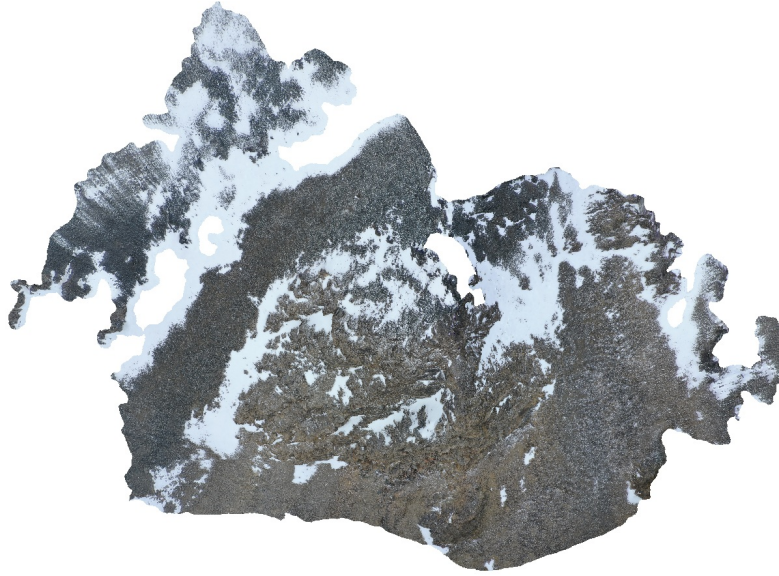


Malmberget

Dense Cloud Confidence: 20
Filter Component Size: 99%

22 February 2022



Survey Data

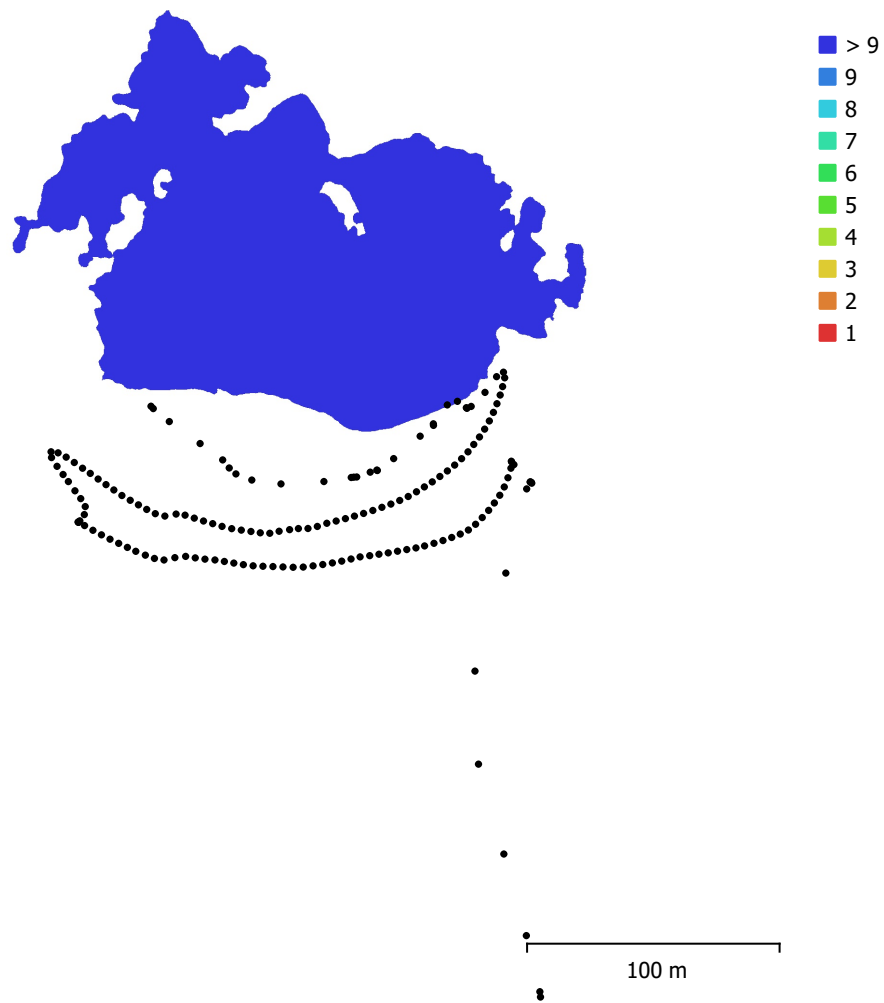


Fig. 1. Camera locations and image overlap.

Number of images:	163	Camera stations:	163
Flying altitude:	152 m	Tie points:	24,805
Ground resolution:	2.42 cm/pix	Projections:	293,666
Coverage area:	0.0201 km ²	Reprojection error:	0.593 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 μ m	No

Table 1. Cameras.

Camera Calibration

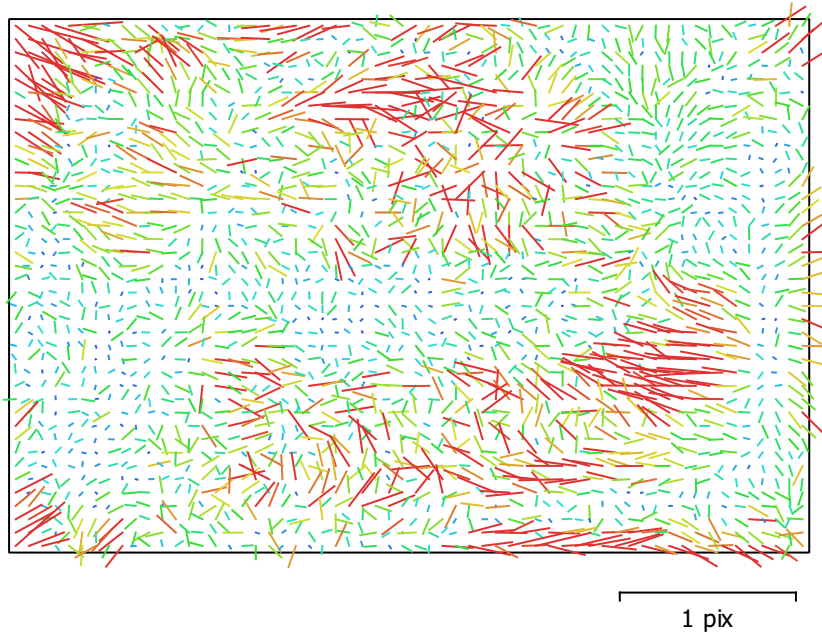


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

163 images

Type	Resolution	Focal Length	Pixel Size
Frame	5472 x 3648	10.26 mm	2.41 x 2.41 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	P1	P2
F	4353.32	0.1	1.00	0.03	0.09	-0.57	0.00	-0.07	0.15	-0.14	-0.02	-0.05
Cx	-8.54265	0.14		1.00	-0.12	0.07	0.37	-0.04	0.01	0.01	0.88	-0.11
Cy	-49.5715	0.15			1.00	-0.69	0.14	0.04	-0.04	0.03	-0.19	0.66
B1	-4.60695	0.094				1.00	-0.09	-0.12	0.07	-0.04	0.18	-0.28
B2	-10.1318	0.075					1.00	0.03	-0.02	0.01	0.13	0.04
K1	0.0033936	6.9e-05						1.00	-0.94	0.87	-0.04	-0.09
K2	0.048191	0.00023							1.00	-0.98	0.02	0.04
K3	-0.0522545	0.00026								1.00	-0.01	-0.03
P1	-0.00132411	1.1e-05									1.00	-0.11
P2	-0.00315197	7.4e-06										1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

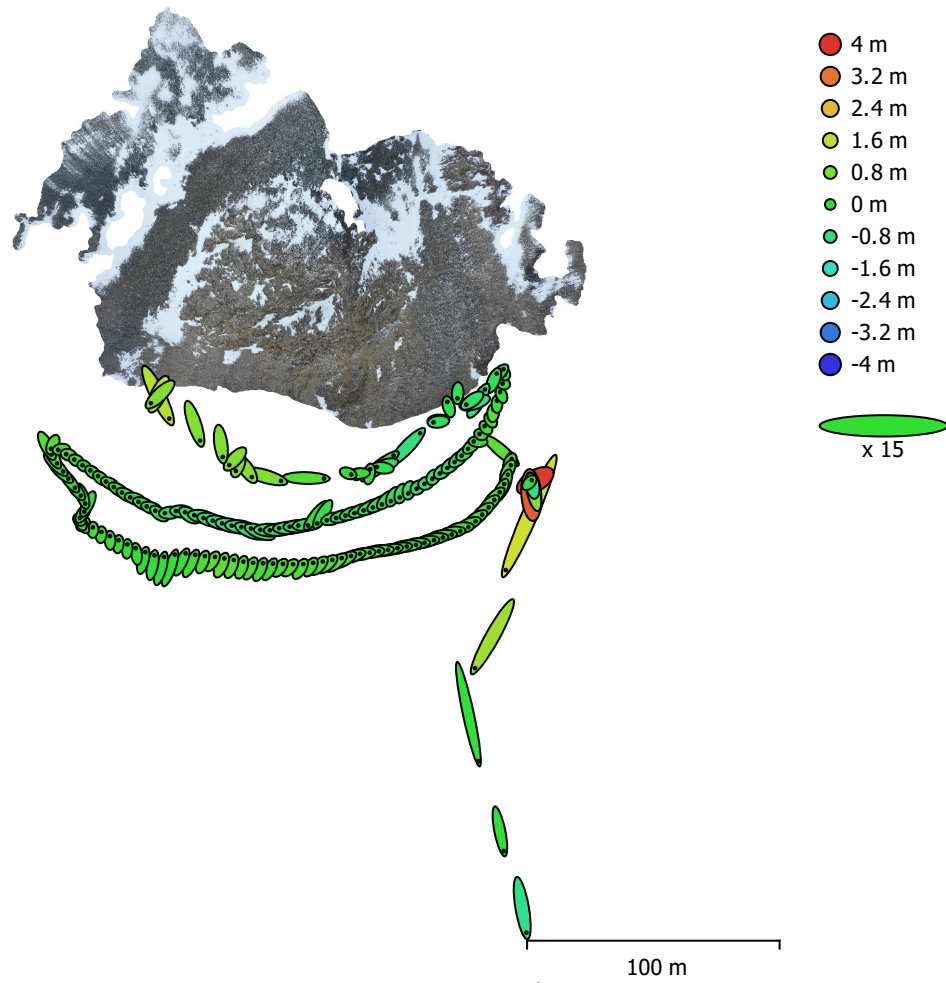


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
32.9239	48.8177	65.6456	58.8825	88.1844

Table 3. Average camera location error.

X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

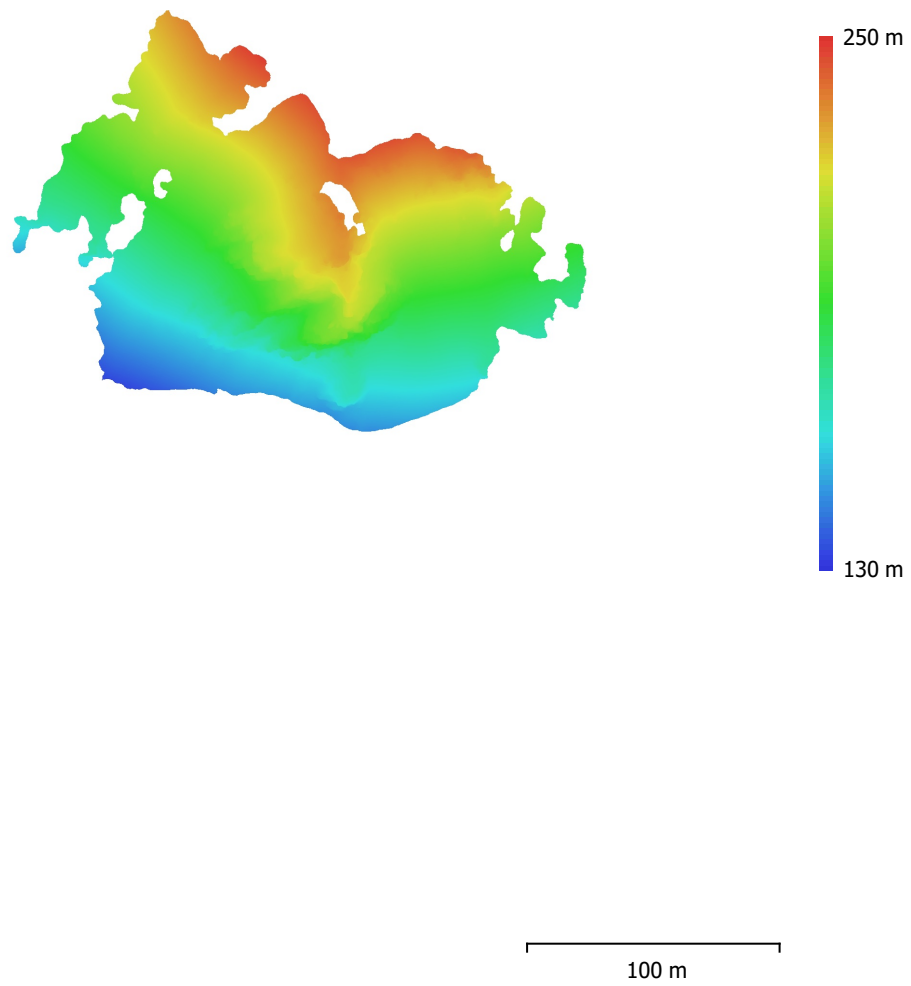


Fig. 4. Reconstructed digital elevation model.

Resolution: 4.84 cm/pix
Point density: 426 points/m²

Processing Parameters

General

Cameras	163
Aligned cameras	163
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	24,805 of 41,811
RMS reprojection error	0.298289 (0.593037 pix)
Max reprojection error	1.23906 (17.4516 pix)
Mean key point size	1.88688 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	21.7614

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	2 minutes 18 seconds
Matching memory usage	496.78 MB
Alignment time	1 minutes 26 seconds
Alignment memory usage	109.96 MB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	Yes
Optimization time	3 seconds
Software version	1.7.3.12473
File size	14.59 MB

Depth Maps

Count	163
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Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	15 minutes 34 seconds
Memory usage	8.97 GB
Software version	1.7.3.12473
File size	1.15 GB

Dense Point Cloud

Points	56,767,979
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	15 minutes 34 seconds

Memory usage	8.97 GB
Dense cloud generation parameters	
Processing time	1 hours 15 minutes
Memory usage	13.11 GB
Software version	1.7.3.12473
File size	804.80 MB
Model	
Faces	2,282,952
Vertices	1,145,733
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	15 minutes 34 seconds
Memory usage	8.97 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	6 minutes 19 seconds
Memory usage	6.51 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	3 minutes 17 seconds
UV mapping memory usage	2.95 GB
Blending time	1 minutes 57 seconds
Blending memory usage	4.47 GB
Software version	1.7.3.12473
File size	319.03 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	15 minutes 34 seconds
Memory usage	8.97 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	46 minutes 49 seconds
Memory usage	3.59 GB
Software version	1.7.2.12040
File size	475.98 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.2 build 12040

OS	Windows 64 bit
RAM	127.78 GB
CPU	Intel(R) Core(TM) i9-10900 CPU @ 2.80GHz
GPU(s)	NVIDIA GeForce RTX 2080 SUPER