

dom_2021-0056

Processing Report

Reconstruction uncertainty: 15

Projection Accuracy: 3

Reprojection Error: 0.3

Dense Cloud Confidence: 5-255

Mesh connected component size: 99%

23 March 2023



Survey Data

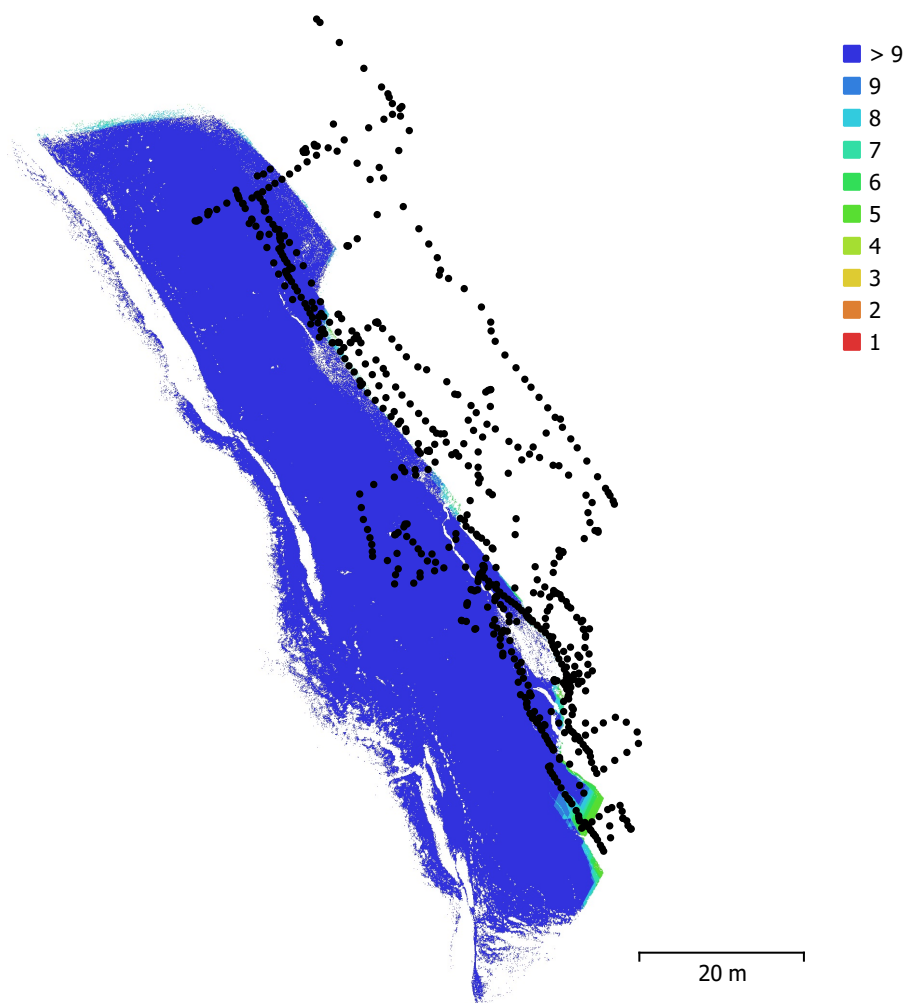


Fig. 1. Camera locations and image overlap.

Number of images:	623	Camera stations:	623
Flying altitude:	6.98 m	Tie points:	690,465
Ground resolution:	2.44 mm/pix	Projections:	1,758,769
Coverage area:	2.17e+03 m ²	Reprojection error:	0.22 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

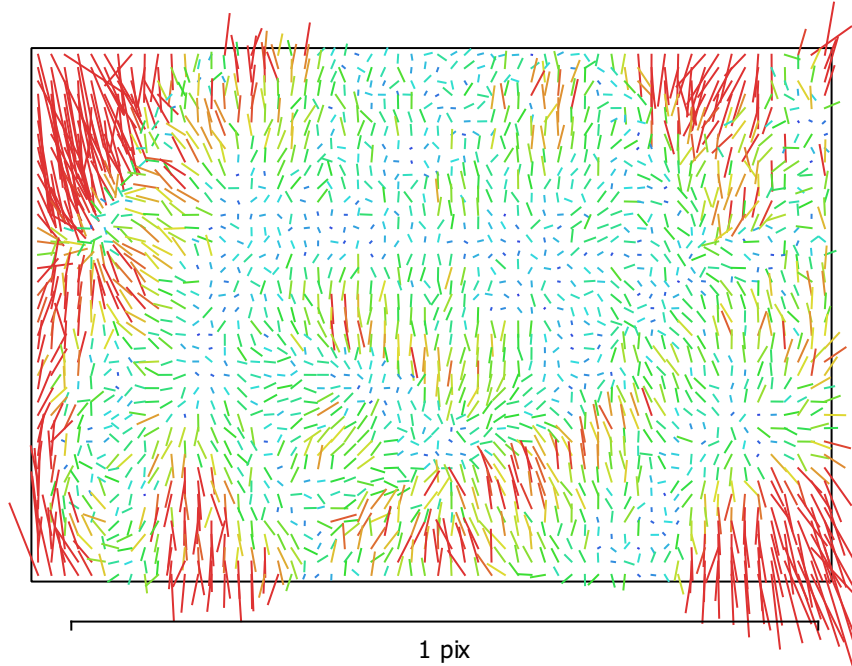


Fig. 2. Image residuals for L1D-20c (10.26mm).

L1D-20c (10.26mm)

623 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	4393.6	0.082	1.00	-0.03	-0.60	0.05	0.06	-0.05	0.01	-0.23
Cx	10.7067	0.082		1.00	0.07	-0.01	-0.00	0.00	0.84	0.07
Cy	-55.467	0.094			1.00	-0.05	0.00	0.00	0.04	0.55
K1	0.0167295	1.9e-05				1.00	-0.93	0.86	-0.01	-0.10
K2	0.0302801	8.3e-05					1.00	-0.98	0.00	0.02
K3	-0.0294348	0.00011						1.00	-0.00	-0.01
P1	0.000325119	4.9e-06							1.00	0.08
P2	-0.00311547	2.3e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

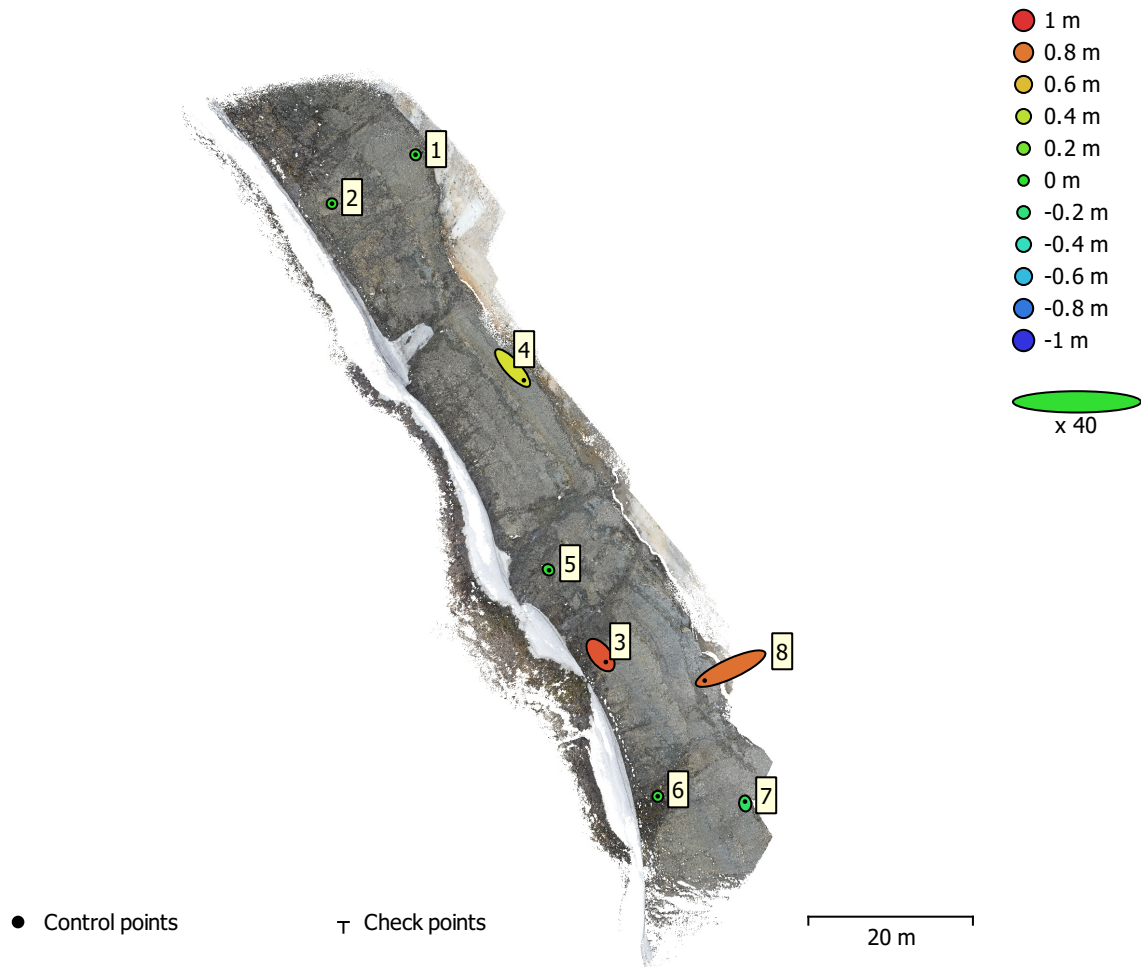


Fig. 3. GCP locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated GCP locations are marked with a dot or crossing.

Count	X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
8	6.16101	3.99126	46.5551	7.34085	47.1303

Table 3. Control points RMSE.

X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
1	-0.0545828	0.100075	-0.441437	0.455918	19.228 (10)
2	-0.00200082	-0.00123838	-0.0208768	0.021009	8.296 (25)
4	6.8201	-7.46916	47.7135	48.7737	22.981 (9)
5	0.35858	-0.274241	-1.10193	1.19081	8.659 (18)
3	3.25424	-4.22033	90.4332	90.5901	4.733 (43)
8	-15.6974	-7.23789	81.7554	83.5628	8.262 (33)
6	-0.0116236	0.0470668	-1.68014	1.68084	25.177 (5)
7	-0.139673	1.16921	-14.003	14.0524	17.107 (4)
Total	6.16101	3.99126	46.5551	47.1303	11.392

Table 4. Control points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

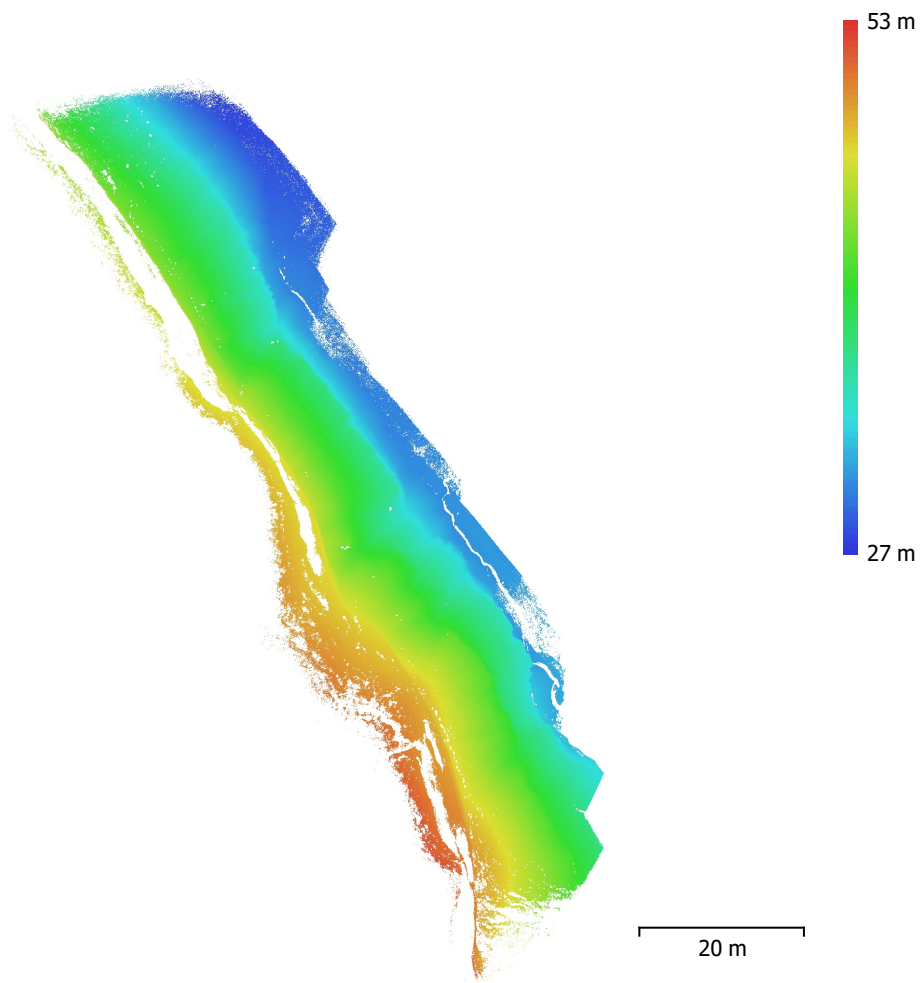


Fig. 4. Reconstructed digital elevation model.

Resolution: 4.88 mm/pix
Point density: 4.2 points/cm²

Processing Parameters

General

Cameras	623
Aligned cameras	623
Markers	8
Coordinate system	WGS 84 / UTM zone 33N (EPSG::32633)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	690,465 of 4,324,010
RMS reprojection error	0.135098 (0.22038 pix)
Max reprojection error	0.979712 (2.37117 pix)
Mean key point size	1.55387 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.76762

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	44 minutes 25 seconds
Matching memory usage	2.51 GB
Alignment time	24 minutes 8 seconds
Alignment memory usage	2.38 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	12 seconds
Date created	2023:03:08 12:49:48
Software version	1.8.4.14856
File size	276.84 MB

Depth Maps

Count	622
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Depth maps generation parameters

Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	57 minutes 25 seconds
Memory usage	4.37 GB
Date created	2023:03:08 13:30:09
Software version	1.8.4.14856
File size	4.66 GB

Point Cloud

Points	139,817,814
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Point attributes

Position	
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Color	3 bands, uint8
Normal	
Confidence	
Point classes	
Created (never classified)	139,817,814
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	57 minutes 25 seconds
Memory usage	4.37 GB
Point cloud generation parameters	
Processing time	4 hours 55 minutes
Memory usage	13.72 GB
Date created	2023:03:08 14:18:16
Software version	1.8.4.14856
File size	3.16 GB
Model	
Faces	61,402,476
Vertices	30,687,780
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096 x 25, 4 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Mild
Max neighbors	16
Processing time	57 minutes 25 seconds
Memory usage	4.37 GB
Point cloud generation parameters	
Processing time	4 hours 55 minutes
Memory usage	13.72 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Point cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	1 hours 36 minutes
Memory usage	13.90 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 54 seconds
UV mapping memory usage	9.48 GB
Blending time	1 hours 1 minutes
Blending memory usage	40.08 GB
Date created	2023:03:08 15:28:02
Software version	2.0.1.15925
File size	3.03 GB
Tiled Model	
Texture	3 bands, uint8
Reconstruction parameters	
Source data	Mesh
Tile size	256

Face count	High
Enable ghosting filter	No
Processing time	2 hours 33 minutes
Memory usage	19.61 GB
Date created	2023:03:08 18:36:11
Software version	2.0.1.15925
File size	1.94 GB

DEM

Size	15,622 x 23,525
Coordinate system	WGS 84 / UTM zone 33N (EPSG::32633)

Reconstruction parameters

Source data	Point cloud
Interpolation	Disabled
Processing time	2 minutes 29 seconds
Memory usage	404.80 MB
Date created	2023:03:09 19:35:18
Software version	2.0.1.15925
File size	314.87 MB

Orthomosaic

Size	49,189 x 10,134
Coordinate system	WGS 84 (EPSG::4978)
Colors	3 bands, uint8

Reconstruction parameters

Blending mode	Mosaic
Surface	Mesh
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	1 hours 32 minutes
Memory usage	6.06 GB
Date created	2023:03:09 11:19:14
Software version	2.0.1.15925
File size	14.80 GB

System

Software name	Agisoft Metashape Professional
Software version	2.0.1 build 15986
OS	Windows 64 bit
RAM	127.71 GB
CPU	Intel(R) Xeon(R) Gold 5122 CPU @ 3.60GHz
GPU(s)	Quadro P5000