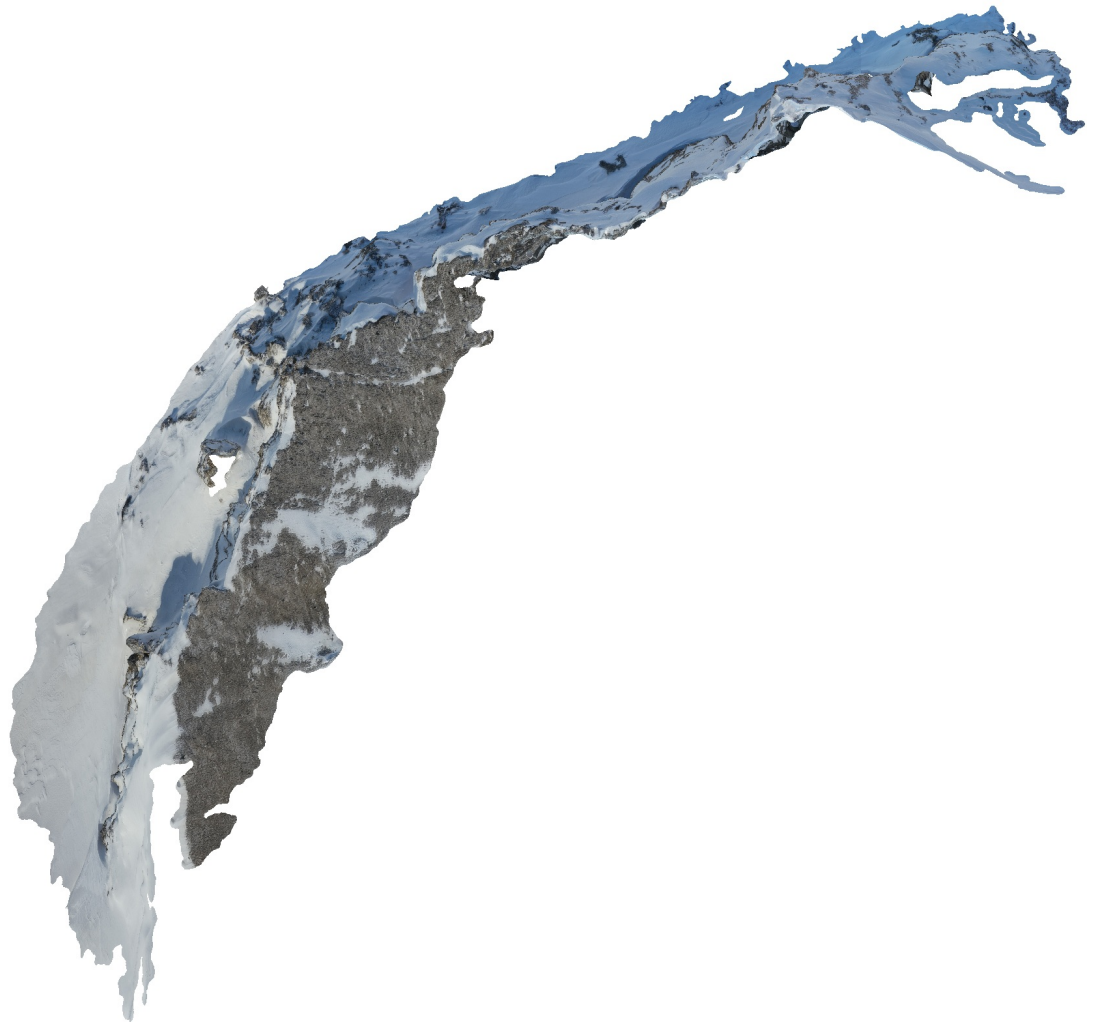


# Lovehovden

Dense cloud confidence 20

Component size 99%

22 February 2022



# Survey Data

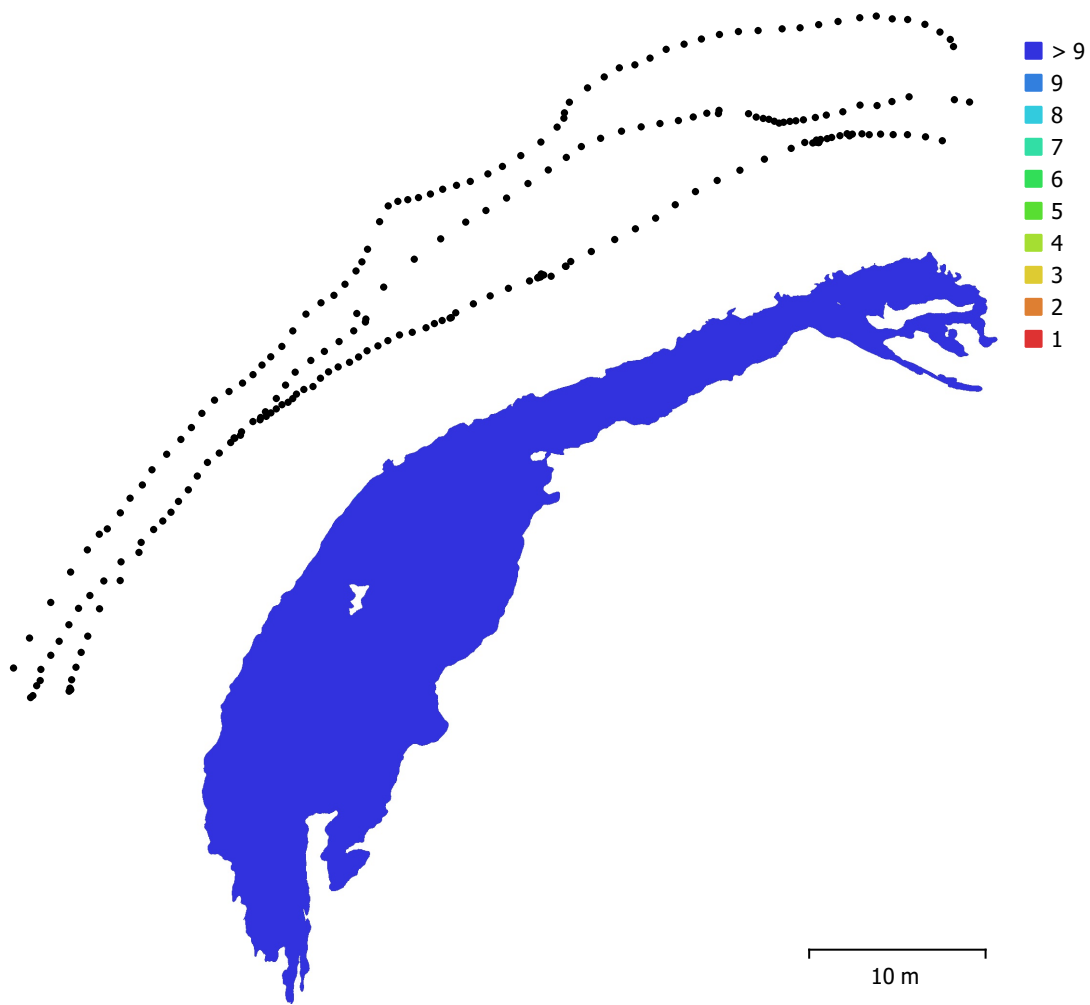


Fig. 1. Camera locations and image overlap.

Number of images:	227	Camera stations:	227
Flying altitude:	14.2 m	Tie points:	56,725
Ground resolution:	3.16 mm/pix	Projections:	484,678
Coverage area:	384 m <sup>2</sup>	Reprojection error:	1.13 pix

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

Table 1. Cameras.

# Camera Calibration

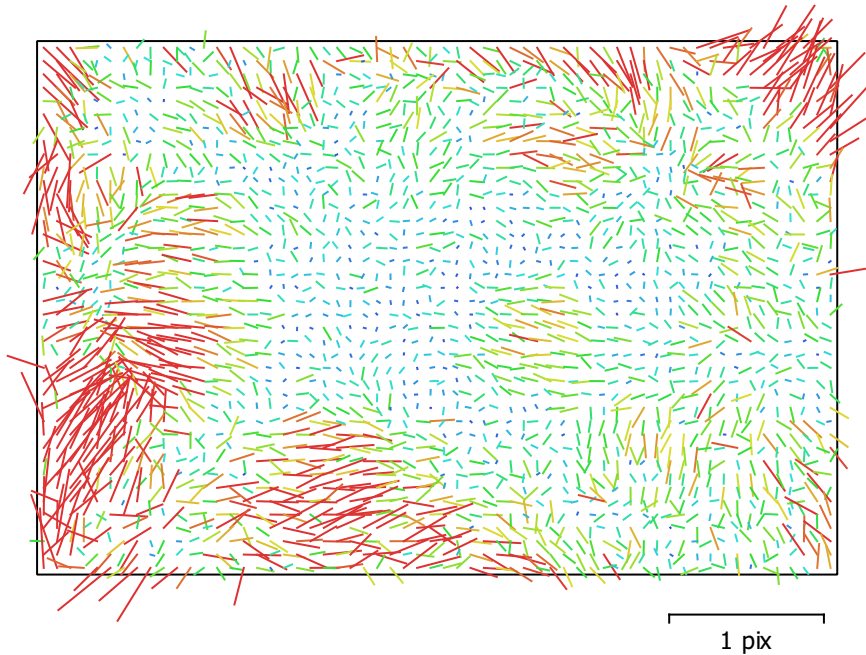


Fig. 2. Image residuals for Test\_Pro (10.26mm).

## Test\_Pro (10.26mm)

227 images

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>5472 x 3648</b>	<b>10.26 mm</b>	<b>2.41 x 2.41 <math>\mu</math>m</b>

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	P1	P2
<b>F</b>	<b>4355.13</b>	0.1	1.00	0.12	-0.19	-0.45	0.03	-0.07	0.10	-0.09	0.03	-0.09
<b>Cx</b>	<b>-17.2055</b>	0.2		1.00	-0.03	-0.19	-0.07	-0.02	0.02	-0.03	0.93	0.12
<b>Cy</b>	<b>-51.667</b>	0.11			1.00	0.11	-0.35	-0.00	0.01	-0.01	-0.00	0.70
<b>B1</b>	<b>-1.12136</b>	0.11				1.00	-0.04	0.02	0.00	-0.00	-0.12	-0.05
<b>B2</b>	<b>-3.69356</b>	0.11					1.00	0.01	-0.03	0.03	-0.06	-0.11
<b>K1</b>	<b>0.00635525</b>	5.1e-05						1.00	-0.95	0.88	-0.01	-0.04
<b>K2</b>	<b>0.0202173</b>	0.00022							1.00	-0.98	0.02	0.03
<b>K3</b>	<b>-0.027485</b>	0.00029								1.00	-0.02	-0.03
<b>P1</b>	<b>-0.00156518</b>	1.2e-05									1.00	0.13
<b>P2</b>	<b>-0.00357568</b>	5.1e-06										1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

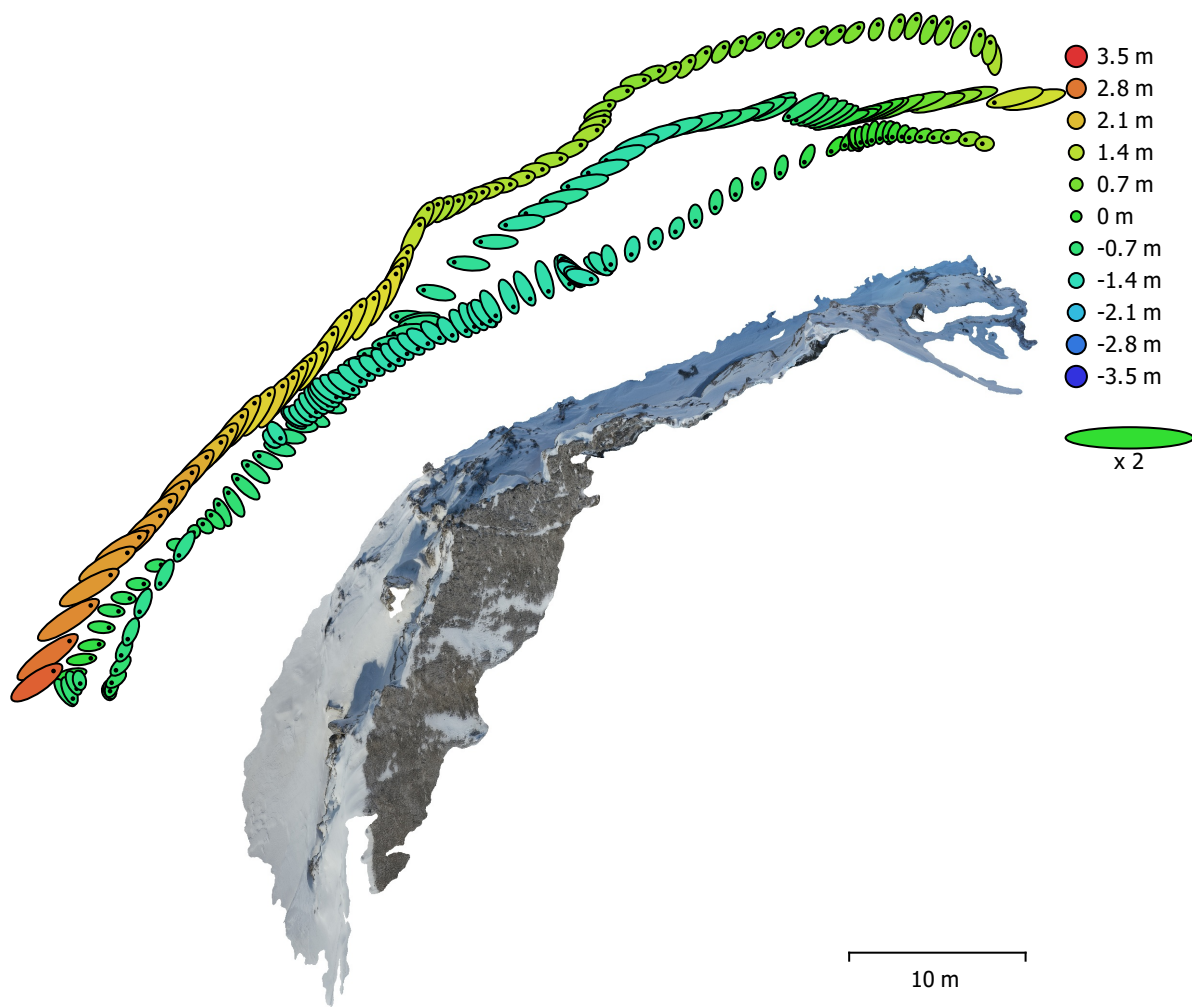


Fig. 3. Camera locations and error estimates.

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)
0.575313	0.433435	1.16631	0.720314	1.37082

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

# Digital Elevation Model

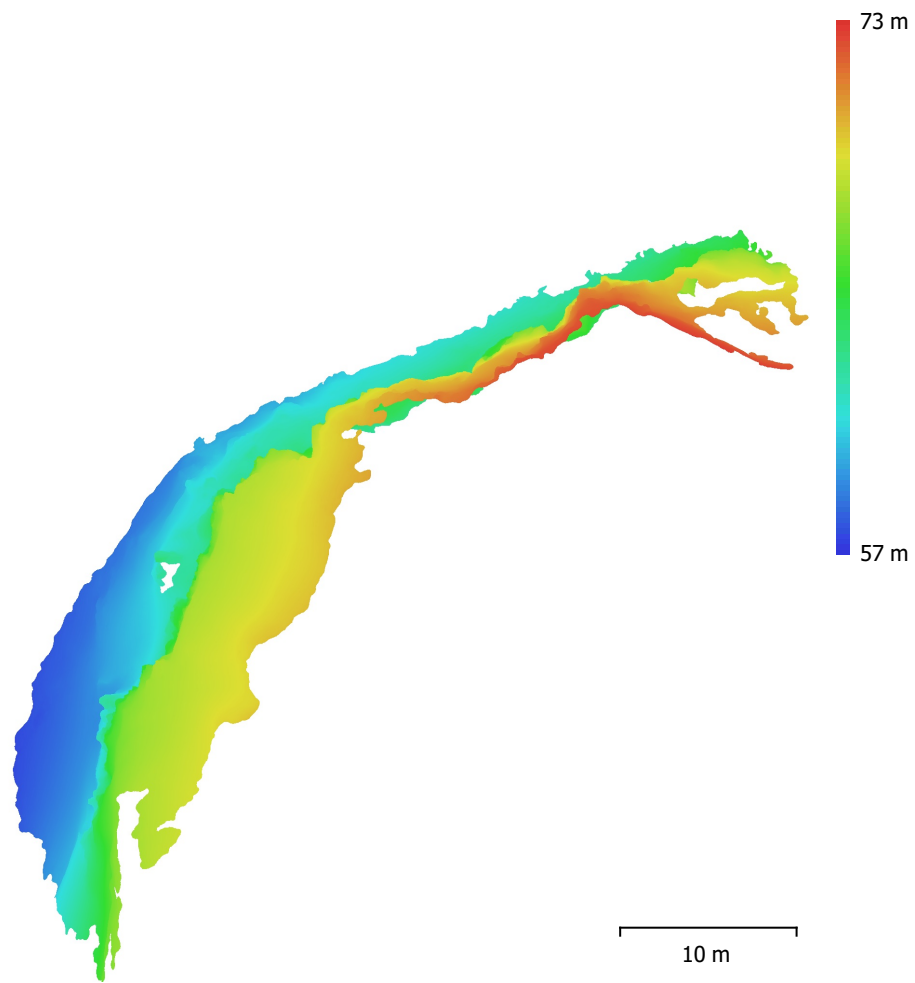


Fig. 4. Reconstructed digital elevation model.

Resolution: 6.32 mm/pix  
Point density: 2.51 points/cm<sup>2</sup>

# Processing Parameters

## General

Cameras	227
Aligned cameras	227
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	56,725 of 82,284
RMS reprojection error	0.343268 (1.12786 pix)
Max reprojection error	1.32997 (54.2696 pix)
Mean key point size	3.06956 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	11.9433

## 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	1 minutes 59 seconds
Matching memory usage	626.42 MB
Alignment time	2 minutes 29 seconds
Alignment memory usage	81.96 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	16.56 MB

## Depth Maps

Count	227
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## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	17 minutes 3 seconds
Memory usage	8.85 GB
Software version	1.7.3.12473
File size	1.54 GB

## Dense Point Cloud

Points	18,282,332
Point colors	3 bands, uint8

## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	17 minutes 3 seconds

Memory usage	8.85 GB
<b>Dense cloud generation parameters</b>	
Processing time	1 hours 26 minutes
Memory usage	15.08 GB
Software version	1.7.3.12473
File size	782.42 MB
<b>Model</b>	
Faces	3,646,801
Vertices	1,829,544
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	17 minutes 3 seconds
Memory usage	8.85 GB
<b>Reconstruction parameters</b>	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	7 minutes 38 seconds
Memory usage	10.15 GB
<b>Texturing parameters</b>	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	3 minutes 4 seconds
UV mapping memory usage	3.20 GB
Blending time	2 minutes 4 seconds
Blending memory usage	5.84 GB
Software version	1.7.3.12473
File size	357.25 MB
<b>Tiled Model</b>	
Texture	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	17 minutes 3 seconds
Memory usage	8.85 GB
<b>Reconstruction parameters</b>	
Source data	Dense cloud
Tile size	128
Face count	Low
Enable ghosting filter	No
Processing time	11 minutes 4 seconds
Memory usage	7.85 GB
Software version	1.7.3.12473
File size	12.07 MB
<b>System</b>	
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