

# Mediumfjellet

**Reconstruction uncertainty - 14**

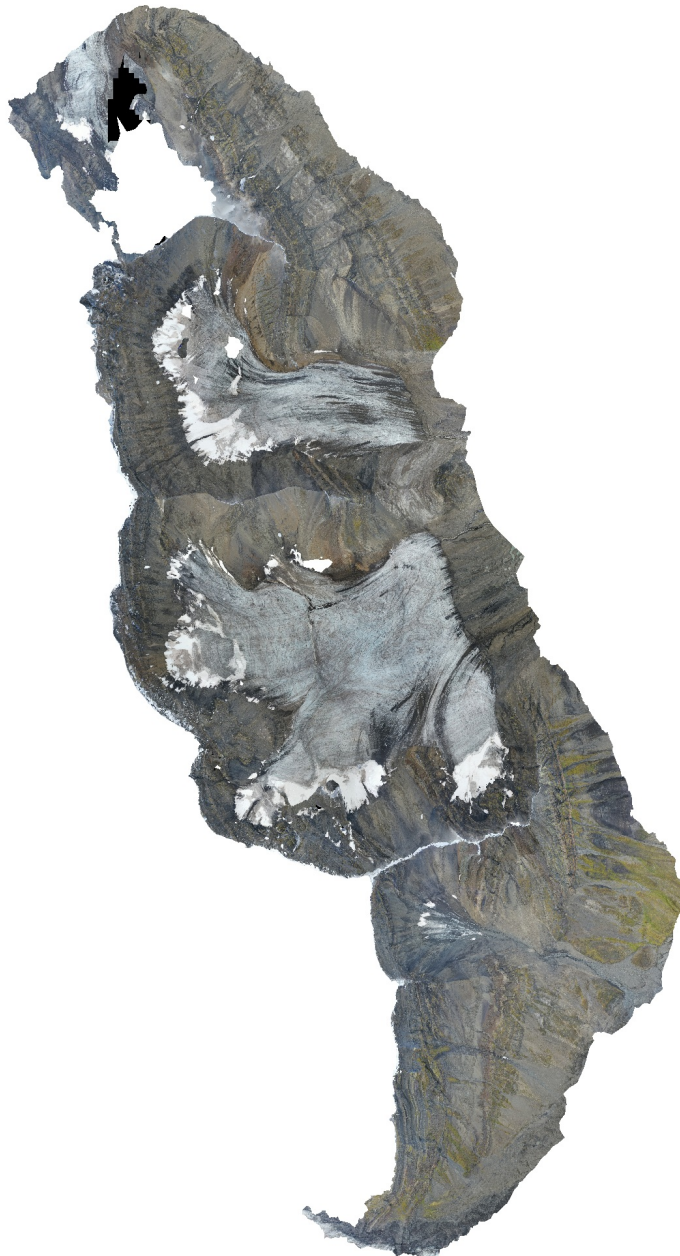
**Projection accuracy - 3**

**Reprojection error - 0.5**

**Point Cloud Confidence 6-255**

**Connected component size - 99**

**22 August 2023**



# Survey Data

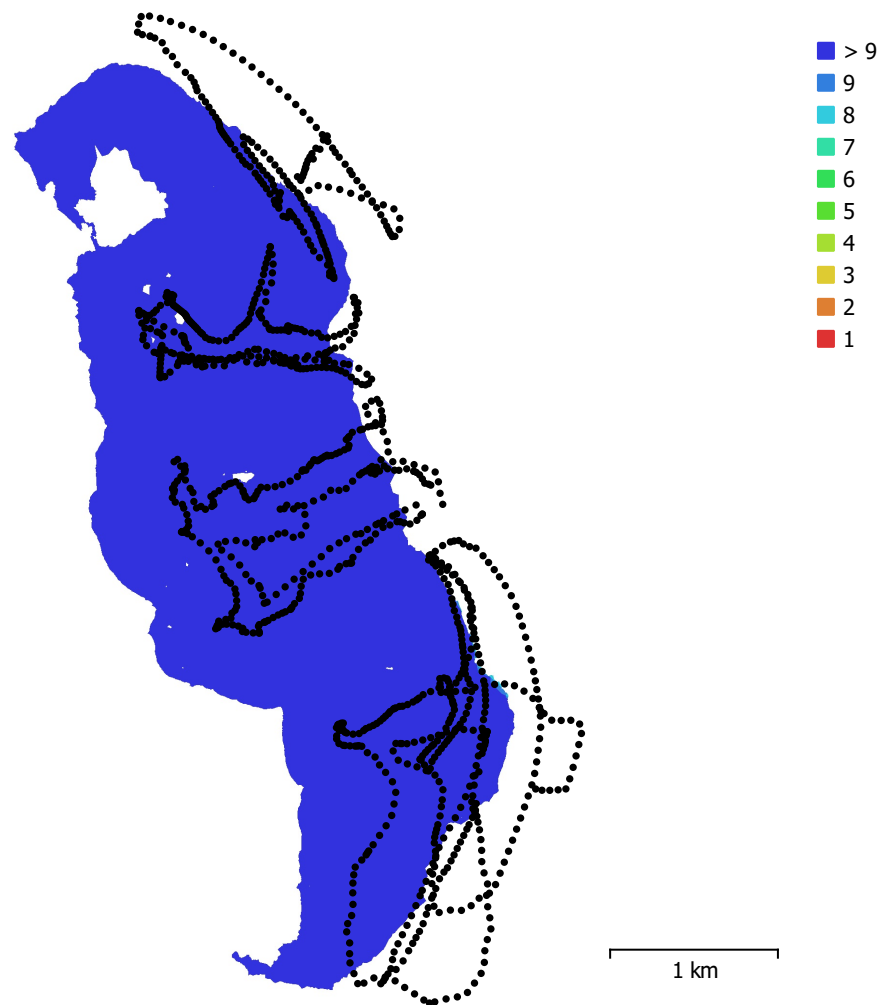


Fig. 1. Camera locations and image overlap.

Number of images:	1,140	Camera stations:	1,140
Flying altitude:	288 m	Tie points:	1,862,738
Ground resolution:	8.96 cm/pix	Projections:	6,769,646
Coverage area:	7.35 km <sup>2</sup>	Reprojection error:	0.297 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

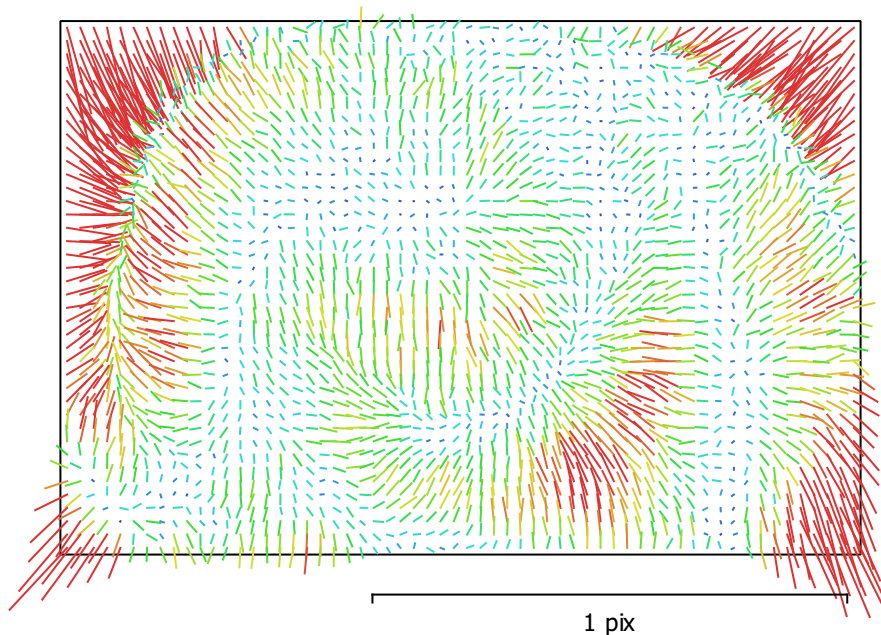


Fig. 2. Image residuals for Test\_Pro (10.26mm).

## Test\_Pro (10.26mm)

1140 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	K1	K2	K3	P1	P2
<b>F</b>	<b>4313.42</b>	0.013	1.00	-0.04	-0.58	-0.04	0.11	-0.11	-0.02	-0.16
<b>Cx</b>	<b>-16.7576</b>	0.021		1.00	-0.00	-0.02	0.01	-0.01	0.94	-0.02
<b>Cy</b>	<b>-26.2609</b>	0.02			1.00	-0.10	0.04	-0.03	-0.01	0.68
<b>K1</b>	<b>-0.0134229</b>	8.1e-06				1.00	-0.95	0.89	-0.02	-0.11
<b>K2</b>	<b>0.0265999</b>	3.4e-05					1.00	-0.98	0.01	0.04
<b>K3</b>	<b>-0.0305393</b>	4.3e-05						1.00	-0.01	-0.03
<b>P1</b>	<b>-0.00131759</b>	1.3e-06							1.00	-0.03
<b>P2</b>	<b>-0.00102066</b>	9e-07								1.00

Table 2. Calibration coefficients and correlation matrix.

# Camera Locations

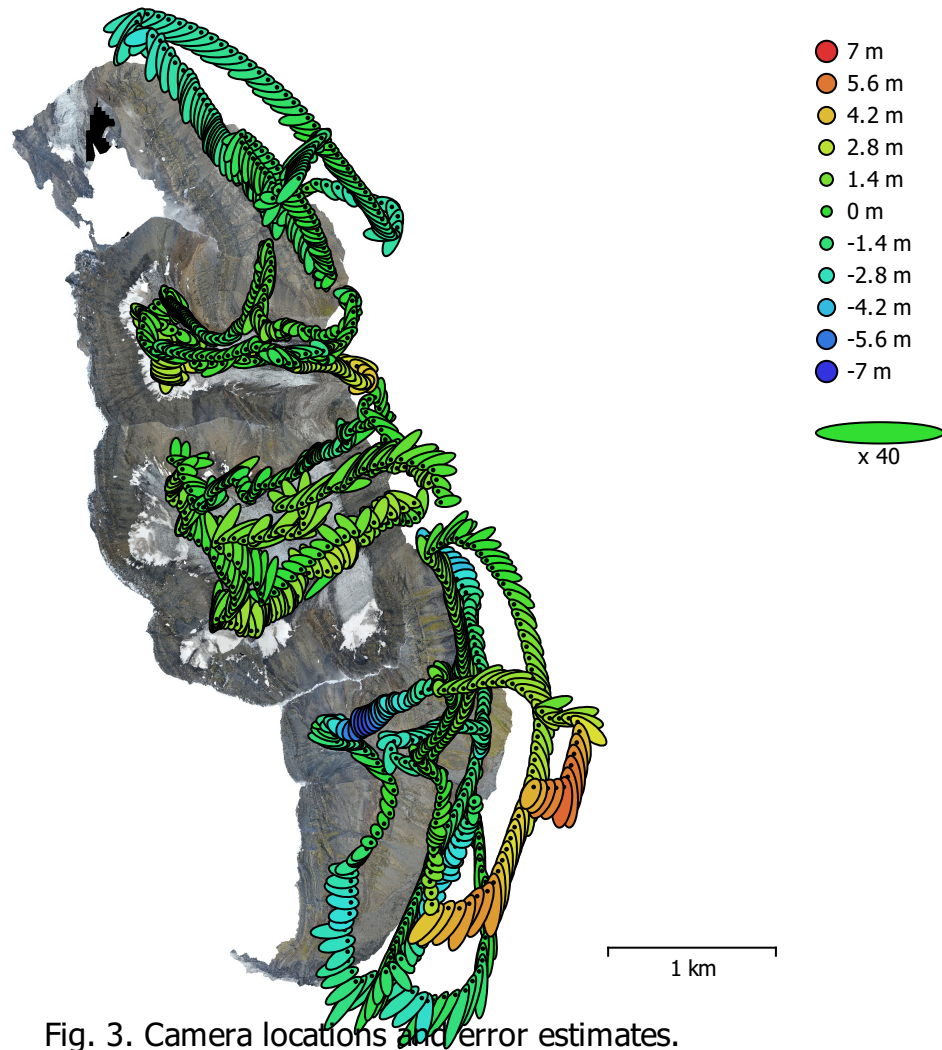


Fig. 3. Camera locations and error estimates.

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)
1.91113	2.47623	1.68967	3.12796	3.55516

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

# Digital Elevation Model

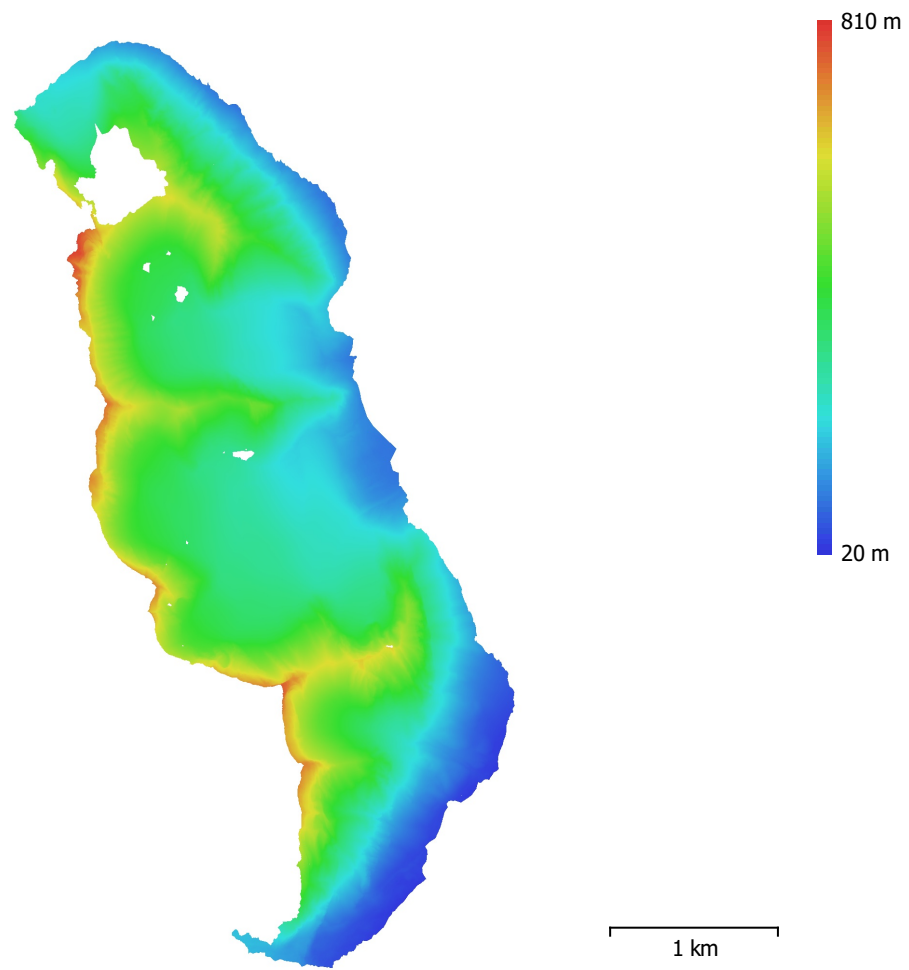


Fig. 4. Reconstructed digital elevation model.

Resolution: 17.9 cm/pix  
Point density: 31.2 points/m<sup>2</sup>

# Processing Parameters

## General

Cameras	1140
Aligned cameras	1140
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

## Tie Points

Points	1,862,738 of 7,056,810
RMS reprojection error	0.209073 (0.296538 pix)
Max reprojection error	0.5 (4.67881 pix)
Mean key point size	1.39129 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.46994

## Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	No
Key point limit	60,000
Key point limit per Mpx	60,000
Tie point limit	0
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	1 hours 29 minutes
Matching memory usage	2.57 GB
Alignment time	31 minutes 47 seconds
Alignment memory usage	2.28 GB

## Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	31 seconds
Date created	2023:08:17 10:50:56
Software version	2.0.2.16334
File size	436.61 MB

## Depth Maps

Count	1140
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## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 42 minutes
Memory usage	5.35 GB
Date created	2023:08:17 12:06:48
Software version	2.0.2.16334
File size	8.30 GB

## Point Cloud

Points	487,821,084
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## Point attributes

Color	3 bands, uint8
Normal	

Confidence	1 - 111
<b>Point classes</b>	
Created (never classified)	305,385,309
High Noise	182,435,775
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 42 minutes
Memory usage	5.35 GB
<b>Point cloud generation parameters</b>	
Processing time	9 hours 21 minutes
Memory usage	21.49 GB
Date created	2023:08:17 13:27:55
Software version	2.0.2.16334
File size	6.82 GB
<b>Model</b>	
Faces	21,548,410
Vertices	10,765,930
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 20, 4 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	1 hours 42 minutes
Memory usage	5.35 GB
<b>Point cloud generation parameters</b>	
Processing time	9 hours 21 minutes
Memory usage	21.49 GB
<b>Reconstruction parameters</b>	
Surface type	Arbitrary
Source data	Point cloud
Interpolation	Disabled
Strict volumetric masks	No
Processing time	2 hours 26 minutes
Memory usage	17.84 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	1 minutes 33 seconds
UV mapping memory usage	5.01 GB
Blending time	17 minutes 14 seconds
Blending memory usage	12.40 GB
Blending GPU memory usage	8.85 GB
Date created	2023:08:17 15:38:19
Software version	2.0.2.16334
File size	1.30 GB
<b>Tiled Model</b>	
Texture	3 bands, uint8
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild

Max neighbors	16
Processing time	1 hours 42 minutes
Memory usage	5.35 GB

**Reconstruction parameters**

Source data	Point cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	7 hours 42 minutes
Memory usage	18.41 GB
Date created	2023:08:18 14:28:22
Software version	2.0.2.16334
File size	2.66 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