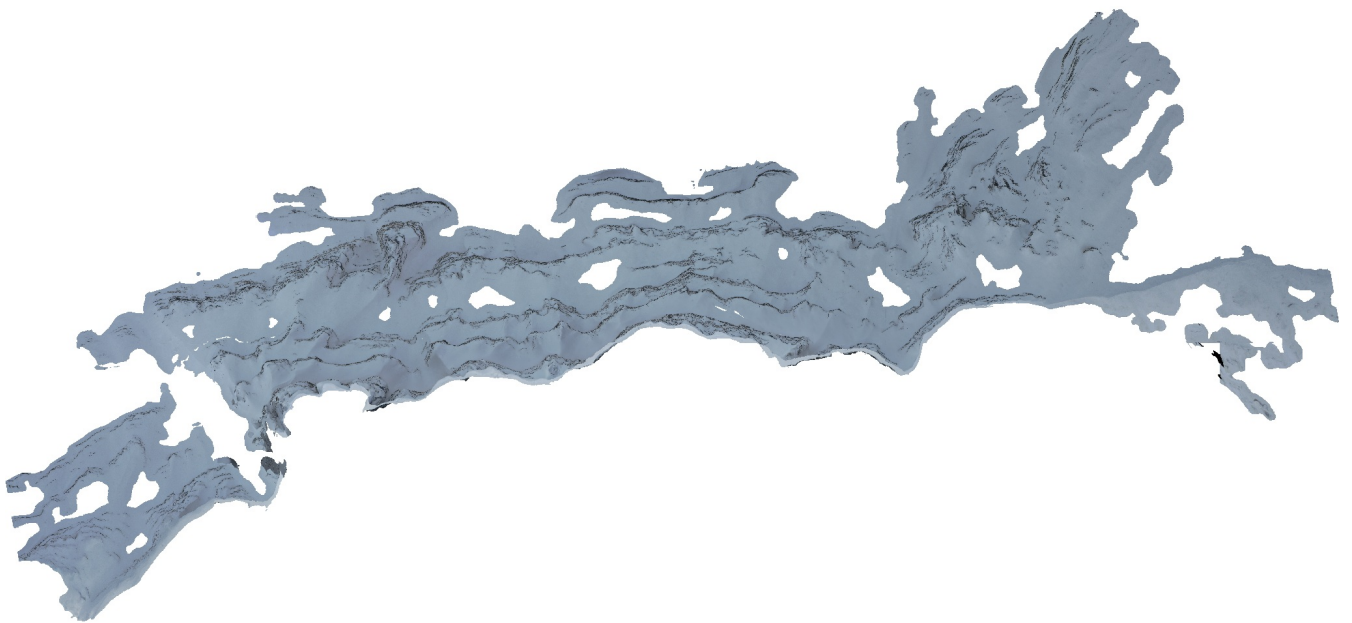


Voringen

Dense Cloud Confidence 2-255
Connected component size 99%

07 March 2022



Survey Data

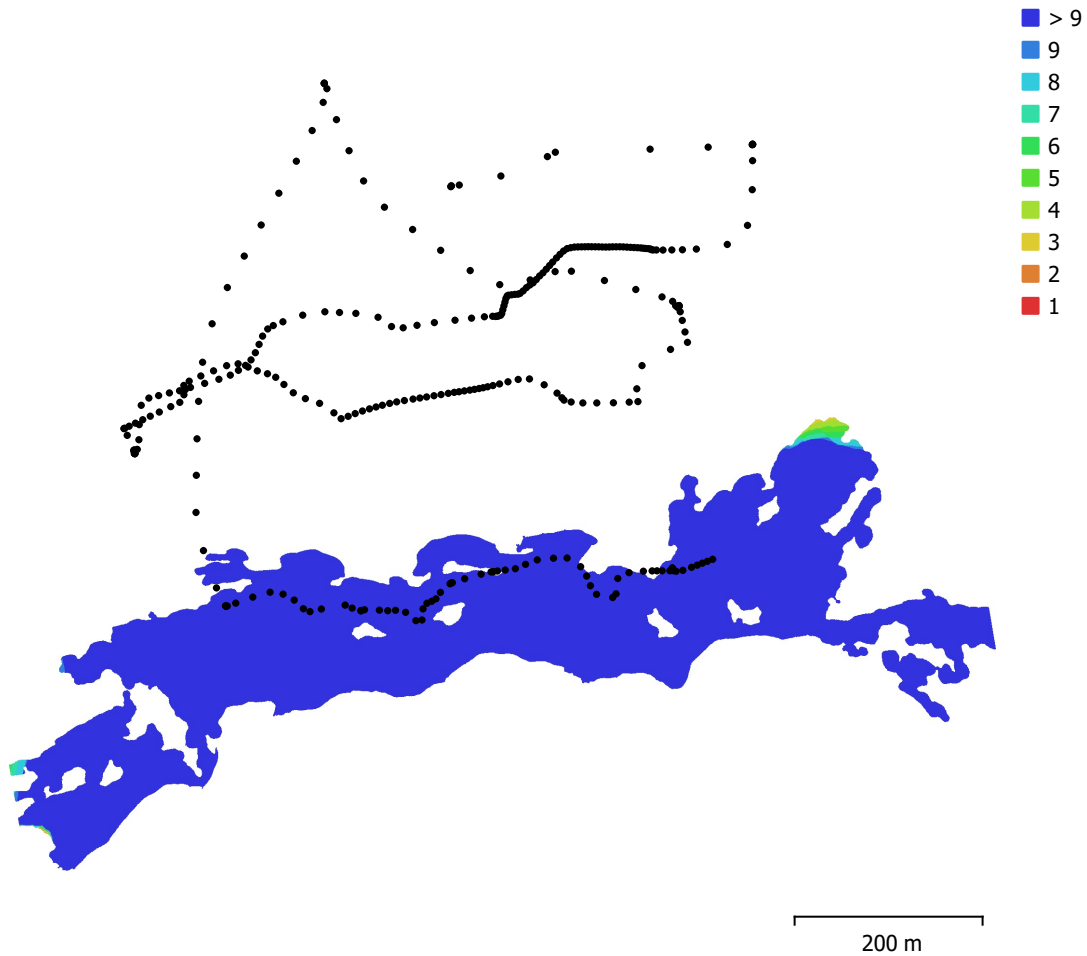


Fig. 1. Camera locations and image overlap.

Number of images:	308	Camera stations:	307
Flying altitude:	309 m	Tie points:	57,744
Ground resolution:	6.44 cm/pix	Projections:	558,594
Coverage area:	0.139 km ²	Reprojection error:	0.736 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

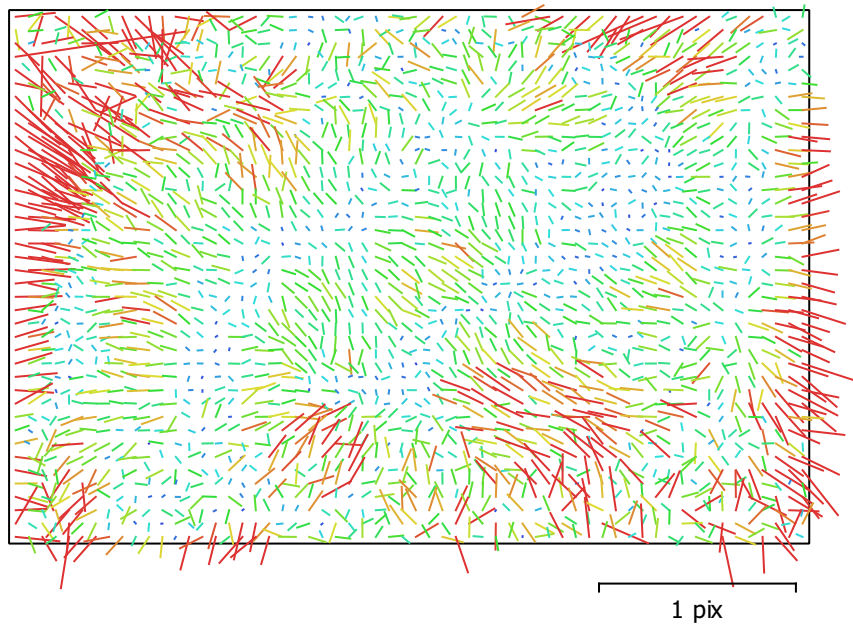


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

307 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	4352.84	0.082	1.00	-0.08	0.26	-0.66	0.30	0.01	0.05	-0.05	0.02	0.11
Cx	13.7032	0.12		1.00	-0.06	0.16	0.29	0.01	0.01	-0.01	0.93	-0.26
Cy	-57.6154	0.083			1.00	-0.48	0.28	-0.04	0.03	-0.03	-0.09	0.68
B1	3.02613	0.08				1.00	-0.08	0.00	0.01	-0.01	-0.01	-0.16
B2	4.37158	0.079					1.00	0.01	0.00	-0.01	0.18	-0.03
K1	0.00594708	3.1e-05						1.00	-0.95	0.89	0.00	-0.04
K2	0.0434903	0.00014							1.00	-0.98	0.01	0.03
K3	-0.0475487	0.0002								1.00	-0.01	-0.02
P1	0.000251647	7.2e-06									1.00	-0.27
P2	-0.00375427	3.2e-06										1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

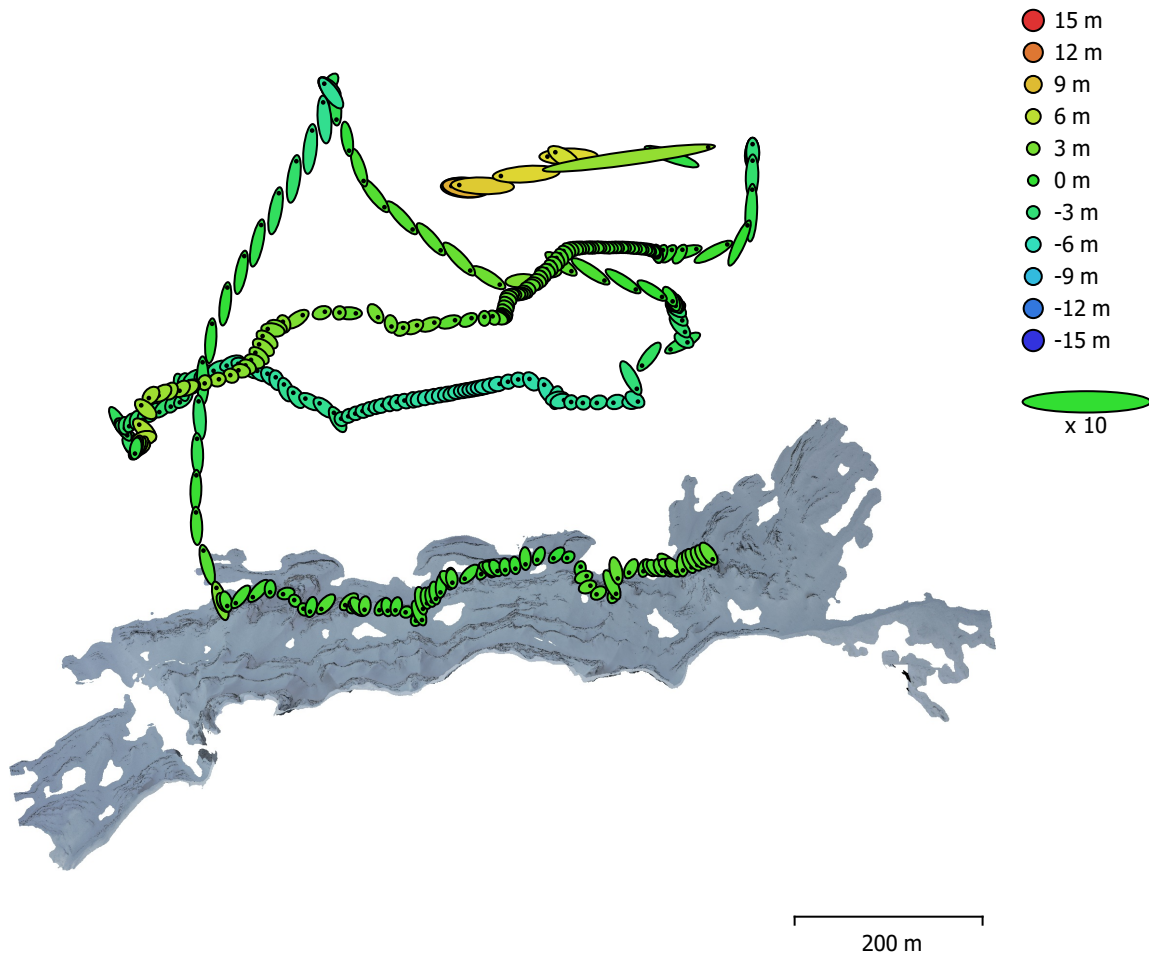


Fig. 3. Camera locations and error estimates.

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)
1.37209	1.20687	3.03982	1.82734	3.54679

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

Digital Elevation Model

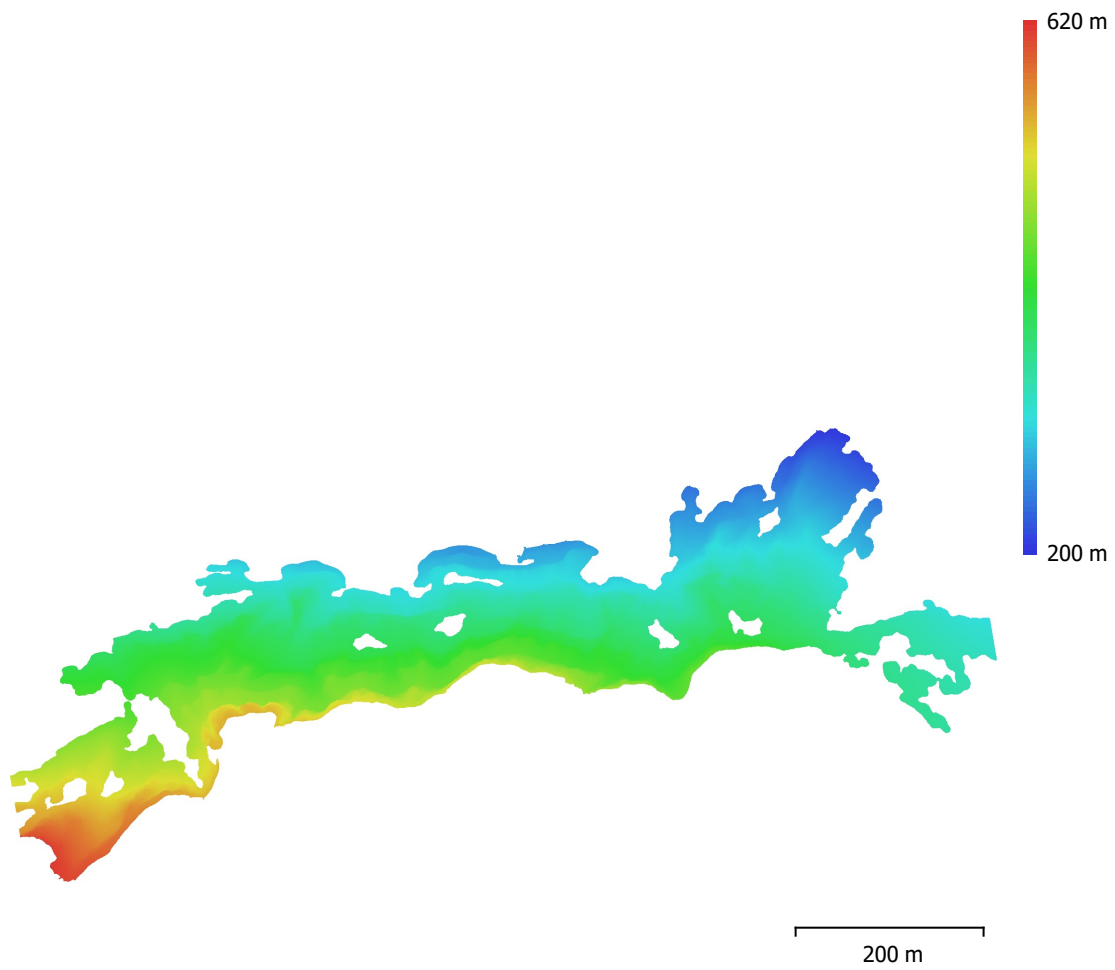


Fig. 4. Reconstructed digital elevation model.

Resolution: 12.9 cm/pix
Point density: 60.2 points/m²

Processing Parameters

General

Cameras	308
Aligned cameras	307
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	57,744 of 93,163
RMS reprojection error	0.216935 (0.7363 pix)
Max reprojection error	0.887803 (23.6709 pix)
Mean key point size	3.07101 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	16.4251

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	3 minutes 23 seconds
Matching memory usage	707.89 MB
Alignment time	5 minutes 16 seconds
Alignment memory usage	329.71 MB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	Yes
Optimization time	4 seconds
Software version	1.7.3.12473
File size	24.98 MB

Depth Maps

Count	307
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Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	25 minutes 55 seconds
Memory usage	10.54 GB
Software version	1.7.3.12473
File size	1.23 GB

Dense Point Cloud

Points	14,571,895
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	25 minutes 55 seconds

Memory usage	10.54 GB
Dense cloud generation parameters	
Processing time	1 hours 24 minutes
Memory usage	13.58 GB
Software version	1.7.3.12473
File size	293.61 MB
Model	
Faces	944,799
Vertices	479,840
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	25 minutes 55 seconds
Memory usage	10.54 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	5 minutes 40 seconds
Memory usage	7.89 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	2 minutes 46 seconds
UV mapping memory usage	3.18 GB
Blending time	12 minutes 37 seconds
Blending memory usage	4.62 GB
Software version	1.7.2.12040
File size	222.53 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	25 minutes 55 seconds
Memory usage	10.54 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	1 hours 13 minutes
Memory usage	2.64 GB
Software version	1.7.2.12040
File size	92.12 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.2 build 12040

OS
RAM
CPU
GPU(s)

Windows 64 bit
127.78 GB
Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GeForce RTX 2080