Grønsteinfjellet

Reconstruction uncertainty 12
Projection accuracy 3
Reprojection error 0.3
Dense Cloud Confidence 4-255
Connected component size 99%

29 September 2022

Survey Data

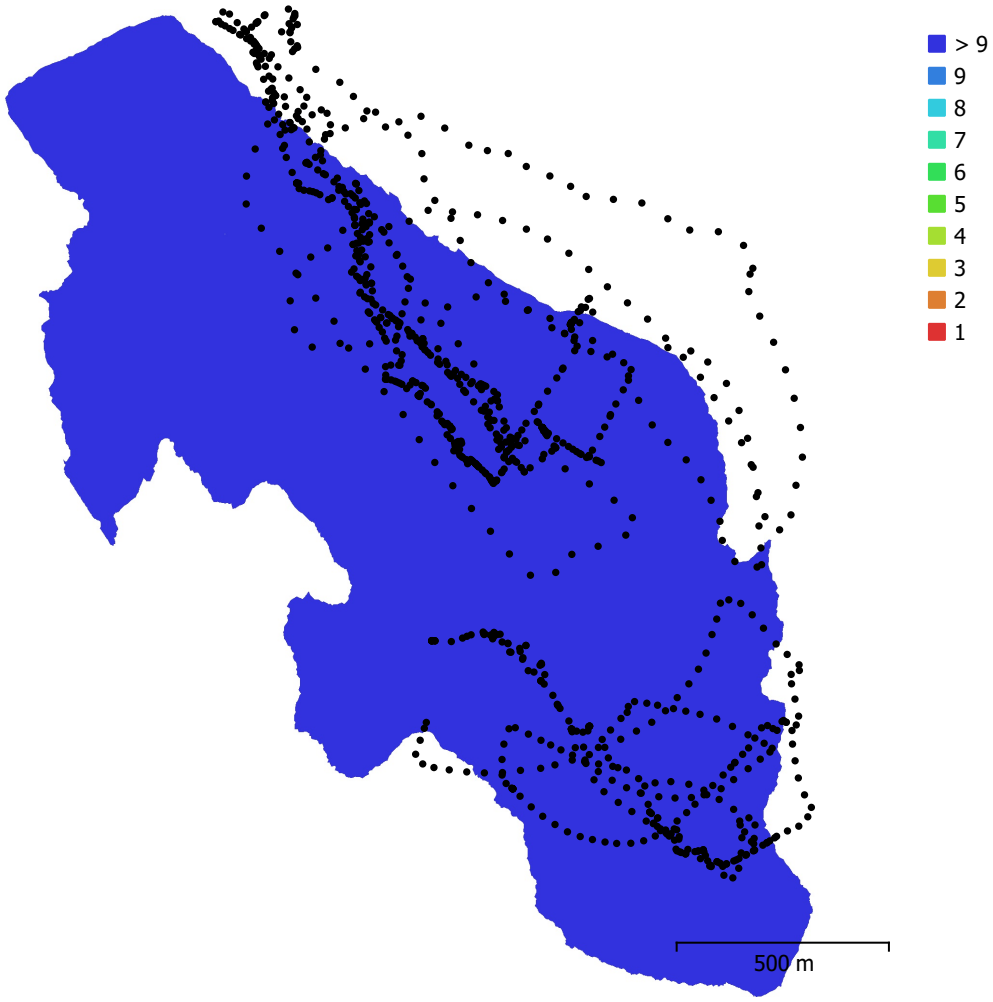

Fig. 1. Camera locations and image overlap.

Number of images:	982	Camera stations:	980
Flying altitude:	137 m	Tie points:	893,129
Ground resolution:	5.06 cm/pix	Projections:	2,717,994
Coverage area:	2.09 km²	Reprojection error:	0.333 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 µm	No
Test_Pro (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 µm	No

Table 1. Cameras.

Camera Calibration

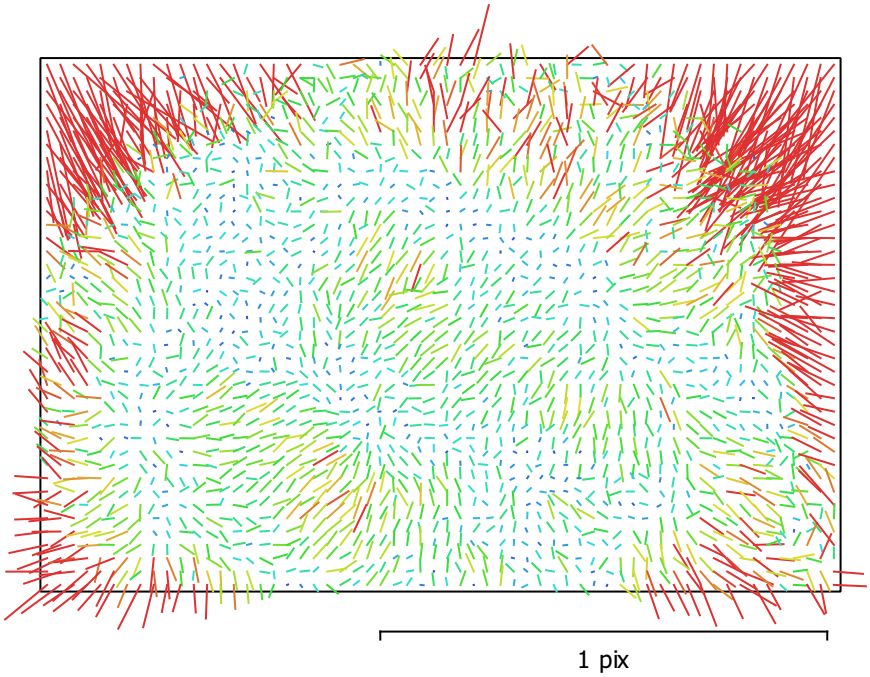

Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

198 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	K1	K2	K3	P1	P2
F	**4341.4**	0.048	1.00	0.17	-0.64	-0.08	0.11	-0.10	0.14	-0.31
Cx	**7.40792**	0.064		1.00	-0.17	0.02	-0.01	0.01	0.91	-0.16
Cy	**-51.4204**	0.073			1.00	-0.08	0.03	-0.02	-0.16	0.77
K1	**0.00167541**	2.7e-05				1.00	-0.95	0.88	0.03	-0.14
K2	**0.0182297**	0.00012					1.00	-0.98	-0.01	0.06
K3	**-0.0233452**	0.00016						1.00	0.02	-0.05
P1	**4.44245e-05**	4.5e-06							1.00	-0.17
P2	**-0.00339616**	3.7e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

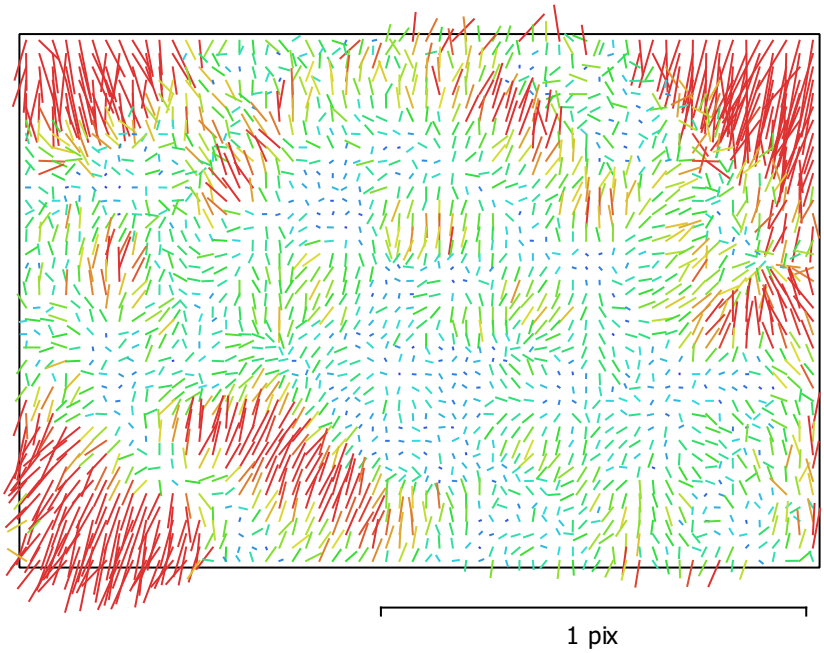

Fig. 3. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

784 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	K1	K2	K3	P1	P2
F	**4329.08**	0.041	1.00	-0.02	-0.68	-0.02	0.09	-0.09	-0.03	-0.17
Cx	**20.7231**	0.05		1.00	0.08	0.01	-0.01	0.01	0.93	0.13
Cy	**-46.3856**	0.053			1.00	-0.06	0.02	-0.01	0.08	0.56
K1	**-0.00285751**	2.1e-05				1.00	-0.95	0.88	0.00	-0.09
K2	**0.0272303**	9.2e-05					1.00	-0.98	-0.01	0.02
K3	**-0.0359206**	0.00012						1.00	0.01	-0.02
P1	**0.00133114**	3.6e-06							1.00	0.15
P2	**-0.00269616**	2.1e-06								1.00

Table 3. Calibration coefficients and correlation matrix.

Camera Locations

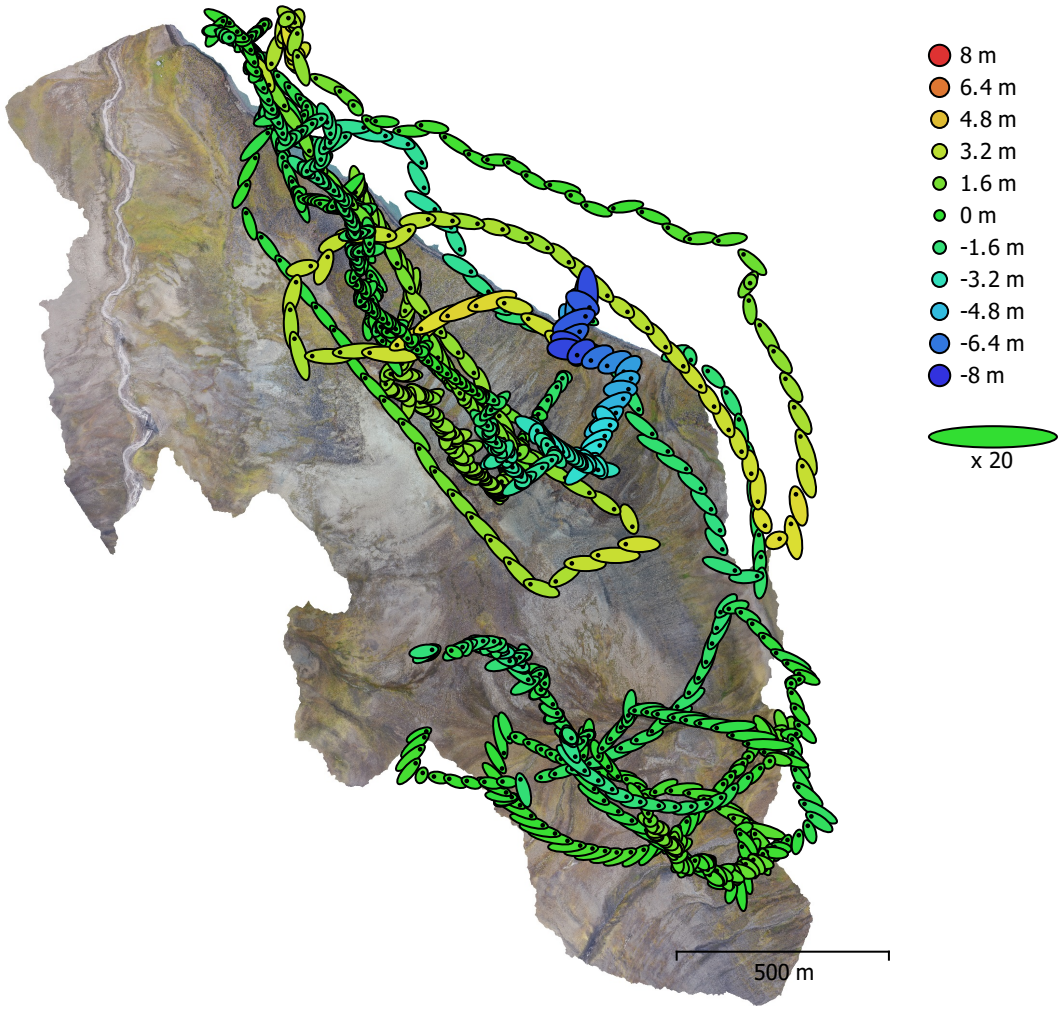

Fig. 4. Camera locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
1.50587	1.36193	1.86431	2.0304	2.75647

Table 4. Average camera location error.
X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

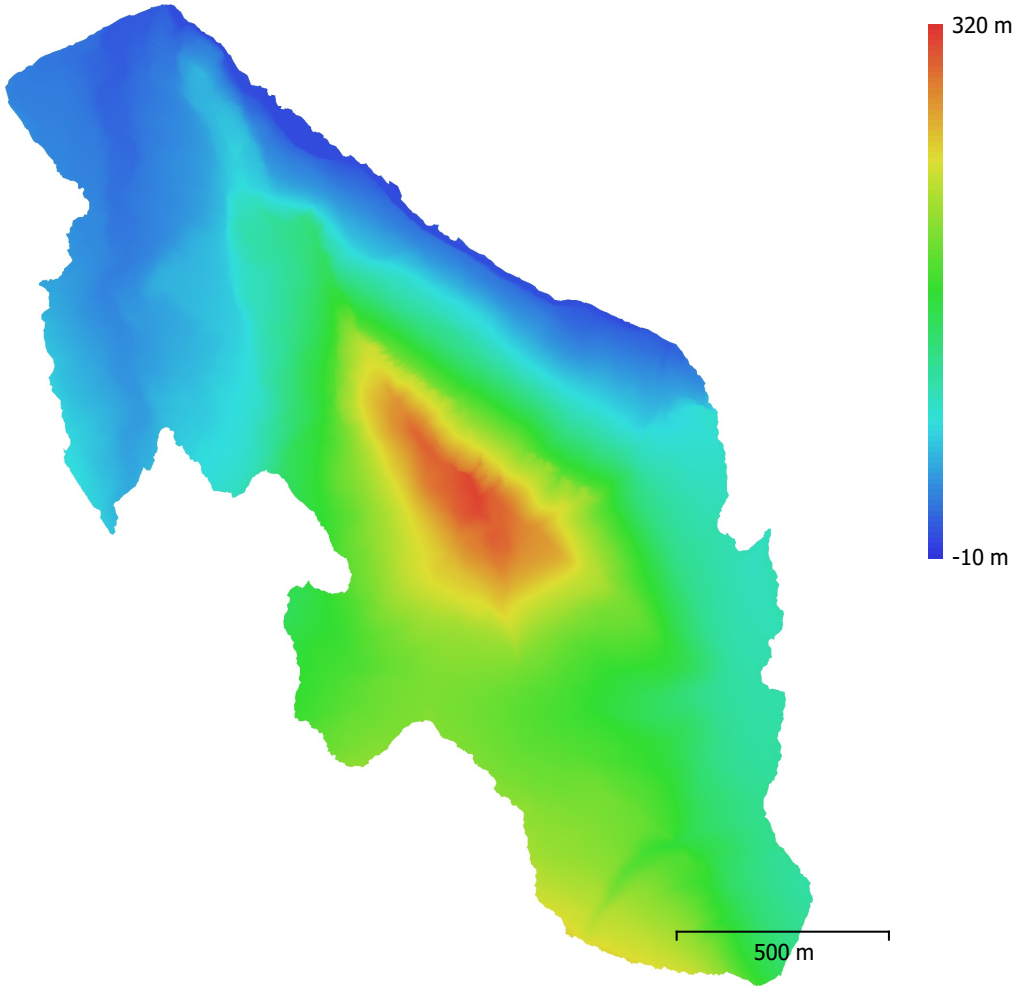

Fig. 5. Reconstructed digital elevation model.

Resolution:	20.3 cm/pix
Point density:	24.4 points/m²

Processing Parameters

General	
Cameras	982
Aligned cameras	980
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	893,129 of 5,545,972
RMS reprojection error	0.21095 (0.333198 pix)
Max reprojection error	1.85425 (4.84786 pix)
Mean key point size	1.50931 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.33184
Alignment parameters	
Accuracy	Highest
Generic preselection	Yes
Reference preselection	No
Key point limit	60,000
Key point limit per Mpx	1,000
Tie point limit	0
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	No
Matching time	1 hours 41 minutes
Matching memory usage	2.55 GB
Alignment time	41 minutes 53 seconds
Alignment memory usage	2.58 GB
Optimization parameters	
Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	16 seconds
Date created	2022:09:29 09:15:12
Software version	1.8.4.14856
File size	318.39 MB
Depth Maps	
Count	970
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	50 minutes 37 seconds
Memory usage	1.59 GB
Date created	2022:09:29 10:13:20
Software version	1.8.4.14856
File size	1.74 GB
Dense Point Cloud	
Points	46,424,556
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	Medium

Filtering mode	Mild
Max neighbors	16
Processing time	50 minutes 37 seconds
Memory usage	1.59 GB
Dense cloud generation parameters	
Processing time	2 hours 36 minutes
Memory usage	11.87 GB
Date created	2022:09:29 10:52:18
Software version	1.8.4.14856
File size	1.34 GB
Model	
Faces	1,975,546
Vertices	988,596
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 10, 4 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	50 minutes 37 seconds
Memory usage	1.59 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	27 minutes 25 seconds
Memory usage	9.27 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	1 minutes 31 seconds
UV mapping memory usage	2.87 GB
Blending time	20 minutes 38 seconds
Blending memory usage	5.00 GB
Blending GPU memory usage	4.47 GB
Date created	2022:09:29 11:47:07
Software version	1.8.4.14856
File size	304.75 MB
Tiled Model	
Texture	3 bands, uint8
Reconstruction parameters	
Source data	Mesh
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	3 hours 28 minutes
Memory usage	2.73 GB
Date created	2022:09:29 14:07:00
Software version	1.8.4.14856
File size	615.09 MB
System	
Software name	Agisoft Metashape Professional

Software version	1.8.4 build 14856
OS	Windows 64 bit
RAM	127.78 GB
CPU	Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2080