Festningen Geotope

Processing Report

27 January 2022

Survey Data

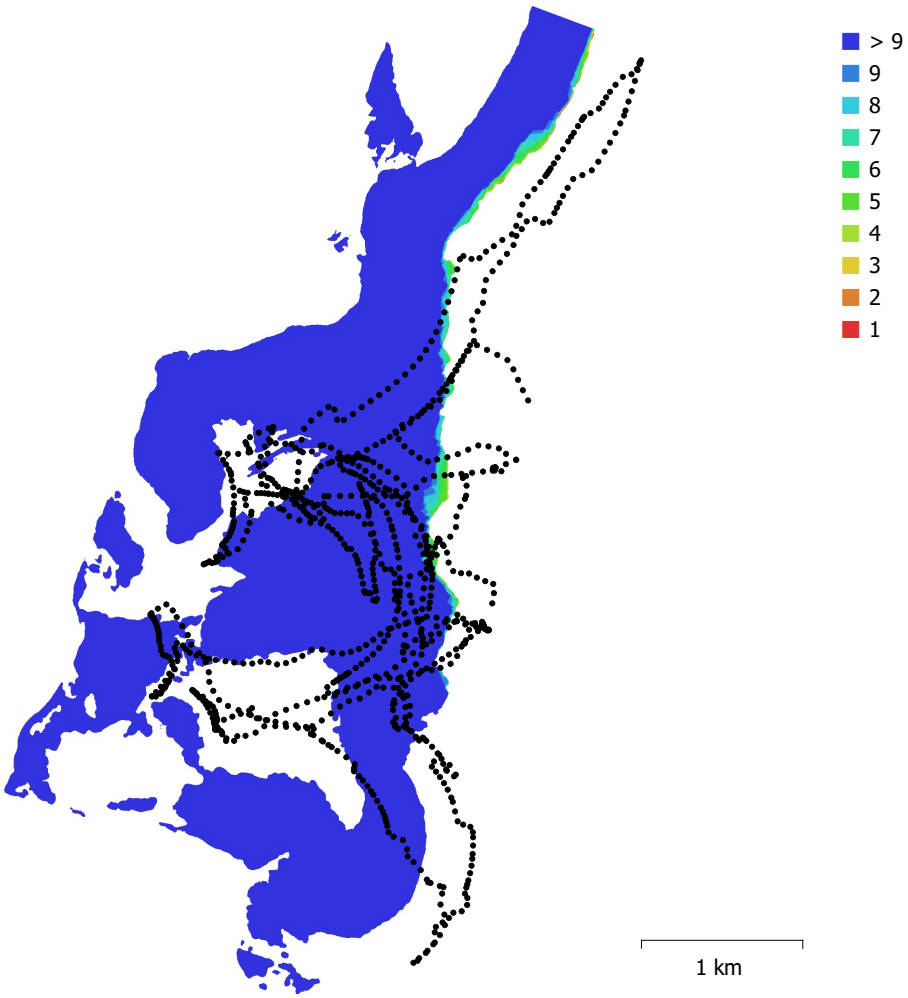

Fig. 1. Camera locations and image overlap.

Number of images:	974	Camera stations:	974
Flying altitude:	468 m	Tie points:	191,584
Ground resolution:	11.8 cm/pix	Projections:	1,906,411
Coverage area:	6.65 km²	Reprojection error:	1.67 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
L1D-20c (10.26mm)	5472 x 3648	10.26 mm	2.41 x 2.41 µm	No

Table 1. Cameras.

Camera Calibration

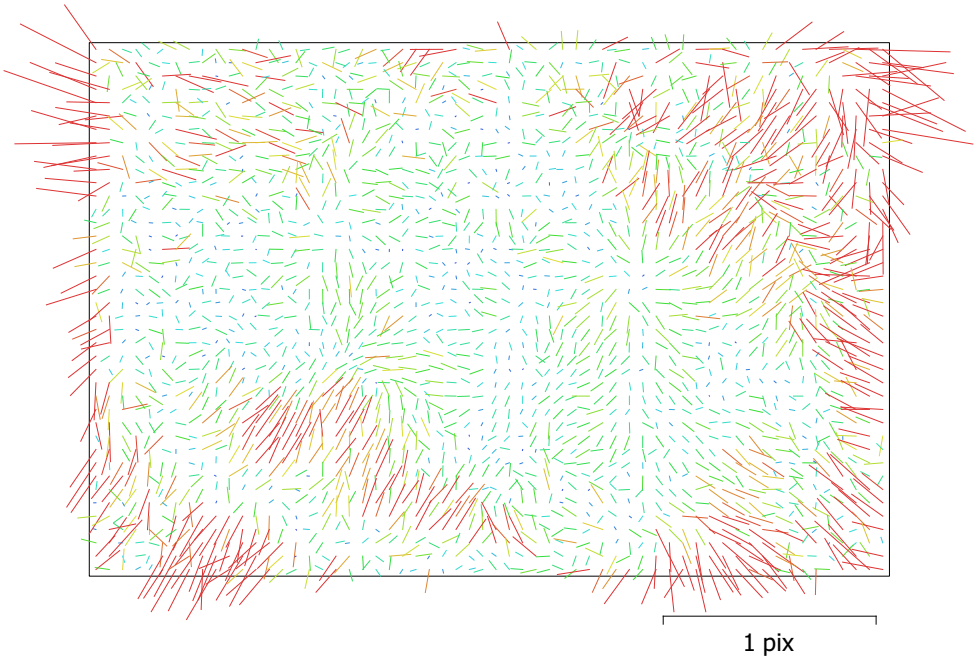

Fig. 2. Image residuals for L1D-20c (10.26mm).

L1D-20c (10.26mm)

974 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	B1	B2	K1	K2	K3	K4	P1	P2
F	**4328.68**	0.1	1.00	-0.03	0.24	-0.83	-0.09	-0.08	0.10	-0.09	0.08	-0.04	0.01
Cx	**13.1116**	0.098		1.00	-0.00	0.04	0.48	-0.01	0.01	-0.01	0.01	0.89	0.06
Cy	**-34.4379**	0.11			1.00	-0.61	-0.10	-0.01	-0.01	0.01	-0.01	0.02	0.61
B1	**7.20004**	0.098				1.00	0.11	-0.02	0.01	-0.00	0.00	0.05	-0.16
B2	**-4.00674**	0.066					1.00	-0.00	0.01	-0.00	0.00	0.19	-0.02
K1	**0.00256247**	6.6e-05						1.00	-0.97	0.91	-0.86	-0.01	-0.04
K2	**0.018835**	0.00048							1.00	-0.98	0.95	0.01	-0.00
K3	**5.36244e-05**	0.0014								1.00	-0.99	-0.00	0.01
K4	**-0.039725**	0.0013									1.00	0.00	-0.01
P1	**0.00113593**	6.3e-06										1.00	0.07
P2	**-0.00256256**	3.9e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

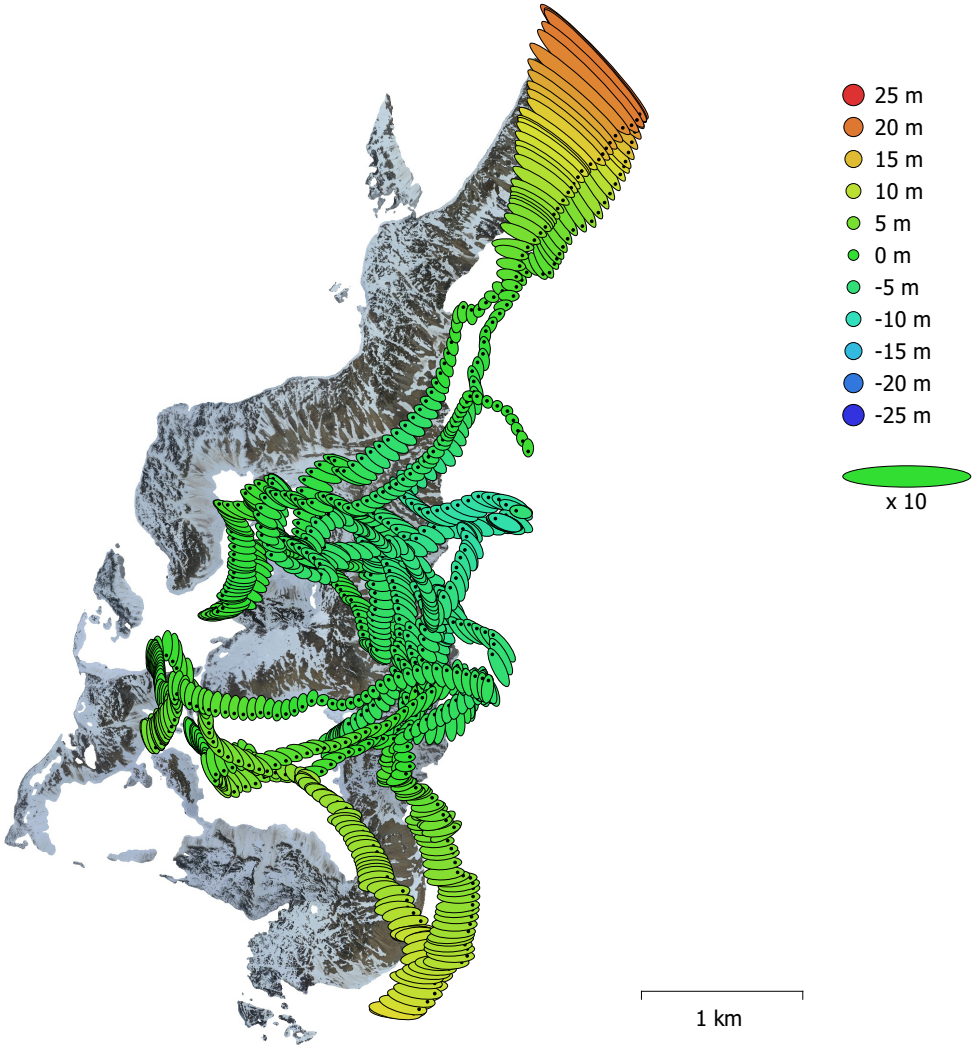

Fig. 3. Camera locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated camera locations are marked with a black dot.

X error (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
11.6334	10.6502	4.93169	15.7723	16.5253

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

Digital Elevation Model

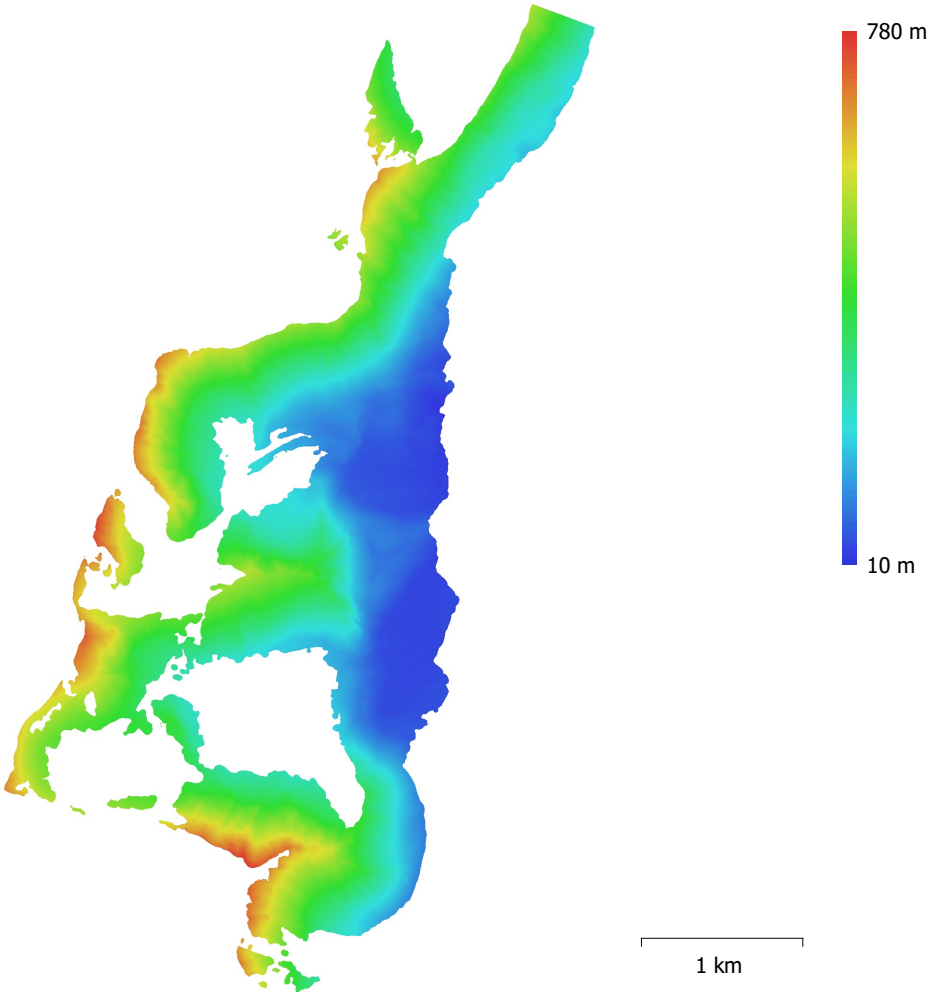

Fig. 4. Reconstructed digital elevation model.

Resolution:	47.1 cm/pix
Point density:	4.51 points/m²

Processing Parameters

General	
Cameras	974
Aligned cameras	974
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll
Point Cloud	
Points	191,584 of 330,362
RMS reprojection error	0.594276 (1.67436 pix)
Max reprojection error	4.73854 (117.527 pix)
Mean key point size	2.26223 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	16.9641
Alignment parameters	
Accuracy	Highest
Generic preselection	No
Reference preselection	No
Key point limit	40,000
Tie point limit	4,000
Exclude stationary tie points	No
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	11 hours 22 minutes
Matching memory usage	3.49 GB
Alignment time	24 minutes 47 seconds
Alignment memory usage	778.14 MB
Optimization parameters	
Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	No
Optimization time	18 seconds
Software version	1.7.2.12040
File size	90.97 MB
Depth Maps	
Count	974
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Processing time	46 minutes 9 seconds
Memory usage	2.31 GB
Software version	1.7.2.12040
File size	1.63 GB
Dense Point Cloud	
Points	34,895,349
Point colors	3 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Processing time	46 minutes 9 seconds
Memory usage	2.31 GB
Dense cloud generation parameters	

Processing time	2 hours 21 minutes
Memory usage	11.12 GB
Software version	1.7.2.12040
File size	1.03 GB
Model	
Faces	2,326,356
Vertices	1,177,497
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
Processing time	46 minutes 9 seconds
Memory usage	2.31 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	13 minutes 19 seconds
Memory usage	17.85 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	4 minutes 33 seconds
UV mapping memory usage	3.60 GB
Blending time	8 minutes 16 seconds
Blending memory usage	5.28 GB
Software version	1.7.2.12040
File size	363.75 MB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Processing time	46 minutes 9 seconds
Memory usage	2.31 GB
Reconstruction parameters	
Source data	Dense cloud
Tile size	256
Face count	Medium
Enable ghosting filter	No
Processing time	3 hours 13 minutes
Memory usage	3.05 GB
Software version	1.7.2.12040
File size	860.40 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.2 build 12040
OS	Windows 64 bit
RAM	127.71 GB
CPU	Intel(R) Xeon(R) Gold 5122 CPU @ 3.60GHz
GPU(s)	Quadro P5000