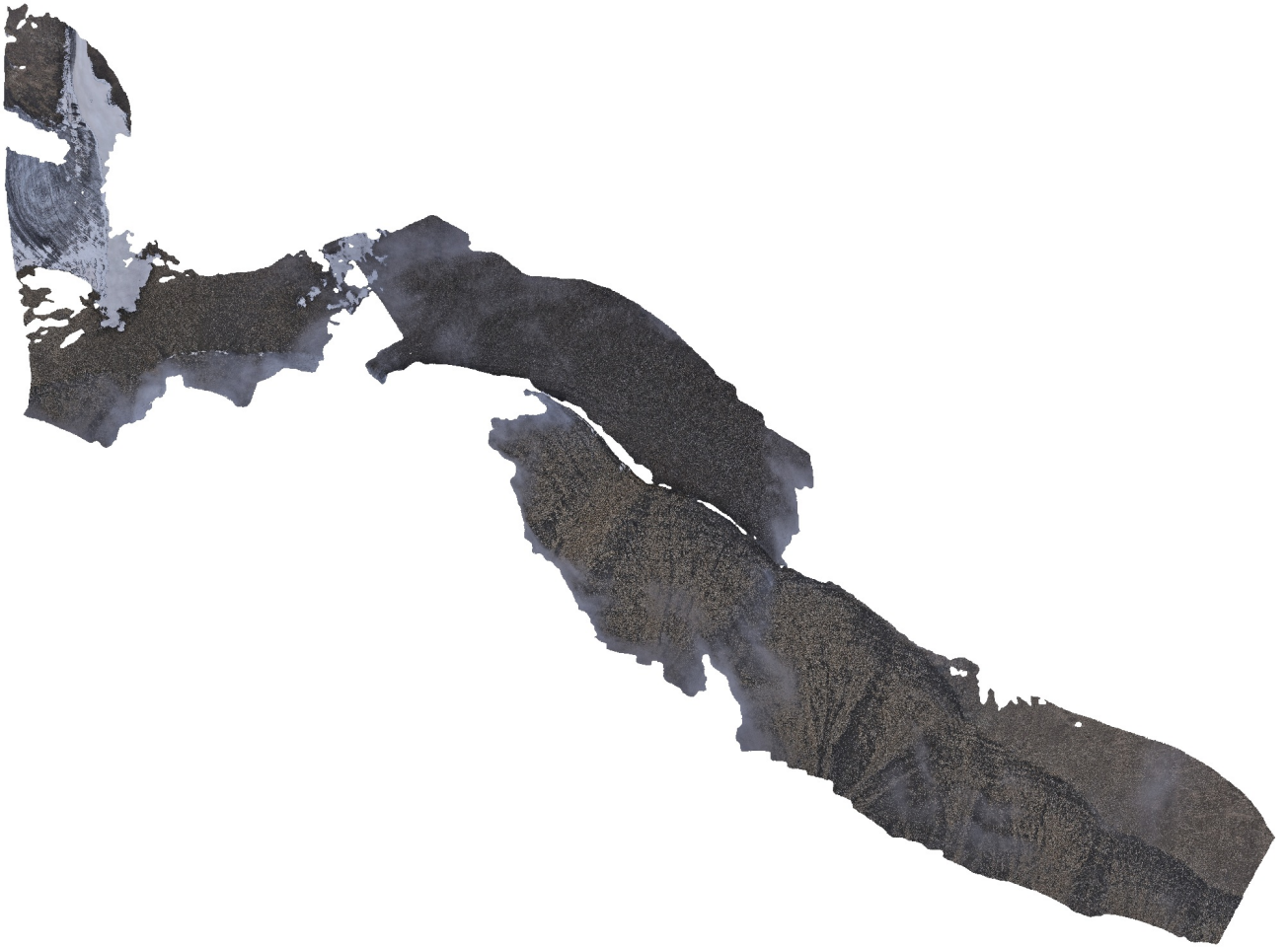


# Brogniartfjellet

Connected component size 99%

25 February 2022



# Survey Data

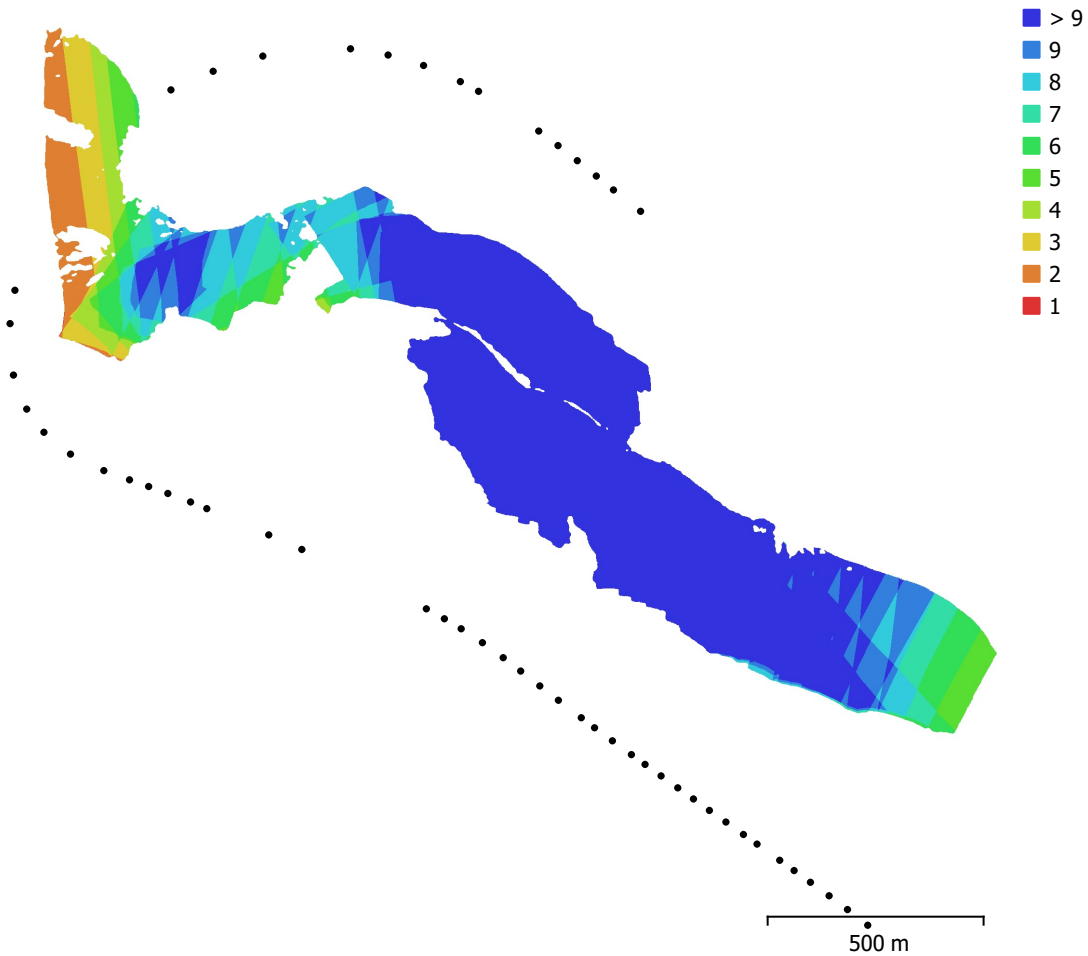


Fig. 1. Camera locations and image overlap.

Number of images:	54	Camera stations:	54
Flying altitude:	942 m	Tie points:	66,300
Ground resolution:	5.04 cm/pix	Projections:	216,831
Coverage area:	0.788 km <sup>2</sup>	Reprojection error:	0.308 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
NIKON D800 (50mm)	4924 x 7374	50 mm	4.88 x 4.88 $\mu$ m	No
NIKON D800 (50mm)	7374 x 4924	50 mm	4.88 x 4.88 $\mu$ m	No

Table 1. Cameras.

# Camera Calibration

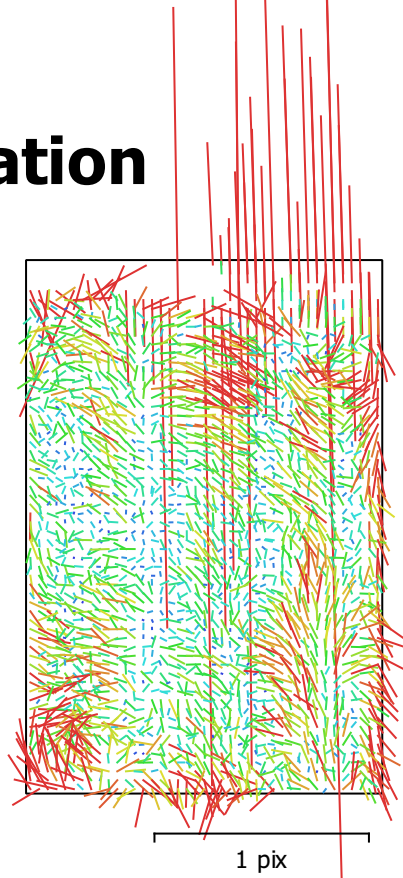


Fig. 2. Image residuals for NIKON D800 (50mm).

## NIKON D800 (50mm)

42 images

Type  
Frame

Resolution  
**4924 x 7374**

Focal Length  
**50 mm**

Pixel Size  
**4.88 x 4.88  $\mu\text{m}$**

	Value	Error	F	B1	K1	K2	K3	P1	P2
<b>F</b>	<b>10559.7</b>	0.81	1.00	-0.68	-0.04	0.10	-0.06	-0.21	-0.14
<b>B1</b>	<b>4.65313</b>	0.55		1.00	0.02	-0.04	0.02	0.24	0.37
<b>K1</b>	<b>-0.109008</b>	0.00011			1.00	-0.94	0.87	0.02	-0.01
<b>K2</b>	<b>0.0725482</b>	0.0014				1.00	-0.98	0.00	0.06
<b>K3</b>	<b>0.17634</b>	0.0057					1.00	-0.01	-0.06
<b>P1</b>	<b>0.000835853</b>	9.8e-06						1.00	0.10
<b>P2</b>	<b>0.00058148</b>	9.4e-06							1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Calibration

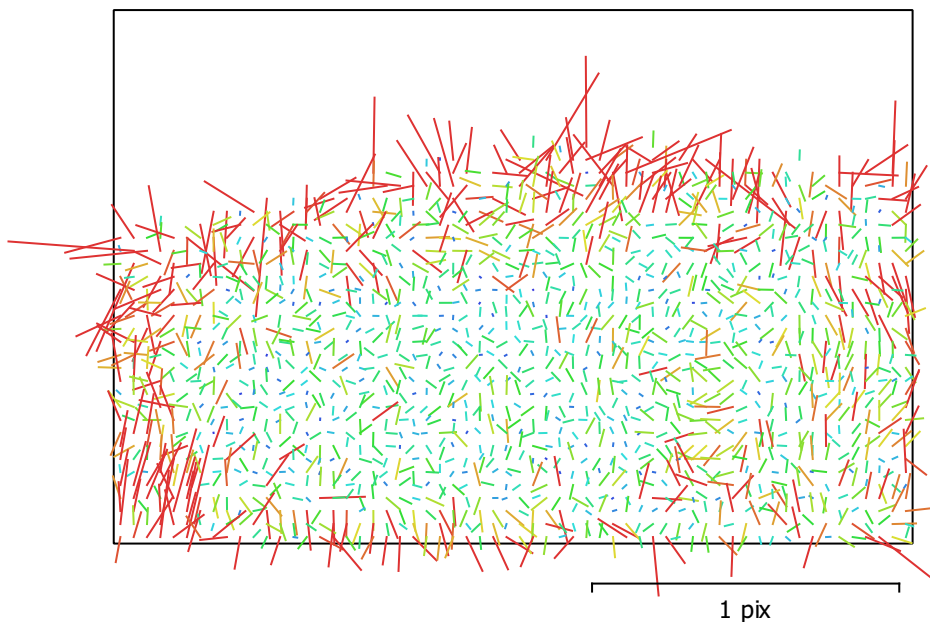


Fig. 3. Image residuals for NIKON D800 (50mm).

## NIKON D800 (50mm)

12 images

Type  
Frame

Resolution  
**7374 x 4924**

Focal Length  
**50 mm**

Pixel Size  
**4.88 x 4.88  $\mu$ m**

	Value	Error	F	B1	K1	K2	K3	P1	P2
<b>F</b>	<b>10553.5</b>	1.1	1.00	-0.79	-0.03	0.03	-0.01	0.08	-0.05
<b>B1</b>	<b>13.4613</b>	1.2		1.00	0.00	0.00	-0.01	-0.08	-0.09
<b>K1</b>	<b>-0.109866</b>	0.00024			1.00	-0.96	0.90	0.02	-0.03
<b>K2</b>	<b>0.0644211</b>	0.0031				1.00	-0.98	0.00	0.01
<b>K3</b>	<b>0.254839</b>	0.012					1.00	-0.01	-0.01
<b>P1</b>	<b>-8.05651e-05</b>	9.1e-06						1.00	0.19
<b>P2</b>	<b>0.000166907</b>	8.1e-06							1.00

Table 3. Calibration coefficients and correlation matrix.

# Camera Locations

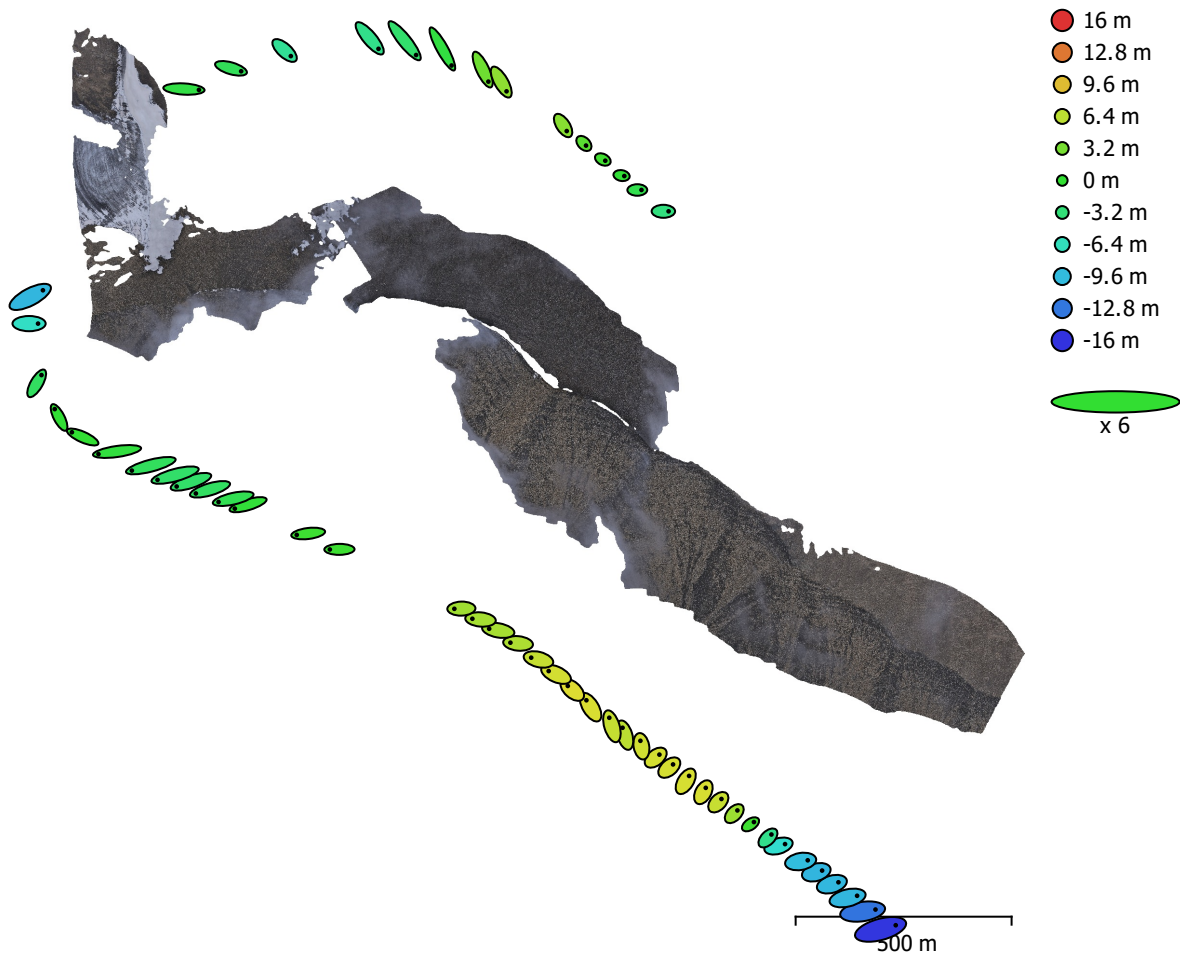


Fig. 4. Camera locations and error estimates.

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)
6.9536	4.20238	6.00162	8.12481	10.1011

Table 4. Average camera location error.

X - Easting, Y - Northing, Z - Altitude.

# Digital Elevation Model

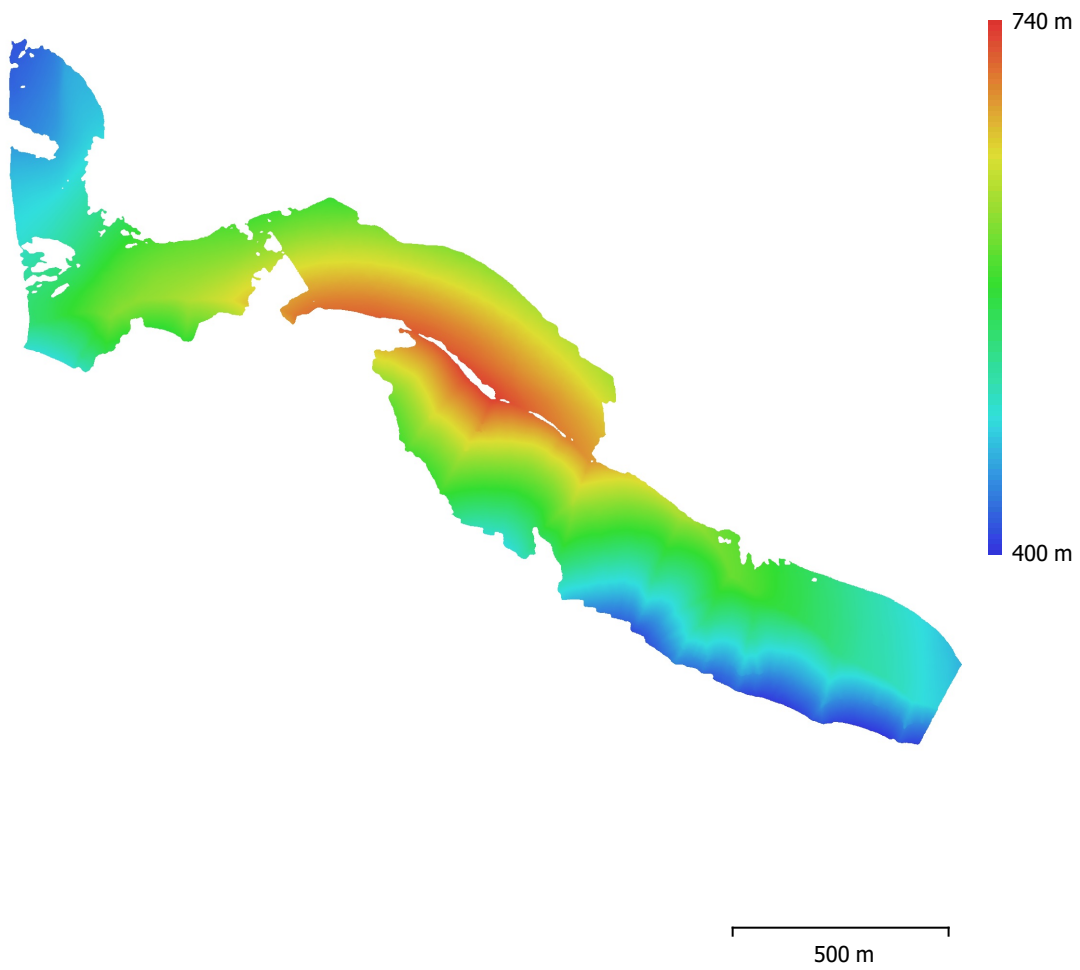


Fig. 5. Reconstructed digital elevation model.

Resolution: 97.5 cm/pix  
Point density: 1.05 points/m<sup>2</sup>

# Processing Parameters

## General

Cameras	54
Aligned cameras	54
Coordinate system	WGS 84 / UTM zone 33N (EPSG::32633)
Rotation angles	Yaw, Pitch, Roll

## Point Cloud

Points	66,300 of 125,498
RMS reprojection error	0.129811 (0.307869 pix)
Max reprojection error	0.709466 (4.4024 pix)
Mean key point size	2.37395 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.17552

## Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	80,000
Tie point limit	8,000
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	50 seconds
Matching memory usage	1.40 GB
Alignment time	22 seconds
Alignment memory usage	52.92 MB

## Optimization parameters

Parameters	f, b1, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	0 seconds
Software version	1.6.4.10928
File size	7.96 MB

## Depth Maps

Count	52
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Aggressive
Processing time	2 minutes 56 seconds
Memory usage	4.24 GB
Software version	1.6.4.10928
File size	308.29 MB

## Dense Point Cloud

Points	112,404,039
Point colors	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Aggressive
Processing time	2 minutes 56 seconds
Memory usage	4.24 GB
<b>Dense cloud generation parameters</b>	
Processing time	5 minutes 16 seconds

Memory usage	10.76 GB
Software version	1.6.4.10928
File size	1.74 GB
<b>Model</b>	
Faces	1,860,658
Vertices	936,579
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
<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	4 minutes 18 seconds
UV mapping memory usage	5.97 GB
Blending time	1 minutes 16 seconds
Blending memory usage	7.72 GB
File size	312.67 MB
<b>Tiled Model</b>	
Texture	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Aggressive
Processing time	2 minutes 56 seconds
Memory usage	4.24 GB
<b>Reconstruction parameters</b>	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	1 hours 39 minutes
Memory usage	4.56 GB
Software version	1.7.2.12040
File size	643.85 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) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2080