.4	2.7	2.2	0.17
5	P14	45	1.3	5.8	5.4	0.29
5	P15	39	0.3	3.0	2.7	0.11
5	P16	46	0.3	2.9	2.5	0.10
5	P17	51	0.5	5.1	4.6	0.11
6	P18	44	0.8	4.3	3.9	0.21
7	P19	37	0.6	3.5	3.1	0.19
7	P20	40	0.8	5.0	4.6	0.18
7	P21	40	1.0	5.6	5.2	0.18
7	P22	37	0.7	5.4	5.0	0.13
8	P23	40	0.7	5.2	4.8	0.13
9	P24	42	0.3	2.8	2.4	0.13
9	P25	46	0.6	4.1	3.7	0.17
10	P26	41	0.5	4.1	3.7	0.13
11	P27	40	0.3	3.3	2.9	0.10

[a] Calculated using **EQ 1**.
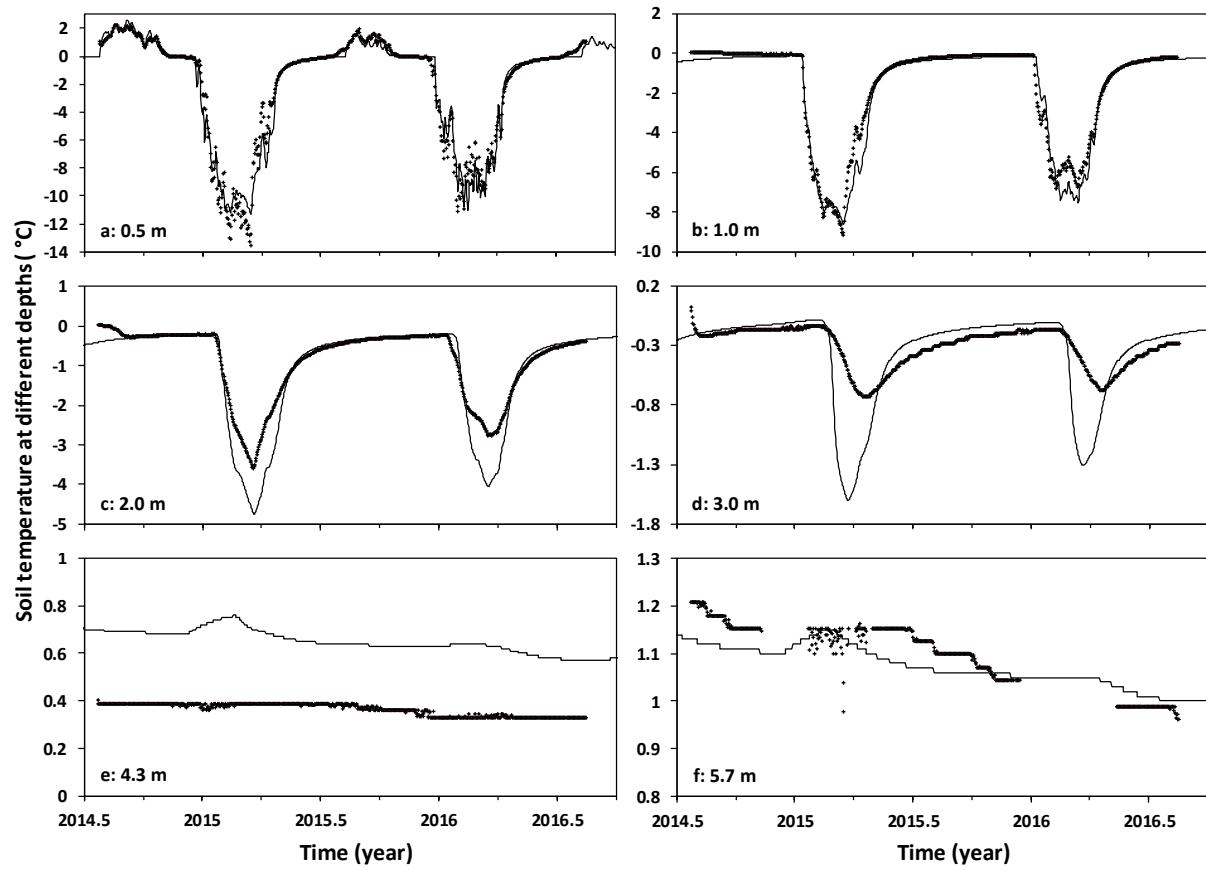
Figure S1. Comparison of modelled and measured temperatures at different depths at the Cartwright (WJD02) borehole, 2014-2016. The thin lines are modelled and the crosses are measured values. The depths are shown in the panels. At 0.5 m, n=755; r^2=0.94; mean difference: -0.1°C; mean absolute difference: 0.75°C. Note: temperature scales differ among the panels.
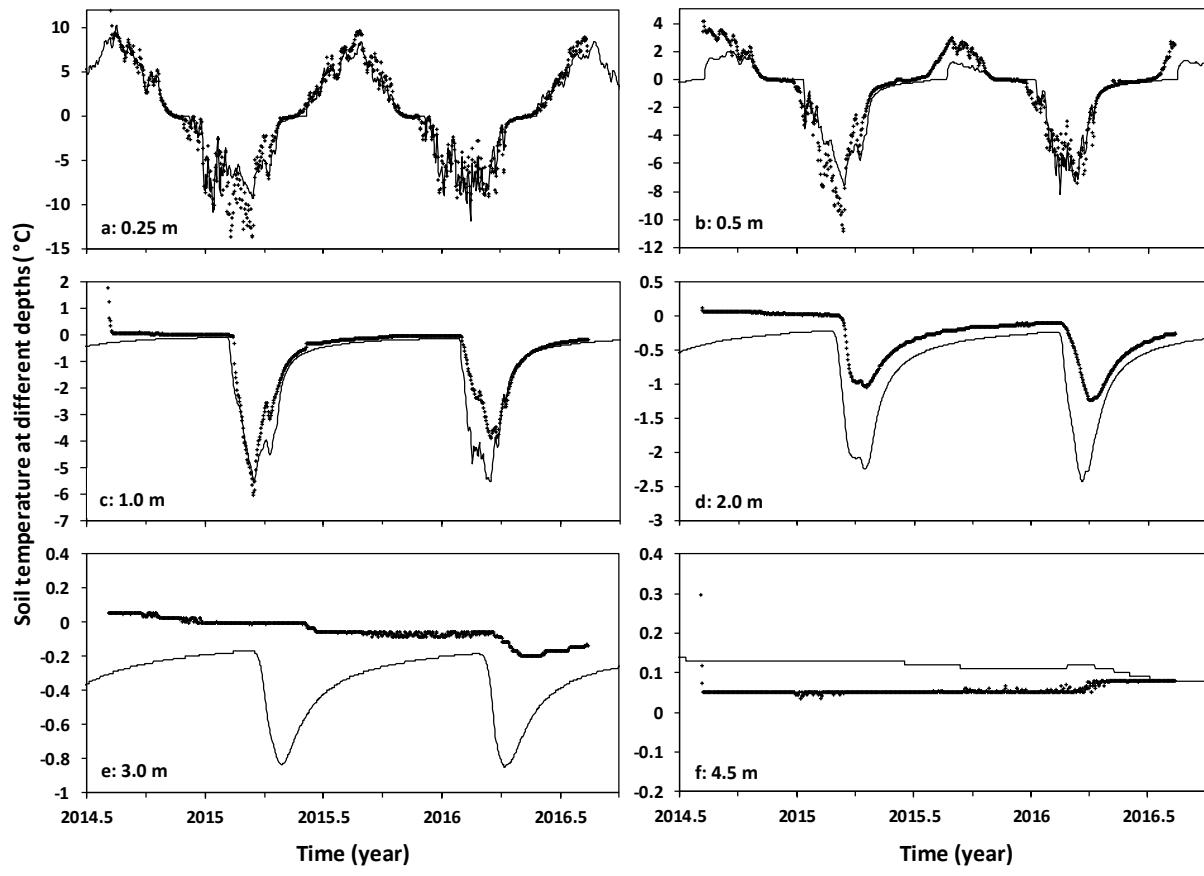
Figure S2. Comparison of modelled and measured temperatures at different depths at the Blanc Sablon (WJD03) borehole, 2014-2016. The thin lines are modelled and the crosses are measured values. The depths are shown in the panels. At 0.25 m, n=621; r^2=0.94; mean difference: -0.14°C; mean absolute difference: 0.93°C. Note: temperature scales differ among the panels.
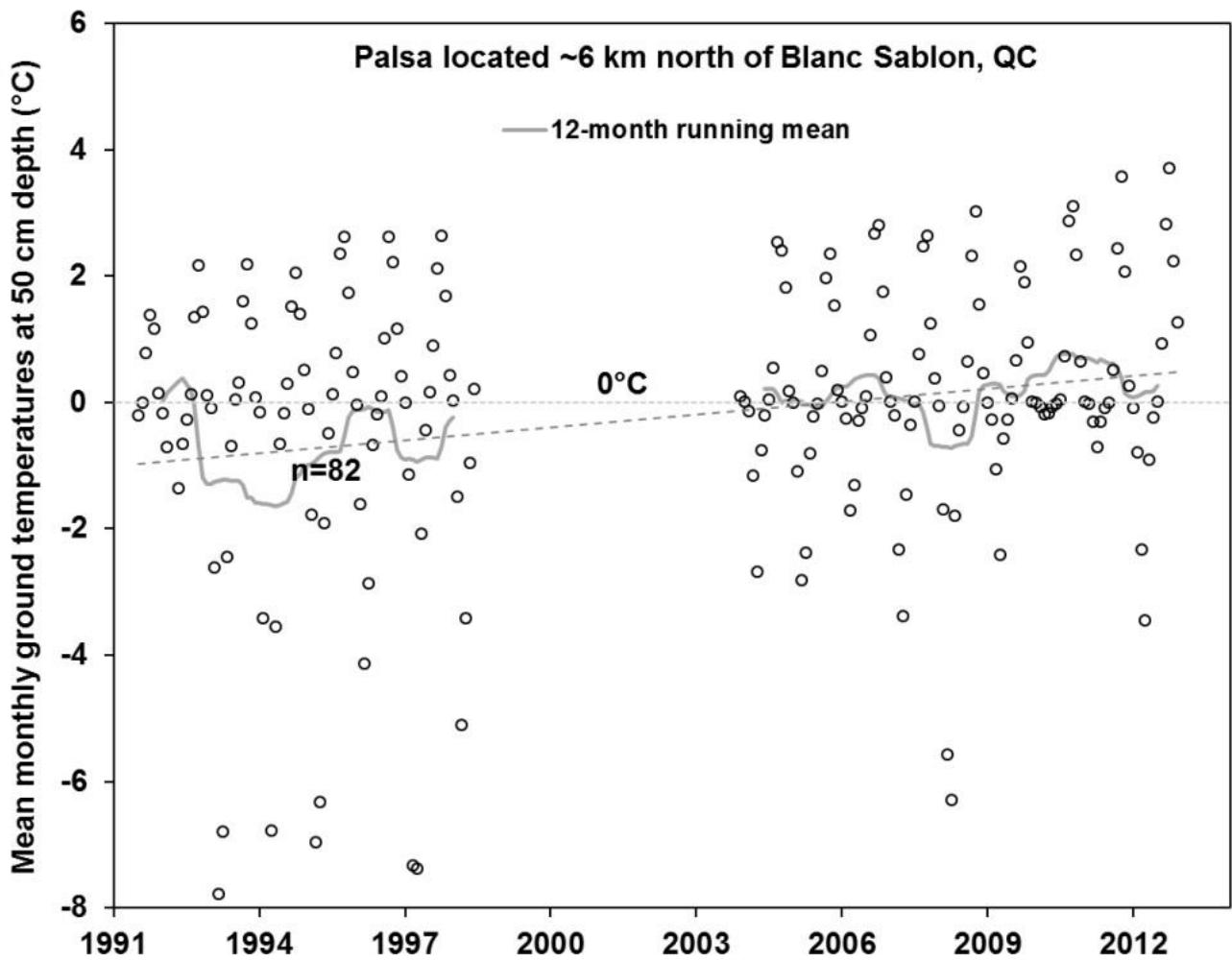
Figure S3. Monthly ground temperatures at 50 cm depth (1991-2012) in a palsa field near Blanc Sablon (from Allard et al. 2014).
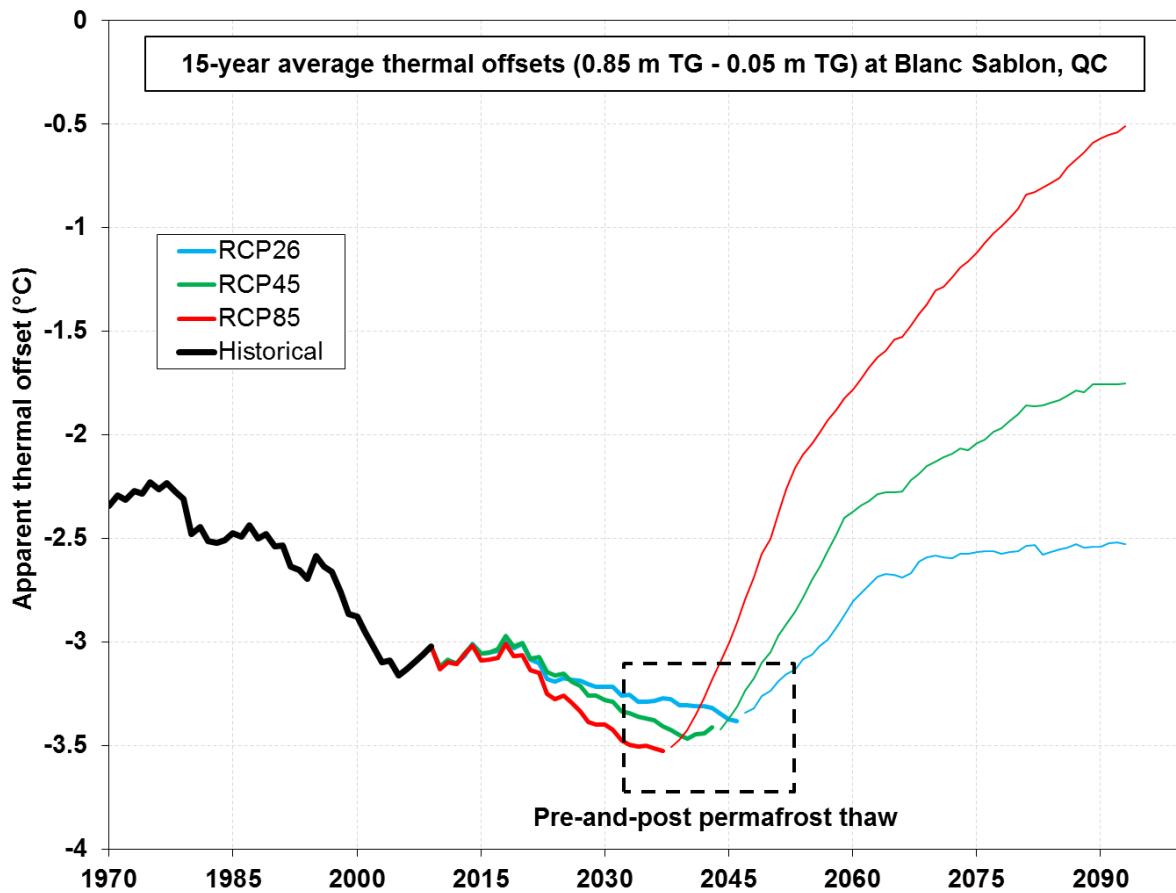
Figure S4. Centred 15-year average apparent thermal offsets for historical and future climate scenarios at Blanc Sablon, QC. Thicker lines denote the presence of permafrost and thinner lines denote the absence of permafrost.