

Larsbreen

Processing Report

27 June 2023



Survey Data

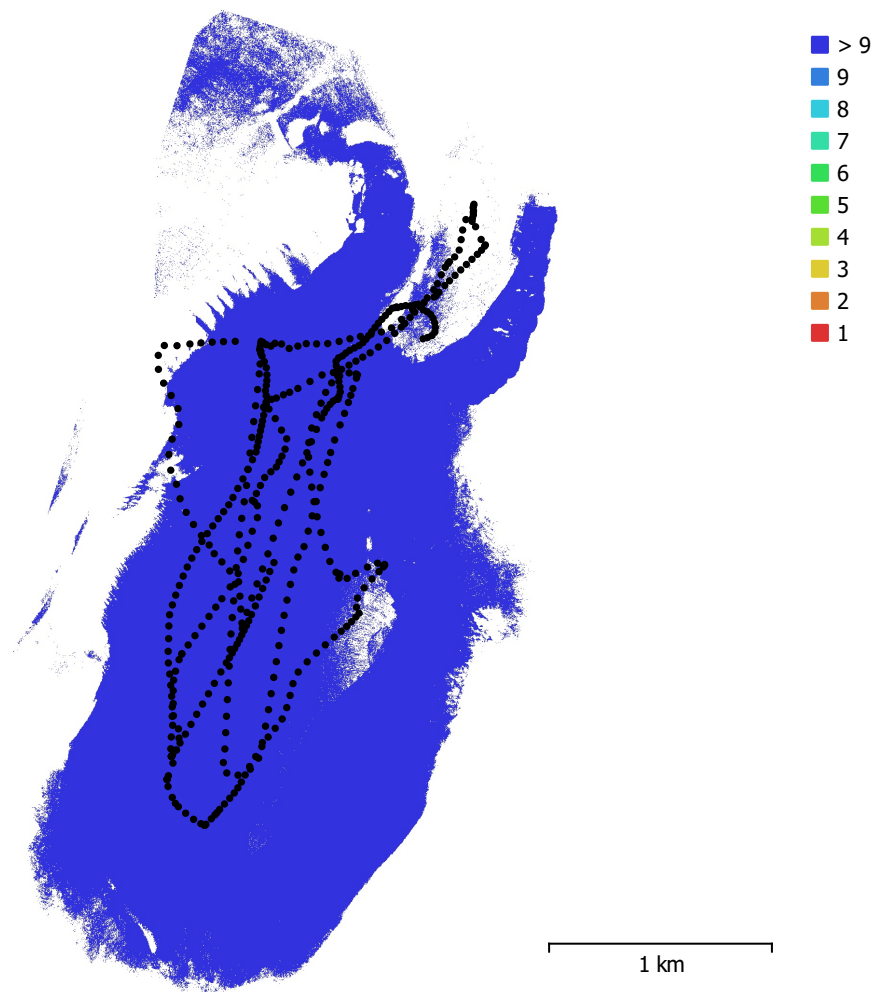


Fig. 1. Camera locations and image overlap.

Number of images:	477	Camera stations:	440
Flying altitude:	280 m	Tie points:	621,844
Ground resolution:	10.9 cm/pix	Projections:	1,809,568
Coverage area:	4.99 km ²	Reprojection error:	0.213 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
L2D-20c (12.29mm)	5280 x 2970	12.29 mm	3.66 x 3.66 μ m	No

Table 1. Cameras.

Camera Calibration

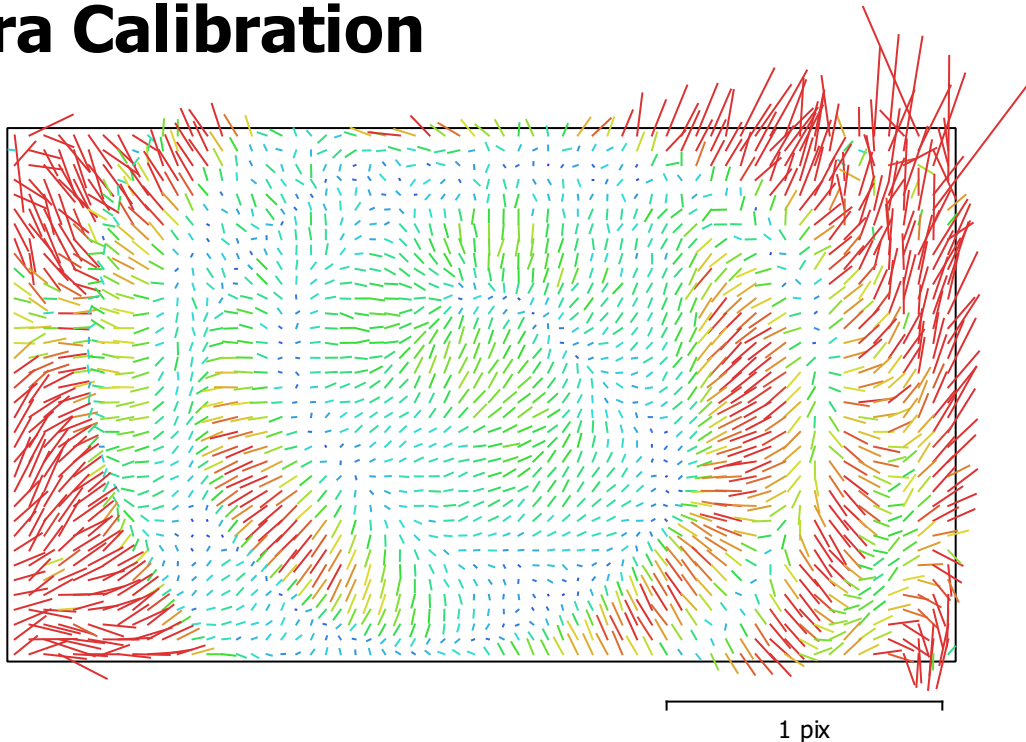


Fig. 2. Image residuals for L2D-20c (12.29mm).

L2D-20c (12.29mm)

477 images

Type	Resolution	Focal Length	Pixel Size
Frame	5280 x 2970	12.29 mm	3.66 x 3.66 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	3706.42	0.044	1.00	0.05	-0.82	0.08	-0.01	0.02	0.04	-0.28
Cx	-41.8828	0.039		1.00	-0.08	0.00	-0.01	0.03	0.90	-0.05
Cy	7.41851	0.062			1.00	-0.14	0.06	-0.06	-0.03	0.49
K1	0.0249647	1.7e-05				1.00	-0.93	0.86	0.02	-0.28
K2	-0.081222	7e-05					1.00	-0.98	-0.02	0.10
K3	0.107493	8.9e-05						1.00	0.02	-0.07
P1	-0.000988371	3.2e-06							1.00	-0.05
P2	-0.000309382	2.3e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

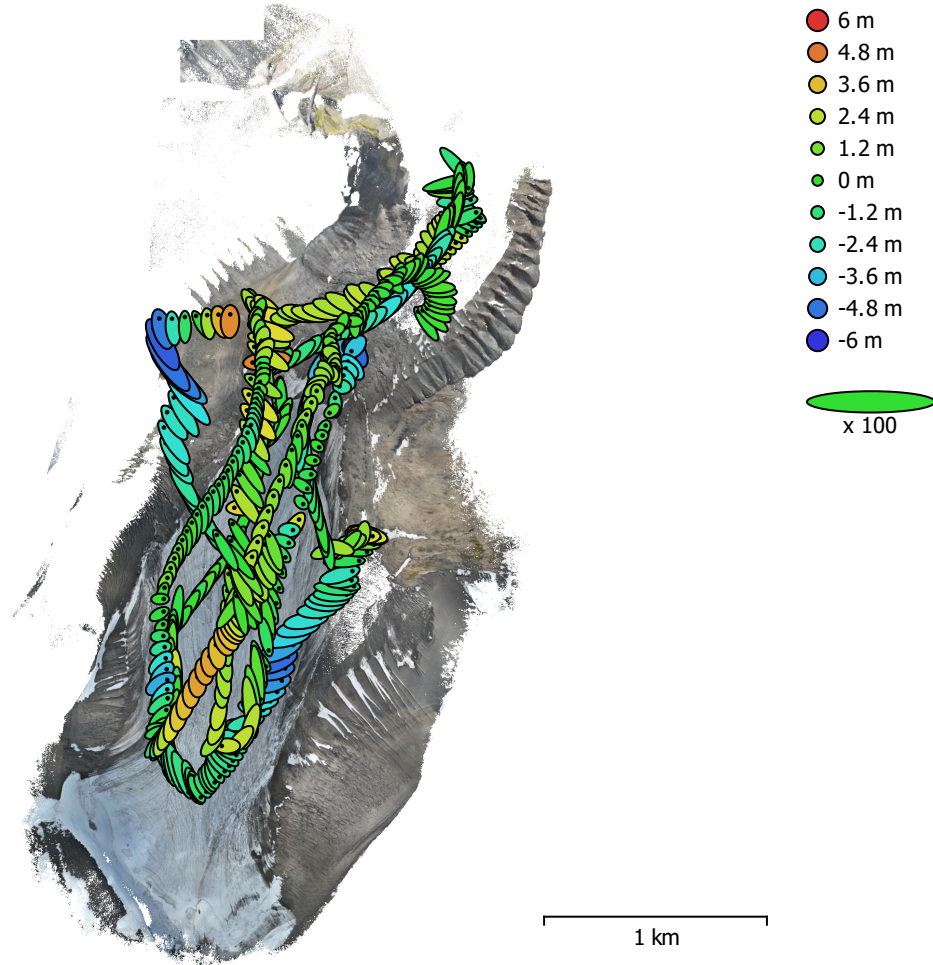


Fig. 3. Camera locations and error estimates.

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 (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
0.628682	0.896266	1.8168	1.09478	2.12116

Table 3. Average camera location error.
 X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

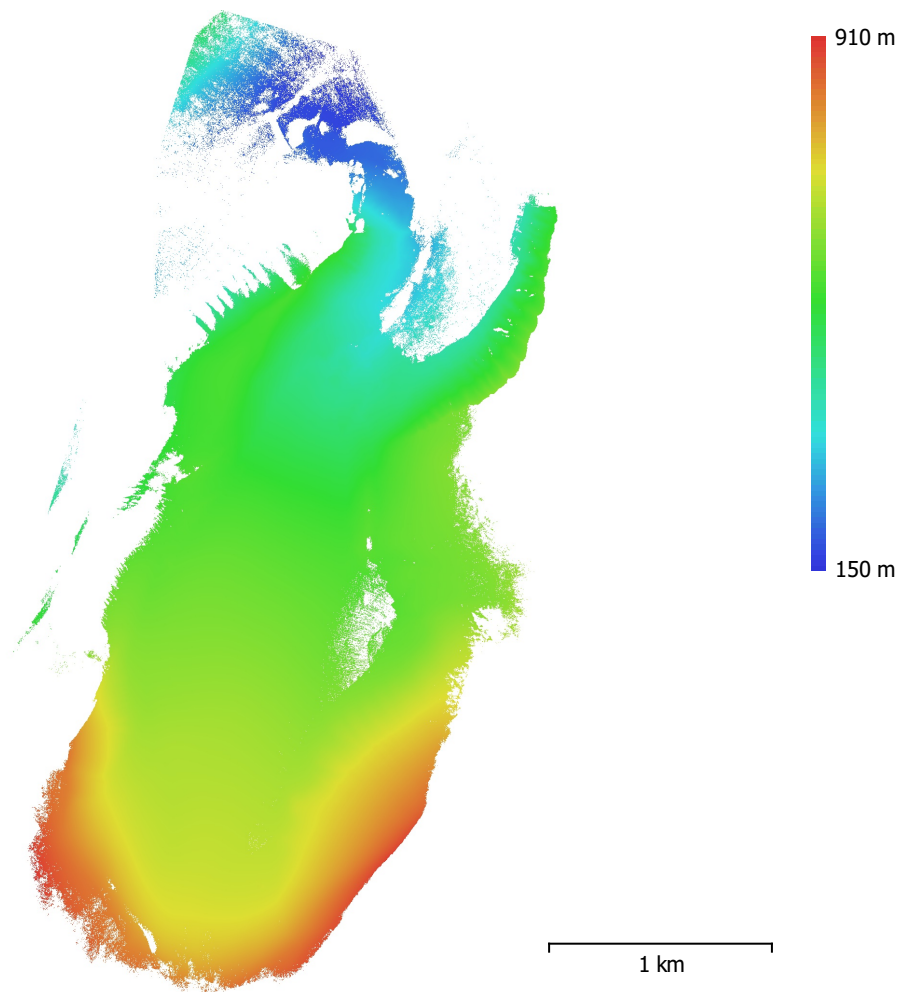


Fig. 4. Reconstructed digital elevation model.

Resolution: 43.5 cm/pix
Point density: 5.27 points/m²

Processing Parameters

General

Cameras	477
Aligned cameras	440
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	621,844 of 3,376,410
RMS reprojection error	0.127032 (0.21328 pix)
Max reprojection error	0.788548 (2.24744 pix)
Mean key point size	1.61229 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.3565

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	Source
Key point limit	60,000
Tie point limit	0
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	15 minutes 33 seconds
Matching memory usage	3.29 GB
Alignment time	28 minutes 31 seconds
Alignment memory usage	982.46 MB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	7 seconds
Date created	2022:07:07 09:30:41
Software version	1.7.2.12040
File size	196.88 MB

Depth Maps

Count	438
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	17 minutes 59 seconds
Memory usage	1.19 GB
Date created	2023:06:27 12:49:15
Software version	2.0.2.16334
File size	660.90 MB

Point Cloud

Points	26,244,731
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Point attributes

Color	3 bands, uint8
Normal	
Confidence	6 - 68

Point classes	
Created (never classified)	26,244,731
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	17 minutes 59 seconds
Memory usage	1.19 GB
Point cloud generation parameters	
Processing time	27 minutes 26 seconds
Memory usage	7.47 GB
Date created	2023:06:27 12:56:18
Software version	2.0.2.16334
File size	671.94 MB
Model	
Faces	1,270,330
Vertices	635,691
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	17 minutes 59 seconds
Memory usage	1.19 GB
Point cloud generation parameters	
Processing time	27 minutes 26 seconds
Memory usage	7.47 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Point cloud
Interpolation	Disabled
Strict volumetric masks	No
Processing time	11 minutes 49 seconds
Memory usage	6.49 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 26 seconds
UV mapping memory usage	2.83 GB
Blending time	5 minutes 27 seconds
Blending memory usage	4.77 GB
Blending GPU memory usage	4.28 GB
Date created	2023:06:27 13:12:45
Software version	2.0.2.16334
File size	245.85 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	17 minutes 59 seconds

Memory usage	1.19 GB
Reconstruction parameters	
Source data	Point cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	1 hours 14 minutes
Memory usage	3.76 GB
Date created	2023:06:27 14:20:18
Software version	2.0.2.16334
File size	499.39 MB
DEM	
Size	5,576 x 10,161
Coordinate system	WGS 84 / UTM zone 33N (EPSG::32633)
Reconstruction parameters	
Source data	Point cloud
Interpolation	Disabled
Processing time	38 seconds
Memory usage	280.99 MB
Date created	2023:06:27 14:21:58
Software version	2.0.2.16334
File size	102.27 MB
Orthomosaic	
Size	22,740 x 40,691
Coordinate system	WGS 84 (EPSG::4326)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	Mesh
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	29 minutes 46 seconds
Memory usage	2.28 GB
Date created	2023:06:27 14:26:18
Software version	2.0.2.16334
File size	12.85 GB
System	
Software name	Agisoft Metashape Professional
Software version	2.0.2 build 16334
OS	Windows 64 bit
RAM	127.71 GB
CPU	Intel(R) Core(TM) i9-10900K CPU @ 3.70GHz
GPU(s)	Quadro RTX 5000