

Varmlandsryggen

Processing Report
10 March 2021



Survey Data

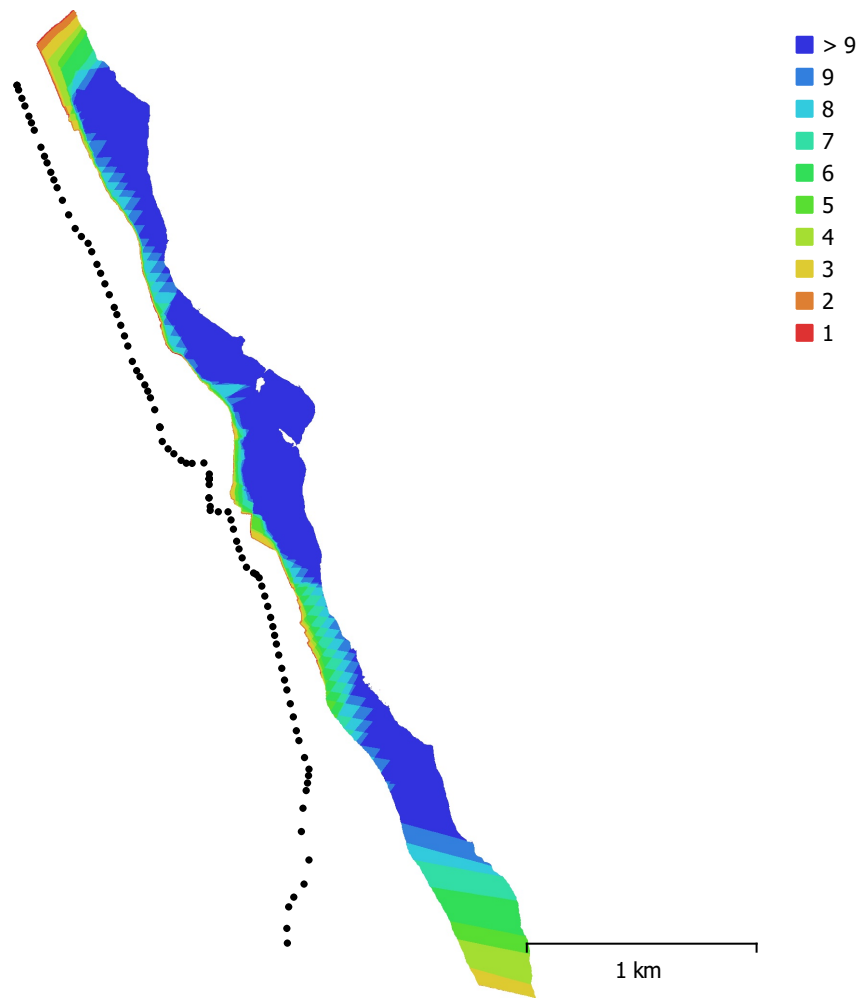


Fig. 1. Camera locations and image overlap.

Number of images:	96	Camera stations:	96
Flying altitude:	323 m	Tie points:	109,639
Ground resolution:	10.2 cm/pix	Projections:	349,760
Coverage area:	1.05 km ²	Reprojection error:	0.415 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC3170 (4.5mm)	4000 x 3000	4.5 mm	1.62 x 1.62 μ m	No

Table 1. Cameras.

Camera Calibration

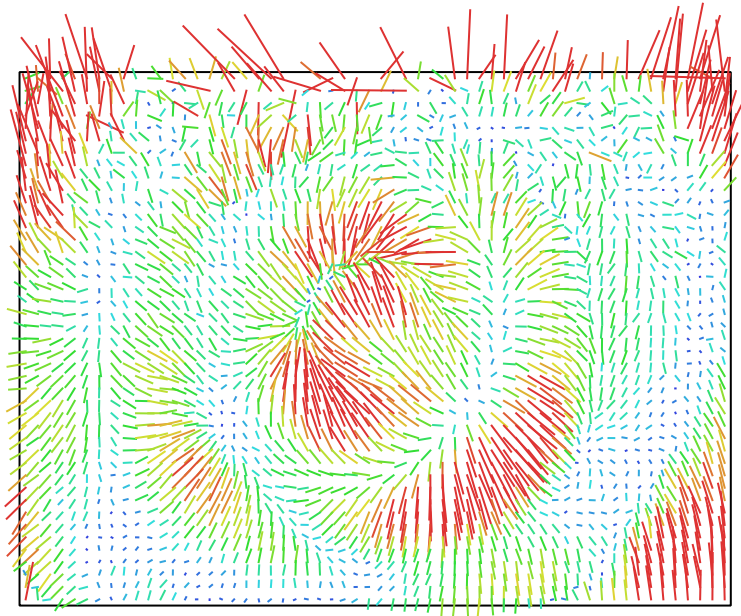


Fig. 2. Image residuals for FC3170 (4.5mm). 1 pix

FC3170 (4.5mm)

96 images

Type
Frame

Resolution
4000 x 3000

Focal Length
4.5 mm

Pixel Size
1.62 x 1.62 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	2942.39	0.12	1.00	-0.06	-0.27	0.09	0.23	-0.30	-0.03	0.06
Cx	13.7967	0.12		1.00	0.07	0.06	-0.07	0.08	0.90	0.02
Cy	18.6347	0.14			1.00	-0.09	0.15	-0.20	0.04	0.71
K1	-0.0329073	6.2e-05				1.00	-0.86	0.76	0.04	-0.16
K2	0.182541	0.0002					1.00	-0.98	-0.07	0.19
K3	-0.192923	0.00021						1.00	0.09	-0.25
P1	-4.34638e-05	1.3e-05							1.00	0.02
P2	1.10419e-06	1e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

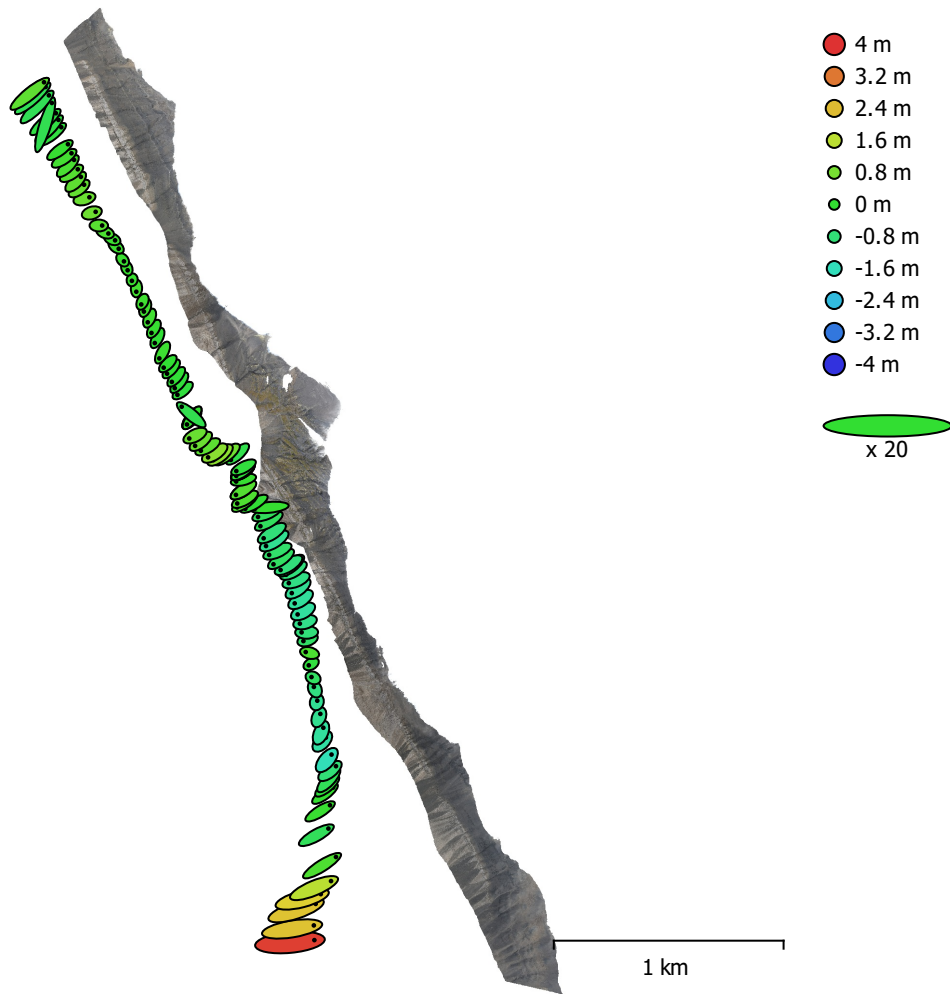


Fig. 3. Camera locations and error estimates.

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)
3.55042	2.42627	0.817457	4.30027	4.37727

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

Digital Elevation Model

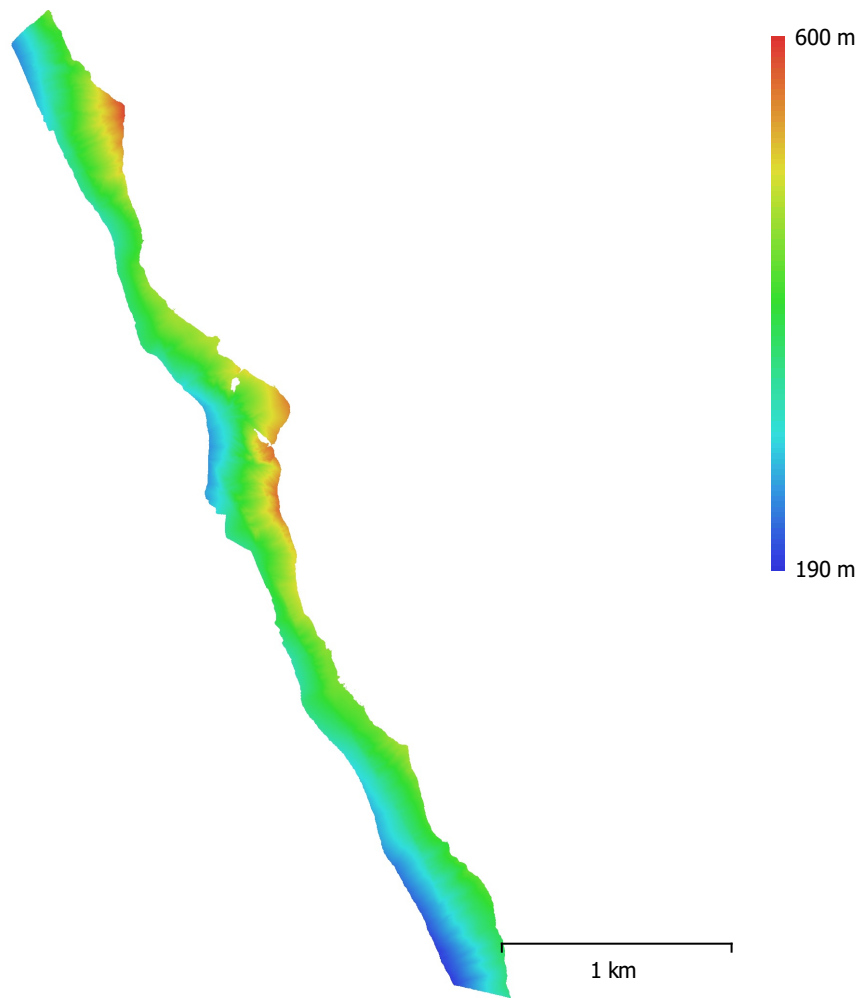


Fig. 4. Reconstructed digital elevation model.

Resolution: 16.7 cm/pix
Point density: 35.9 points/m²

Processing Parameters

General

Cameras	96
Aligned cameras	96
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	109,639 of 122,312
RMS reprojection error	0.302687 (0.414803 pix)
Max reprojection error	0.906403 (9.58641 pix)
Mean key point size	1.41447 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.23865

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Guided image matching	No
Adaptive camera model fitting	No
Matching time	2 minutes 2 seconds
Matching memory usage	390.43 MB
Alignment time	8 minutes 13 seconds
Alignment memory usage	62.18 MB
Software version	1.6.3.10732
File size	8.92 MB

Depth Maps

Count	96
Depth maps generation parameters	
Quality	Ultra High
Filtering mode	Mild
Processing time	43 minutes 14 seconds
Memory usage	5.88 GB
Software version	1.6.3.10732
File size	976.57 MB

Dense Point Cloud

Points	171,373,499
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	Ultra High
Filtering mode	Mild
Processing time	43 minutes 14 seconds
Memory usage	5.88 GB
Dense cloud generation parameters	
Processing time	58 minutes 0 seconds
Memory usage	8.53 GB
Software version	1.6.3.10732
File size	2.52 GB

Model

Faces	2,000,000
Vertices	1,010,450
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096, 4 bands, uint8
Depth maps generation parameters	
Quality	Ultra High
Filtering mode	Mild
Processing time	43 minutes 14 seconds
Memory usage	5.88 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	43 minutes 46 seconds
Memory usage	35.55 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	2 minutes 30 seconds
Blending time	31 seconds
Software version	1.6.3.10732
File size	111.03 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	Ultra High
Filtering mode	Mild
Processing time	43 minutes 14 seconds
Memory usage	5.88 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	1 hours 37 minutes
Memory usage	9.65 GB
Software version	1.7.1.11797
File size	216.27 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.1 build 11797
OS	Windows 64 bit
RAM	127.78 GB
CPU	Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2080