Supplement to: Brief communication: Improving botanical monitoring in proglacial areas with high-resolution UAV data

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Figure S1 to S3
Table S1

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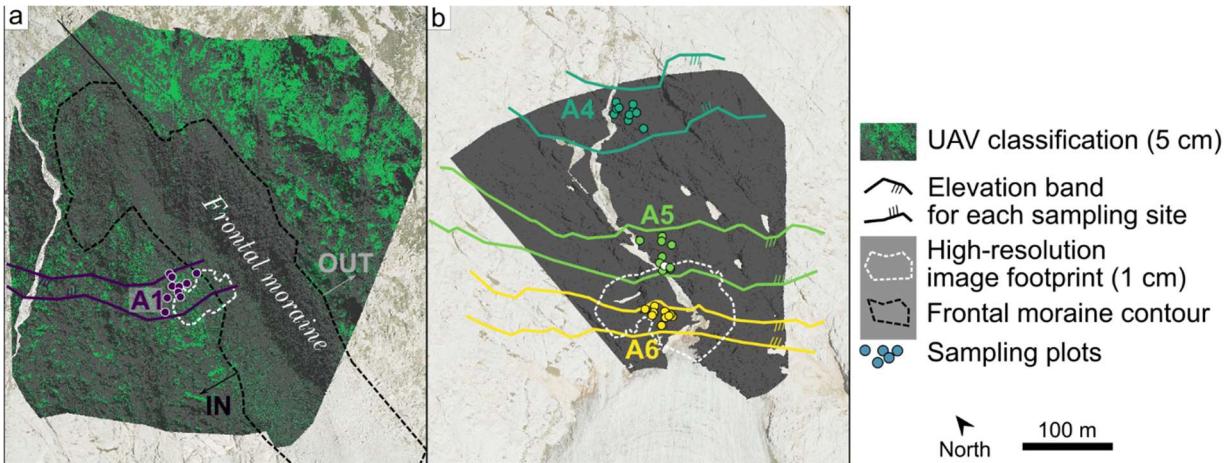
Figure S1. Land cover classification derived from 5 cm resolution UAV images in the lower (a) and upper (b) part of the deglaciated area. The in situ sampling points are the coloured circles and their corresponding elevation band is marked by lines of the same colour. These elevation bands are used in Fig. 6 to evaluate the

15   in situ sampling strategy. The footprint of the 1 cm resolution images is marked by dashed white lines. The frontal moraine associated with the glacier extent during the little ice age (~1850) is marked with dashed black lines. Moraine contour served to define areas within and out of the moraine used in Fig. 3.

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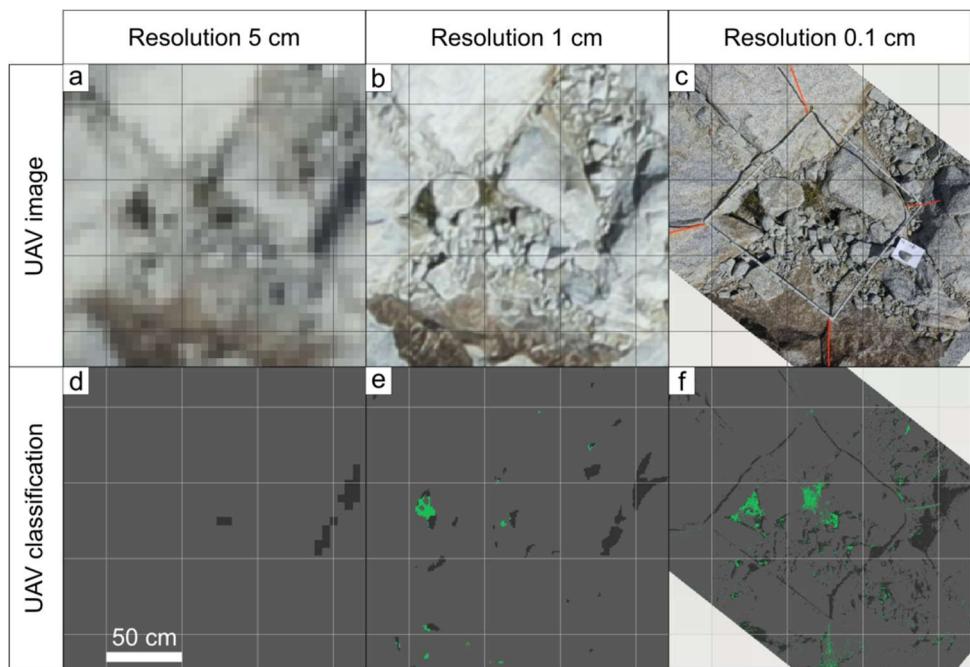


Figure S2. UAV images (a, b, c) and derived classification (d, e, f) of one of the A5 plots at the three available resolutions from left to right: 5 cm, 1 cm and 0.1 cm. Vegetation appears in green in the classification, while rock is in grey and black.

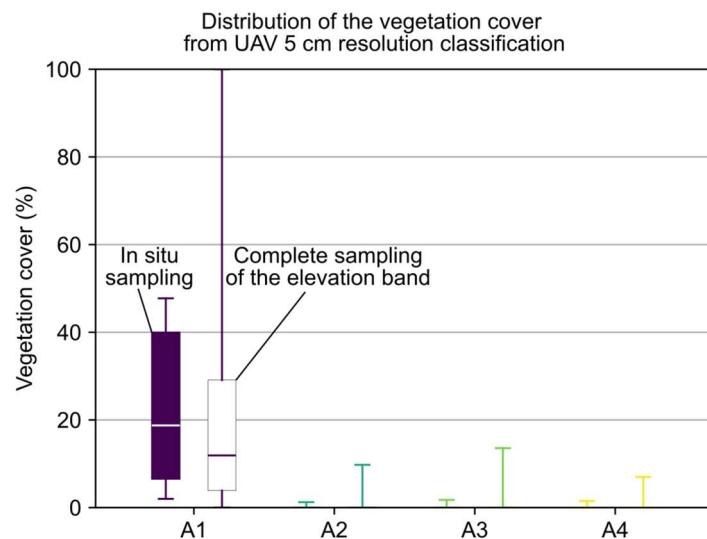
Distribution of the vegetation cover
from UAV 5 cm resolution classification

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Figure S3. Distribution of the vegetation cover in UAV 5 cm classification. The vegetation cover was either sampled in the UAV map at the location of the in situ observations (n=10, coloured boxplot) or was extracted for all the 1 m square found in the corresponding elevation band shown in Fig. S1 (white boxplot).

Area	Resolution (cm)	N	Residual (UAV minus in situ)							UAV				In situ			
			min	max	mean	median	std	RMSE	Pearson coef.	min	max	mean	median	min	max	mean	median
A1	5	9	-44.0	0.5	-23.8	-27.5	13.2	27.2	0.6	2.0	47.8	21.3	18.8	31.0	67.0	45.1	40.0
	1	2	-18.2	-9.9	-14.0	-14.0	4.2	14.6	1.0	21.2	21.8	21.5	21.5	31.0	40.0	35.5	35.5
	0.1	9	-10.7	10.8	2.9	5.4	6.8	7.4	0.9	29.3	74.9	48.0	45.5	31.0	67.0	45.1	40.0
A4-6	5	29	-25.0	-0.2	-10.3	-9.0	6.5	12.2	-0.1	0.0	1.8	0.2	0.0	2.0	25.0	10.4	9.0
	1	10	-20.6	-1.5	-8.3	-6.9	5.6	10.0	0.5	0.1	3.9	1.0	0.6	2.0	22.0	9.3	7.0
	0.1	5	-7.8	0.3	-4.3	-5.2	2.7	5.1	-0.3	1.2	3.4	2.1	1.8	2.0	9.0	6.4	7.0

Table S1. Statistics of the vegetation cover measured by UAV, in situ and of the residuals (UAV minus in situ).