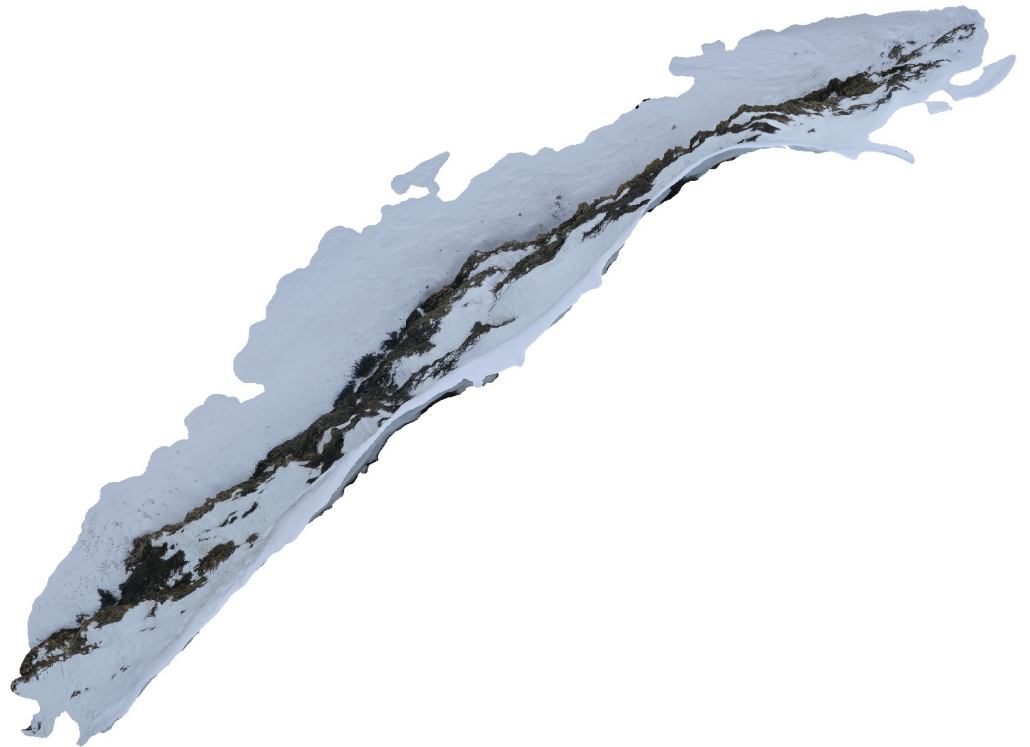


# Larvikpynten

Processing Report  
21 February 2022



# Survey Data

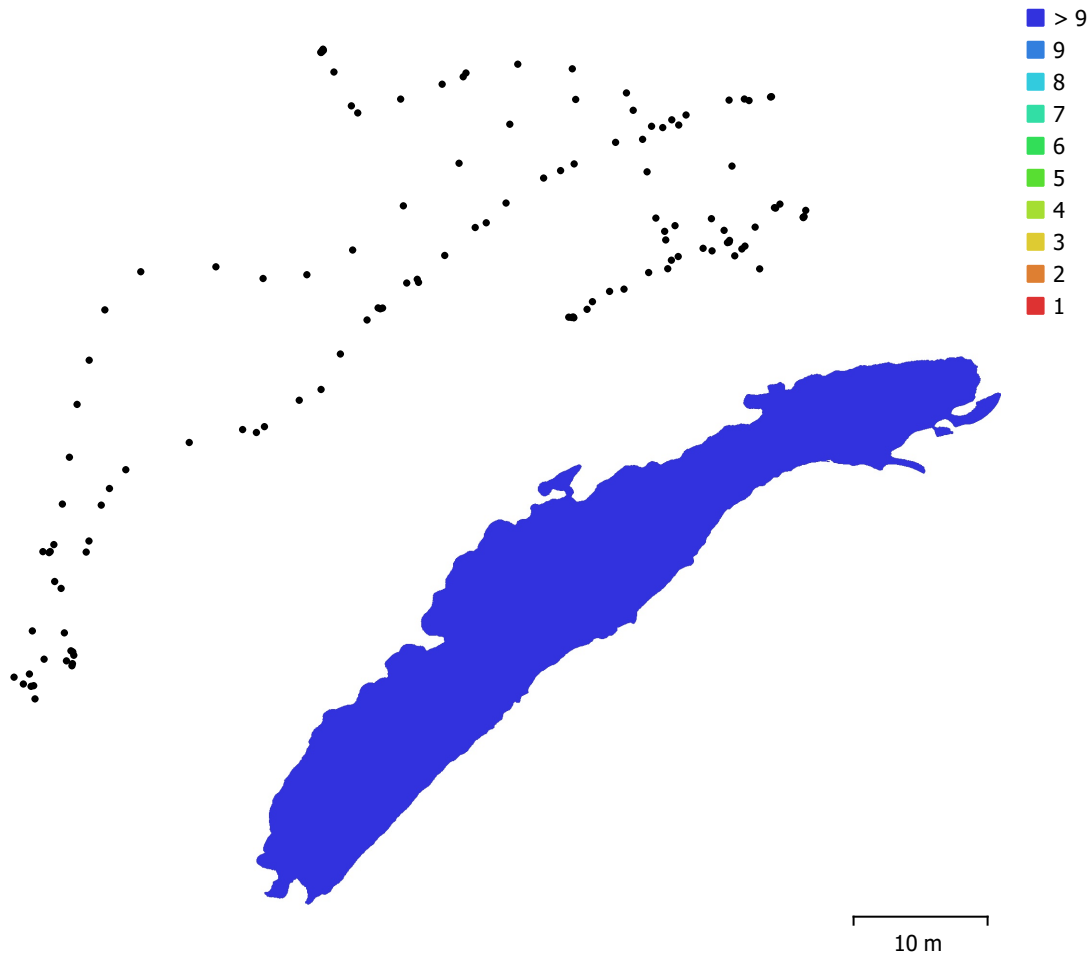


Fig. 1. Camera locations and image overlap.

Number of images:	127	Camera stations:	127
Flying altitude:	30 m	Tie points:	35,658
Ground resolution:	6.39 mm/pix	Projections:	388,542
Coverage area:	519 m <sup>2</sup>	Reprojection error:	1.46 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

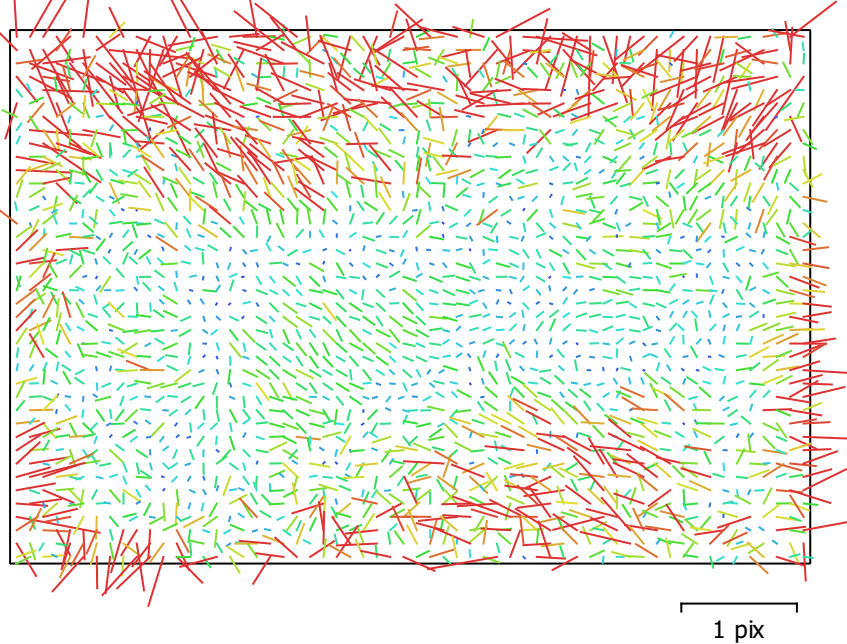


Fig. 2. Image residuals for Test\_Pro (10.26mm).

## Test\_Pro (10.26mm)

127 images

Type  
Frame

Resolution  
**5472 x 3648**

Focal Length  
**10.26 mm**

Pixel Size  
**2.41 x 2.41  $\mu$ m**

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	P1	P2
<b>F</b>	<b>4374.83</b>	0.16	1.00	0.02	-0.16	-0.41	-0.20	-0.02	0.07	-0.06	0.04	-0.23
<b>Cx</b>	<b>35.3082</b>	0.33		1.00	-0.00	-0.00	-0.02	0.07	-0.02	0.01	0.95	-0.09
<b>Cy</b>	<b>-42.8741</b>	0.2			1.00	-0.19	0.13	-0.03	0.00	-0.00	-0.06	0.84
<b>B1</b>	<b>-42.5971</b>	0.18				1.00	-0.05	-0.04	0.04	-0.03	0.06	0.03
<b>B2</b>	<b>29.3125</b>	0.15					1.00	-0.06	-0.00	0.01	-0.14	0.15
<b>K1</b>	<b>0.00482658</b>	7.1e-05						1.00	-0.94	0.87	0.08	-0.07
<b>K2</b>	<b>0.0325664</b>	0.00031							1.00	-0.98	-0.03	0.03
<b>K3</b>	<b>-0.0320955</b>	0.00042								1.00	0.02	-0.03
<b>P1</b>	<b>0.000620513</b>	2e-05									1.00	-0.12
<b>P2</b>	<b>-0.00349872</b>	1.1e-05										1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

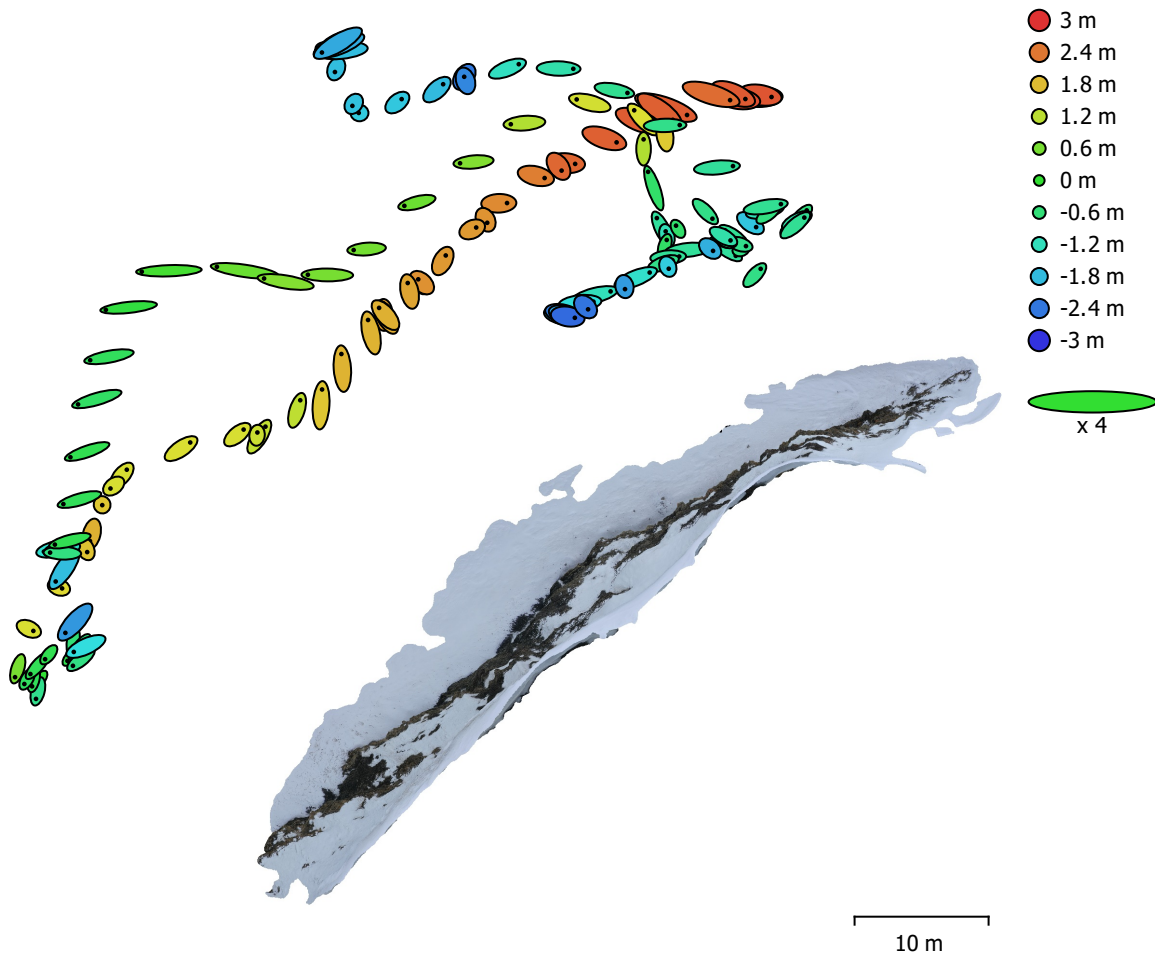


Fig. 3. Camera locations and error estimates.

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)
0.385643	0.214073	1.54372	0.441075	1.6055

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

# Digital Elevation Model

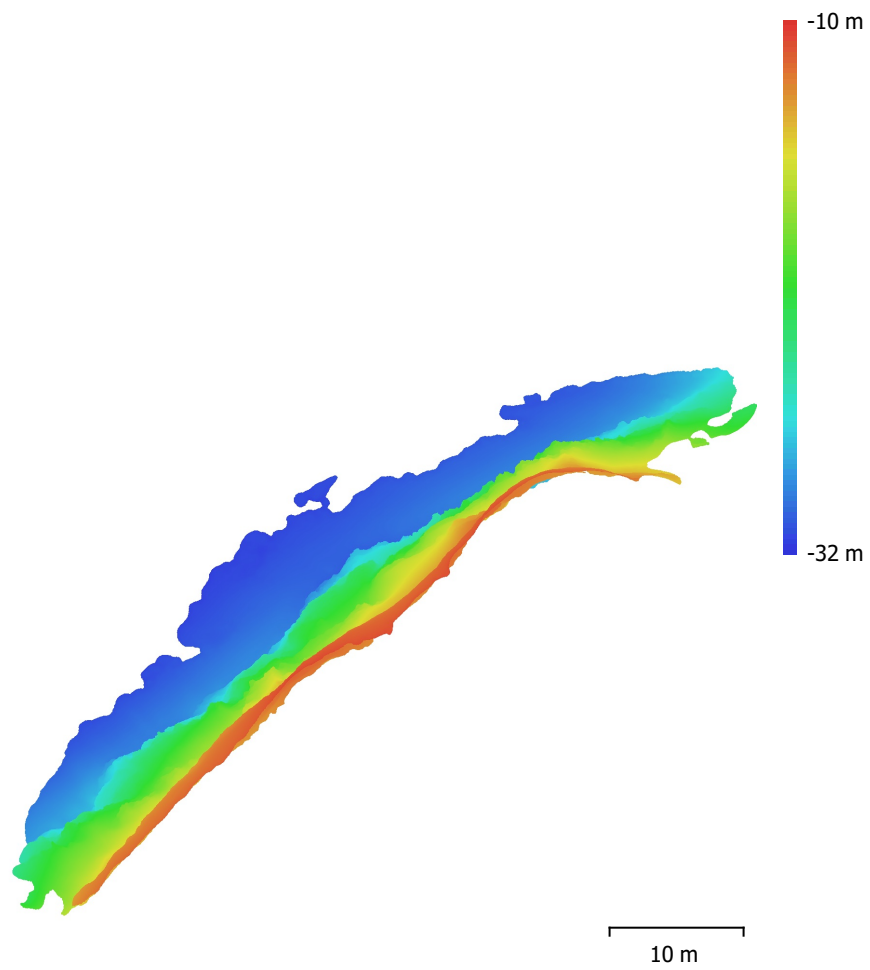


Fig. 4. Reconstructed digital elevation model.

Resolution: 1.28 cm/pix  
Point density: 0.612 points/cm<sup>2</sup>

# Processing Parameters

## General

Cameras	127
Aligned cameras	127
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	35,658 of 49,158
RMS reprojection error	0.475584 (1.46462 pix)
Max reprojection error	2.68173 (35.2079 pix)
Mean key point size	3.02083 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	12.4282

## 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 29 seconds
Matching memory usage	618.51 MB
Alignment time	5 minutes 19 seconds
Alignment memory usage	45.00 MB

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	Yes
Optimization time	11 seconds
Software version	1.7.3.12473
File size	10.30 MB

## Depth Maps

Count	127
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## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	20 minutes 10 seconds
Memory usage	7.61 GB
Software version	1.7.3.12473
File size	902.02 MB

## Dense Point Cloud

Points	7,959,673
Point colors	3 bands, uint8

## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	100
Processing time	20 minutes 10 seconds

Memory usage	7.61 GB
<b>Dense cloud generation parameters</b>	
Processing time	1 hours 13 minutes
Memory usage	8.66 GB
Software version	1.7.3.12473
File size	329.08 MB
<b>Model</b>	
Faces	1,580,992
Vertices	793,040
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	20 minutes 10 seconds
Memory usage	7.61 GB
<b>Reconstruction parameters</b>	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	3 minutes 19 seconds
Memory usage	4.39 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	2 minutes 42 seconds
UV mapping memory usage	3.79 GB
Blending time	1 minutes 10 seconds
Blending memory usage	5.47 GB
Software version	1.7.3.12473
File size	224.11 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	20 minutes 10 seconds
Memory usage	7.61 GB
<b>Reconstruction parameters</b>	
Source data	Dense cloud
Tile size	128
Face count	Low
Enable ghosting filter	No
Processing time	5 minutes 28 seconds
Memory usage	3.11 GB
Software version	1.7.3.12473
File size	19.17 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