Figure S1. Sensitivity of PISR calculation to the DEM resolution and coverage tested on the site of Mannen. **a.** Difference in calculated PISR between 1 m and 10 m resolution DEMs. **b.** Difference in calculated PISR for same resolution DEMs with viewshed effect (view angle used 8) and without this effect (calculated on a wider area than the one displayed and on the displayed area only).

Figure S2. Comparison of the permafrost distribution map presented in this study and the permafrost lower elevation limit simulated for four sites by Myhra et al. (2017) which used idealized topography and local weather records to simulate the permafrost evolution at these sites. a. Ruklenuten (1380 m a.s.l.). b. Blåhornet (1670 m a.s.l.). c. Ramnefjellet (1770 m a.s.l.). d. Revdalsfjellet (1145 m a.s.l.). The distribution of permafrost for the surrounding slopes is not displayed.

Figure S3. Comparison of the CryoWall map with maps built on BTS measurements by Etzelmuller. a. Jotunheimen. b. Dovrefjell. c. Sølen

Figure S4. Critical slopes and permafrost in steep slopes in Norway. The critical slope database is extracted from http://geo.ngu.no/kart/ustabilefjellparti_mobil/ (Oppikofer et al., 2015). a. Northern Norway. b. Kåfjord area. c. Southern Norway. d. Mannen area.

Figure S5. Distribution of inventoried ice-cored moraines and active rock glaciers compared to the CryoWall map and the Nordic permafrost map from Gisnås et al., (2017) at 1 km resolution.

Table

ID	MARST	PISR	MAAT
Fin_h	-1.6	30	-2.1
Fla_S_17	2.92	220	-0.06
Fla_S_18	3.48	220	-0.06
Fla_N_17	0.06	10	-0.06
Sta_N_18	0.23	10	-0.06
Sta_W_17	1.49	163	-0.06
Sta_W_18	2.00	163	-0.06
Nar_W_17	-1.1	185	-2.22
Nar_W_18	-1.12	185	-1.78
Nar_N_17	-0.8	110	-2.31
Nar_N_18	-0.86	110	-1.86
Nar_E_17	-0.07	235	-2.33
Nar_E_18	0.08	235	-1.88
Man_E_16	2.88	190	0.11
Man_E_17	2.75	190	0.27
Man_E_18	2.5	190	-0.41
Man_N_16	1.63	15	0.11
Man_N_17	1.36	15	0.27
Man_N_18	0.9	15	-0.41
Anka_16	1.52	110	-0.88
Anka_17	0.55	110	-1.47
Anka_18	0.47	110	-1.07
Gama_S_16	0.17	290	-2.16
Gama_S_17	0.15	290	-2.77
Gama_S_18	-0.002	290	-2.12
Gama_NW_16	-1.21	115	-1.98
Gama_NW_17	-1.55	115	-2.58
Gama_NW_18	-2.17	115	-1.97
Gama_N_16	-0.91	120	-2.27
Gama_N_17	-1.28	120	-2.89
Gama_N_18	-1.65	120	-2.21
Adj_Sl_16	2.11	270	-0.69
Adj_Sl_17	1.77	270	-1.26
Adj_Sl_18	1.64	270	-0.91
Adj_Sh_16	0.19	295	-2.28
Adj_Sh_17	0.3	295	-2.9
Adj_Sh_18	-0.06	295	-2.22
Adj_N_16	-1.38	115	-2.21
Adj_N_17	-1.77	115	-2.82
Adj_N_18	-2.1	115	-2.16

ID	MARST	PISR	MAAT
Alt_N_17	2.17	85	-0.03
Alt_N_18	1.42	85	-0.61
Alt_S_17	3.25	150	0.42
Alt_S_18	2.82	150	-0.16
Juv_2_11	-3.25	208	-5.4
Juv_2_12	-2.07	208	-4.57
Juv_2_13	-3.23	208	-5.68
Juv_2_14	-1.06	208	-3.6
Juv_2_15	-2.09	208	-4.66
Juv_2_16	-1.2	208	-3.96
Juv_2_17	-1.7	208	-4.31
Juv_3_11	-3.22	290	-5.47
Juv_3_12	-2.43	290	-4.64
Juv_3_13	-3	290	-5.76
Juv_3_14	-0.87	290	-3.67
Juv_3_15	-2.5	290	-4.73
Juv_3_16	-1.51	290	-4.043
Juv_3_17	-1.87	290	-4.379
Juv_4_11	-4.66	80	-5.32
Juv_4_12	-3.54	80	-4.48
Juv_4_13	-4.89	80	-5.6
Juv_4_14	-2.63	80	-3.51
Juv_4_15	-3.59	80	-4.58
Juv_4_16	-2.92	80	-3.89
Juv_4_17	-3.26	80	-4.22
Juv_5_11	-2.9	220	-5.79
Juv_5_12	-1.73	220	-4.95
Juv_5_13	-3.03	220	-6.07
Juv_5_14	-0.47	220	-3.98
Juv_5_15	-1.77	220	-5.05
Juv_5_16	-0.86	220	-4.34
Juv_5_17	-1.27	220	-4.69
Loen_S_16	1.09	290	-2.4
Loen_S_17	1.42	290	-2.37
Loen_S_18	1.63	290	-1.46
Loen_W_16	1.37	270	-2.4
Loen_W_17	1.67	270	-2.37
Loen_W_18	2.18	270	-1.46
Loen_N_16	-1.88	80	-2.4
Loen_N_17	-1.77	80	-2.37
Loen_N_18	-1.77	80	-1.46

Table S1. MARST, PISR and MAAT values used to fit the multiple linear regression model.