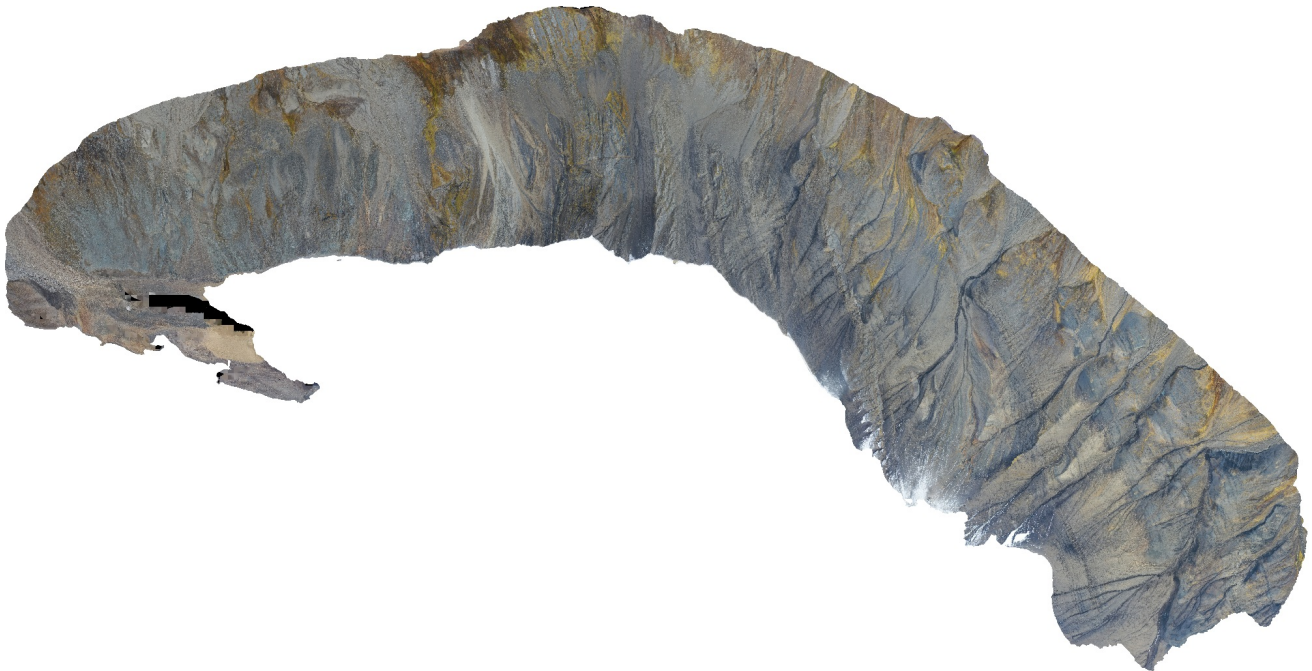


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Reconstruction uncertainty 15
Projection accuracy 3
Reprojection error 0,3
Dense Cloud Confidence 7-255
Connected component size 99%
10 September 2022



Survey Data

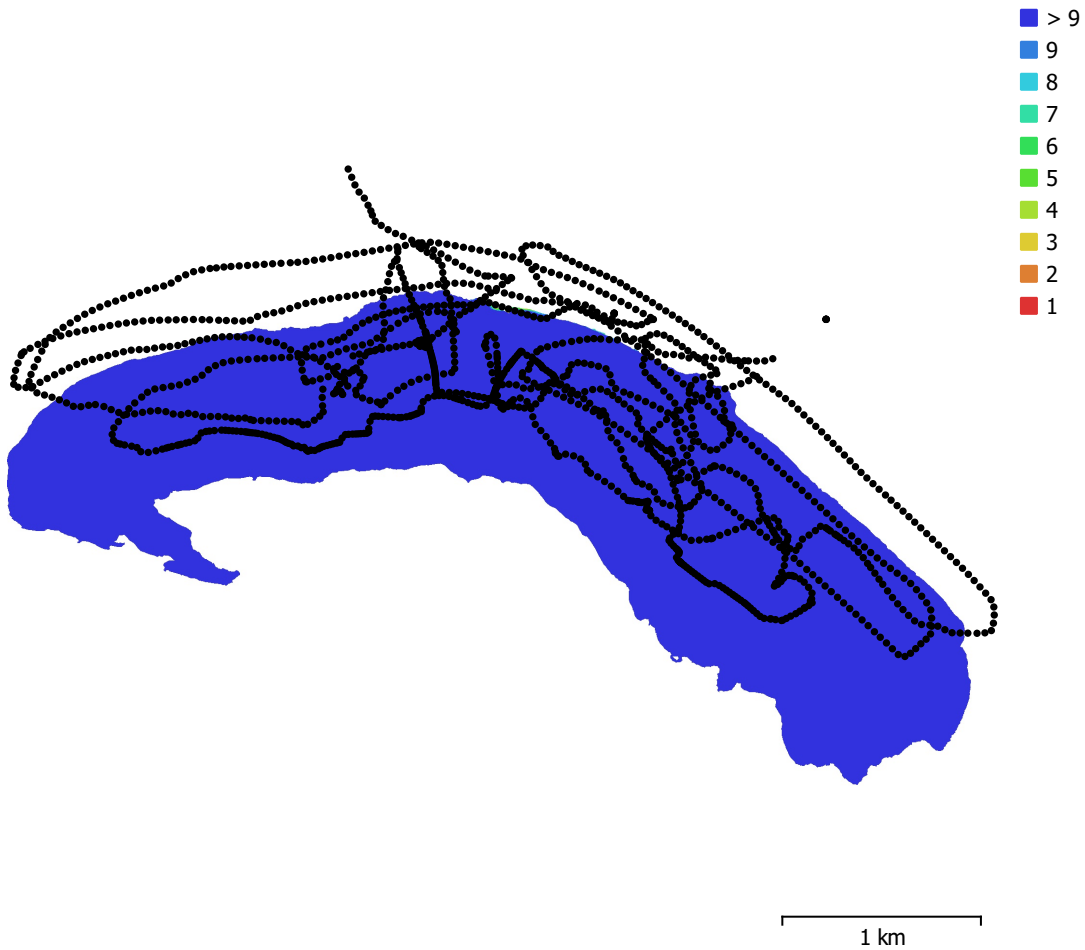


Fig. 1. Camera locations and image overlap.

Number of images:	1,471	Camera stations:	1,471
Flying altitude:	289 m	Tie points:	1,253,745
Ground resolution:	8.79 cm/pix	Projections:	3,754,447
Coverage area:	4.77 km ²	Reprojection error:	0.207 pix

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

Table 1. Cameras.

Camera Calibration

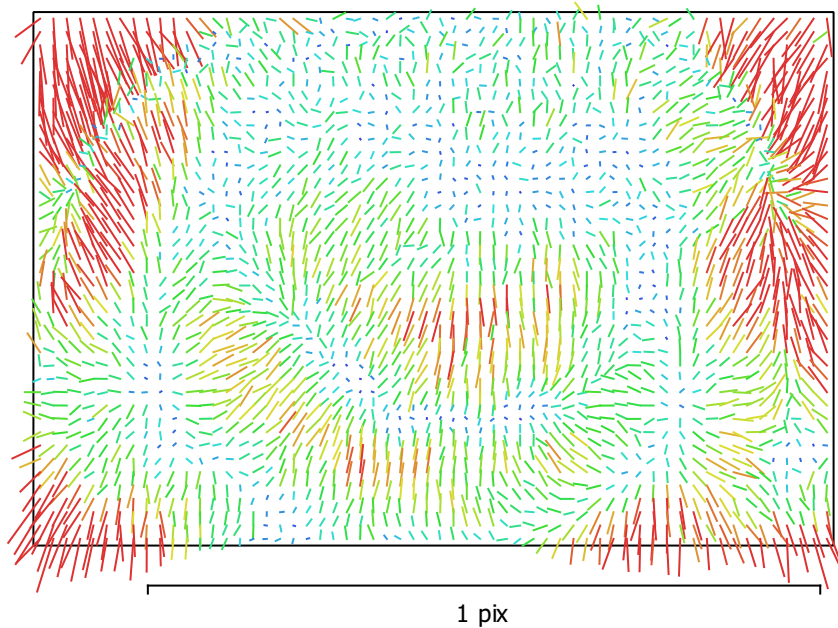


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

1471 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	4337.92	0.013	1.00	0.01	-0.53	-0.02	0.10	-0.10	0.01	-0.14
Cx	11.4638	0.021		1.00	0.07	0.00	-0.01	0.01	0.94	0.08
Cy	-52.2679	0.018			1.00	-0.08	0.04	-0.03	0.07	0.64
K1	0.00243858	7.2e-06				1.00	-0.95	0.88	0.00	-0.12
K2	0.018781	2.9e-05					1.00	-0.98	-0.01	0.04
K3	-0.0217357	3.6e-05						1.00	0.01	-0.03
P1	0.000564432	1.4e-06							1.00	0.09
P2	-0.00325986	8.1e-07								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

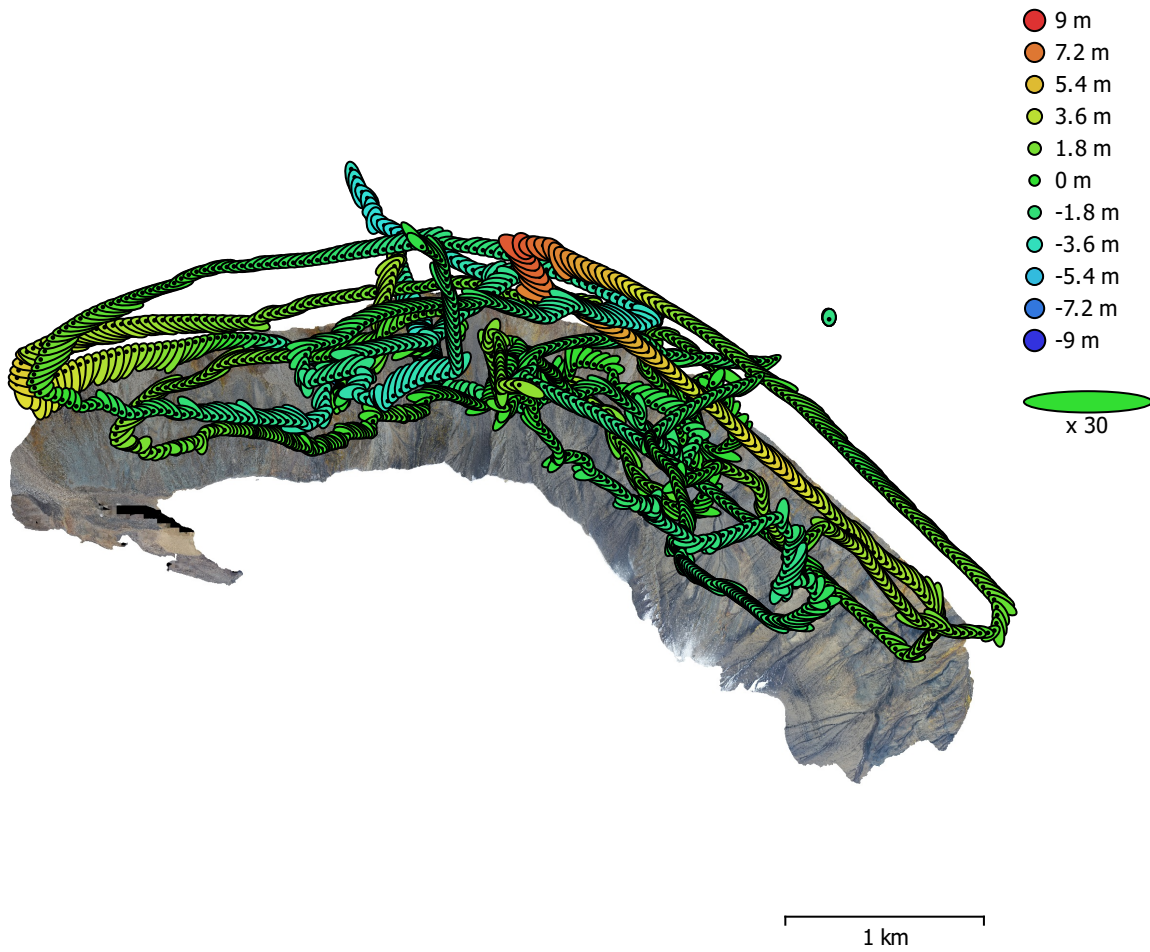


Fig. 3. Camera locations and error estimates.

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)
2.53035	1.86553	2.17319	3.1437	3.82173

Table 3. Average camera location error.

X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

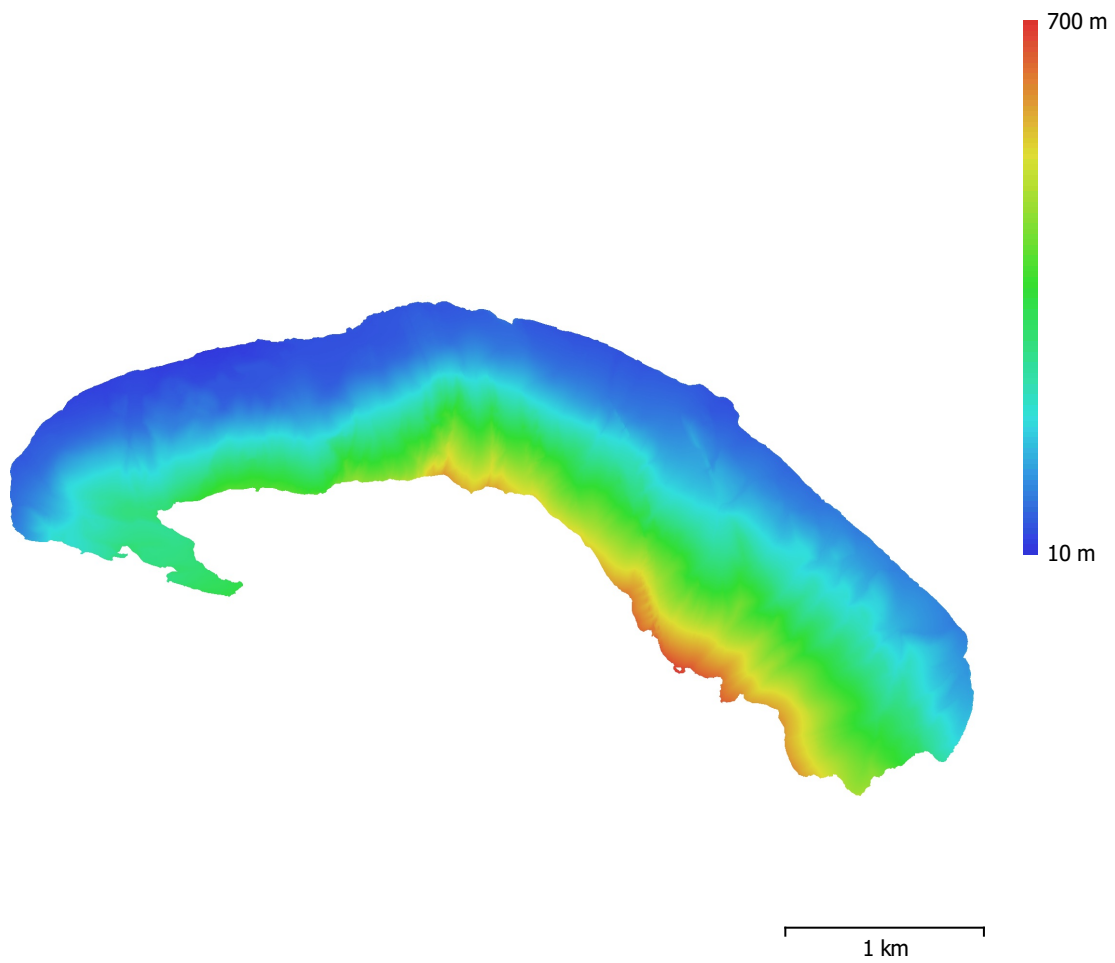


Fig. 4. Reconstructed digital elevation model.

Resolution: 35.2 cm/pix
Point density: 8.08 points/m²

Processing Parameters

General

Cameras	1471
Aligned cameras	1471
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	1,253,745 of 9,396,807
RMS reprojection error	0.150754 (0.206954 pix)
Max reprojection error	0.3 (2.22895 pix)
Mean key point size	1.34875 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.65127

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 9 minutes
Matching memory usage	2.88 GB
Alignment time	53 minutes 30 seconds
Alignment memory usage	3.77 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	1 minutes 12 seconds
Date created	2022:09:08 14:01:55
Software version	1.8.4.14856
File size	579.31 MB

Depth Maps

Count	1470
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	30 minutes 57 seconds
Memory usage	1.47 GB
Date created	2022:09:09 11:01:48
Software version	1.8.4.14856
File size	2.81 GB

Dense Point Cloud

Points	53,316,987
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	Medium

Filtering mode	Mild
Max neighbors	16
Processing time	30 minutes 57 seconds
Memory usage	1.47 GB
Dense cloud generation parameters	
Processing time	1 hours 59 minutes
Memory usage	14.17 GB
Date created	2022:09:09 13:00:58
Software version	1.8.4.14856
File size	1.09 GB
Model	
Faces	1,863,004
Vertices	932,271
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	30 minutes 57 seconds
Memory usage	1.47 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	20 minutes 26 seconds
Memory usage	9.44 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	53 seconds
UV mapping memory usage	2.65 GB
Blending time	12 minutes 58 seconds
Blending memory usage	5.05 GB
Blending GPU memory usage	4.46 GB
Date created	2022:09:09 13:51:23
Software version	1.8.4.14856
File size	309.94 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	30 minutes 57 seconds
Memory usage	1.47 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	2 hours 52 minutes

Memory usage	5.14 GB
Date created	2022:09:09 17:28:20
Software version	1.8.4.14856
File size	714.87 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