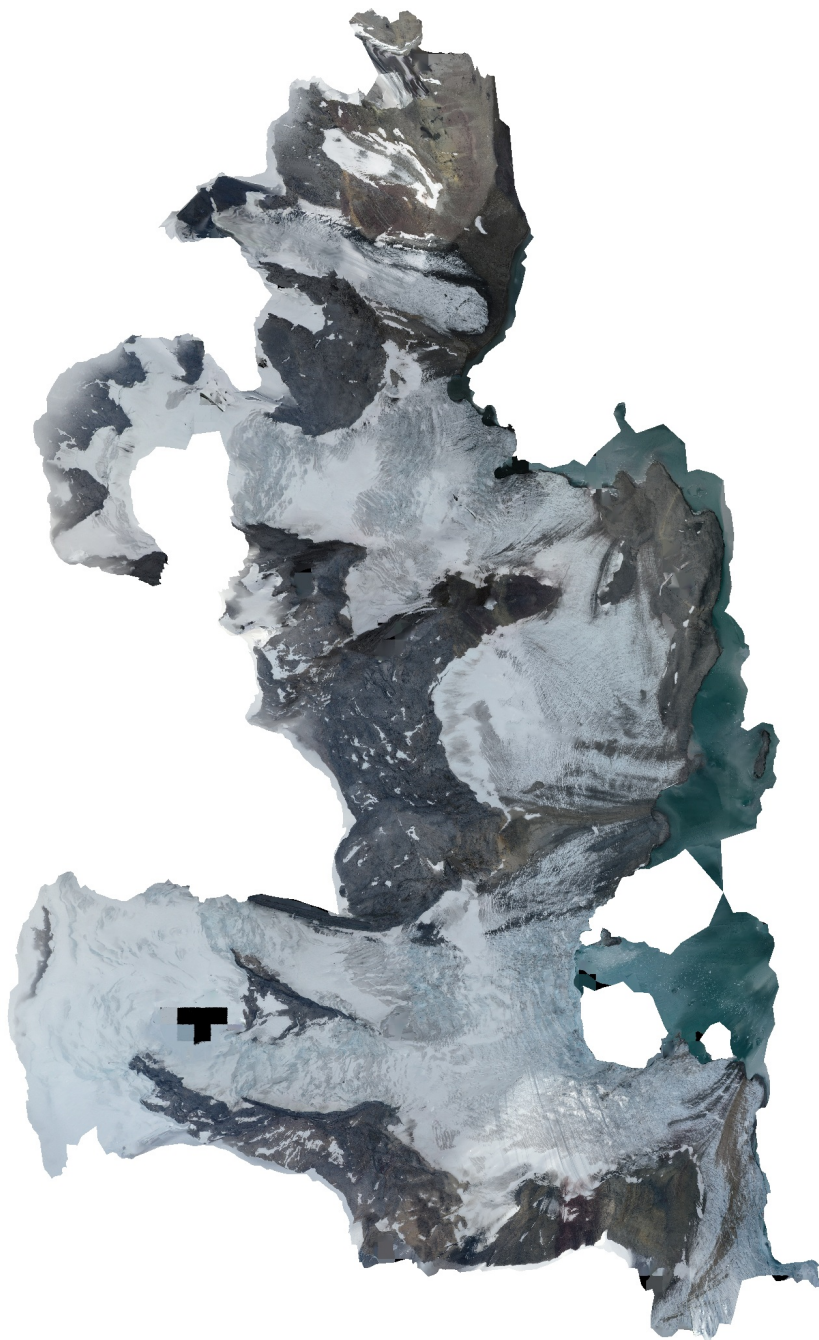


Hornsundtind

Reconstruction uncertainty 19
Projection accuracy 3
Reprojection error 0.3
Dense Cloud Confidence 5-255
Connected component size 99%
11 July 2024



Survey Data

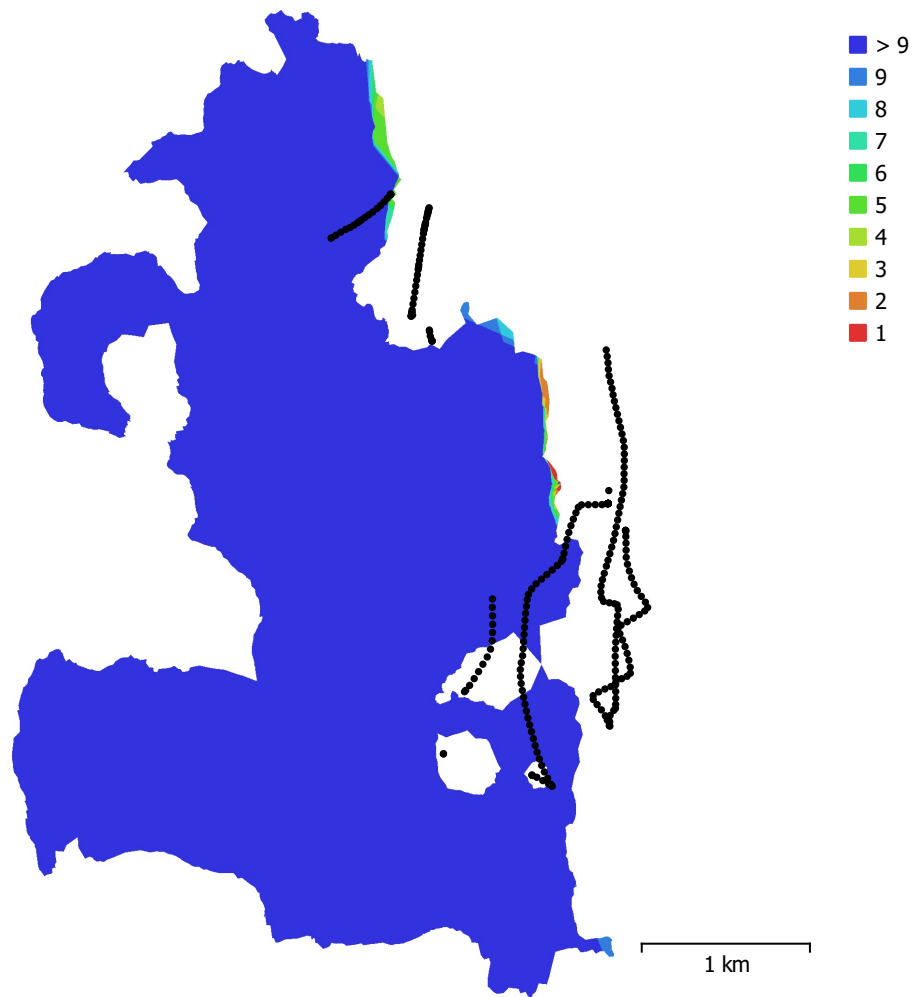


Fig. 1. Camera locations and image overlap.

Number of images:	278	Camera stations:	270
Flying altitude:	600 m	Tie points:	75,048
Ground resolution:	28.7 cm/pix	Projections:	309,020
Coverage area:	11.1 km ²	Reprojection error:	0.251 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 (4.5mm)	8000 x 6000	4.5 mm	0.811 x 0.811 μm	No
Test_Pro (4.5mm)	4000 x 3000	4.5 mm	1.62 x 1.62 μm	No

Table 1. Cameras.

Camera Calibration

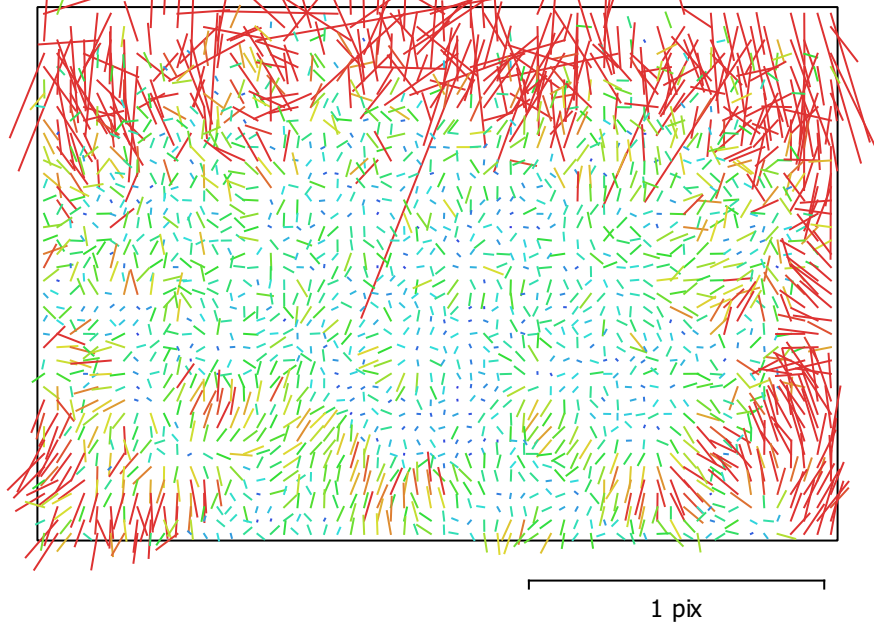


Fig. 2. Image residuals for Test_Pro (10.26mm).

Test_Pro (10.26mm)

185 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	4332.22	0.076	1.00	0.01	-0.48	0.15	0.08	-0.10	-0.00	-0.42
Cx	20.7572	0.15		1.00	0.08	-0.01	0.01	-0.01	0.97	0.17
Cy	-45.6003	0.14			1.00	-0.16	0.05	-0.04	0.08	0.65
K1	-0.00364353	4.3e-05				1.00	-0.93	0.87	-0.01	-0.18
K2	0.0276625	0.00017					1.00	-0.98	0.01	0.03
K3	-0.0347833	0.00021						1.00	-0.01	-0.02
P1	0.00149509	1.2e-05							1.00	0.20
P2	-0.00281481	5.3e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

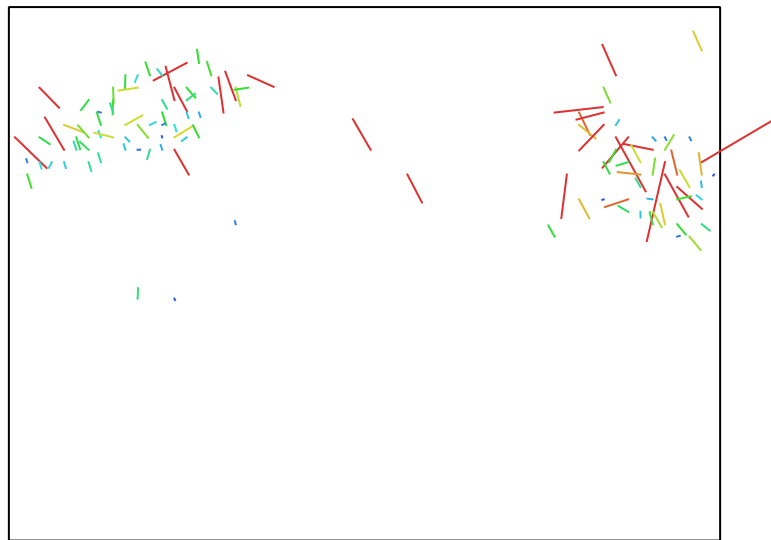


Fig. 3. Image residuals for Test_Pro (4.5mm). 1 pix

Test_Pro (4.5mm)

2 images

Type	Resolution	Focal Length	Pixel Size
Frame	8000 x 6000	4.5 mm	0.811 x 0.811 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	5895.42	4.1	1.00	0.16	-0.74	-0.70	0.72	-0.71	0.30	-0.40
Cx	-101.638	3.9		1.00	-0.23	-0.09	0.07	-0.07	0.92	-0.34
Cy	-41.3184	3.6			1.00	0.22	-0.26	0.28	-0.40	0.45
K1	-0.0653634	0.0039				1.00	-0.98	0.95	-0.19	0.37
K2	0.270761	0.012					1.00	-0.99	0.20	-0.32
K3	-0.272412	0.013						1.00	-0.21	0.31
P1	-0.00310272	0.00033							1.00	-0.56
P2	-0.000600338	0.00016								1.00

Table 3. Calibration coefficients and correlation matrix.

Camera Calibration

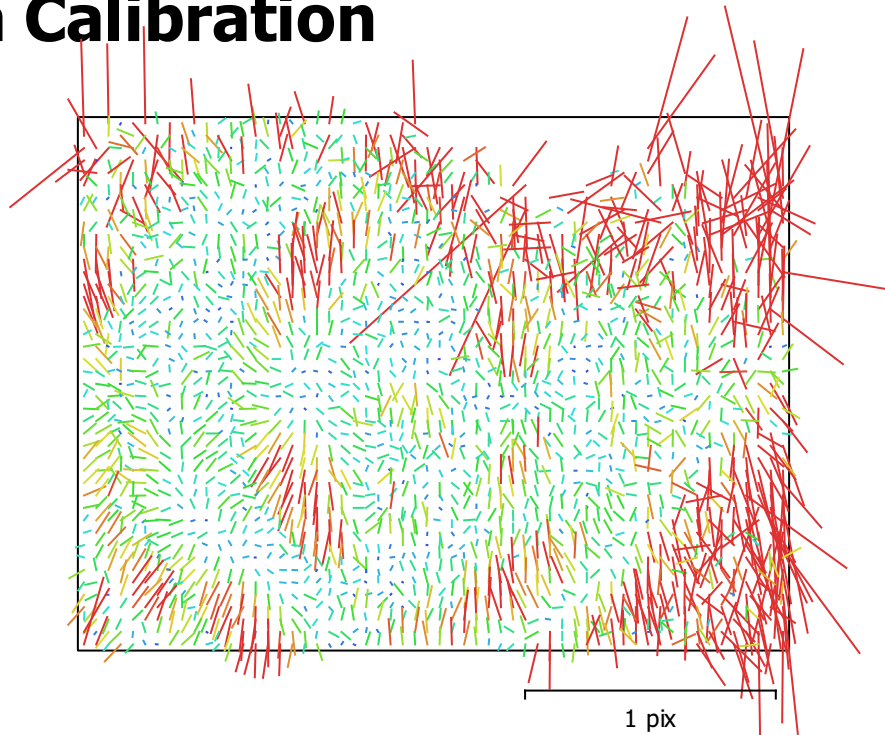


Fig. 4. Image residuals for Test_Pro (4.5mm).

Test_Pro (4.5mm)

91 images

Type	Resolution	Focal Length	Pixel Size
Frame	4000 x 3000	4.5 mm	1.62 x 1.62 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	2940.09	0.11	1.00	0.03	-0.49	-0.14	0.19	-0.20	-0.04	0.01
Cx	-48.5056	0.17		1.00	-0.08	0.08	-0.22	0.33	0.87	-0.01
Cy	-28.0069	0.14			1.00	-0.15	0.15	-0.17	-0.04	0.47
K1	-0.0415681	9.2e-05				1.00	-0.93	0.85	0.09	-0.18
K2	0.200596	0.00029					1.00	-0.97	-0.19	0.13
K3	-0.207018	0.00029						1.00	0.29	-0.15
P1	-0.00145784	2e-05							1.00	-0.08
P2	-0.000609547	1e-05								1.00

Table 4. Calibration coefficients and correlation matrix.

Camera Locations

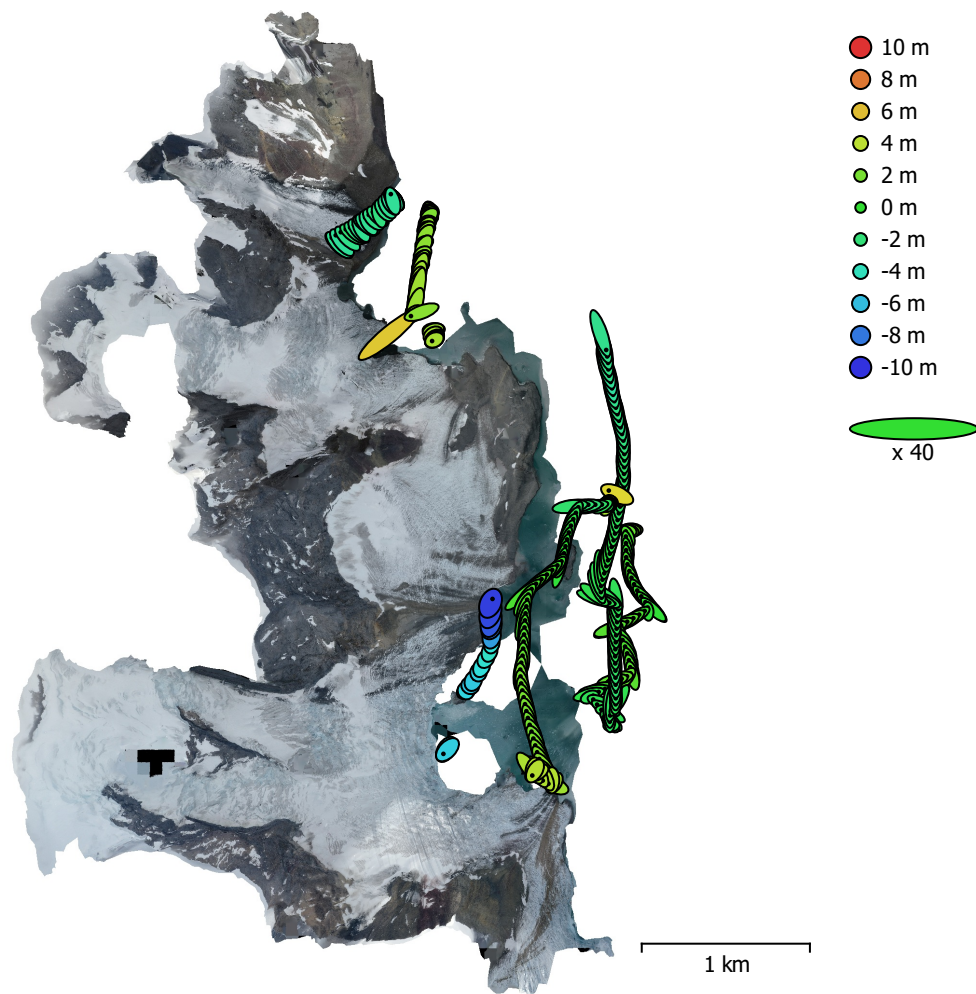


Fig. 5. Camera locations and error estimates.

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)
1.42489	2.48371	2.62578	2.86341	3.88508

Table 5. Average camera location error.

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

Digital Elevation Model

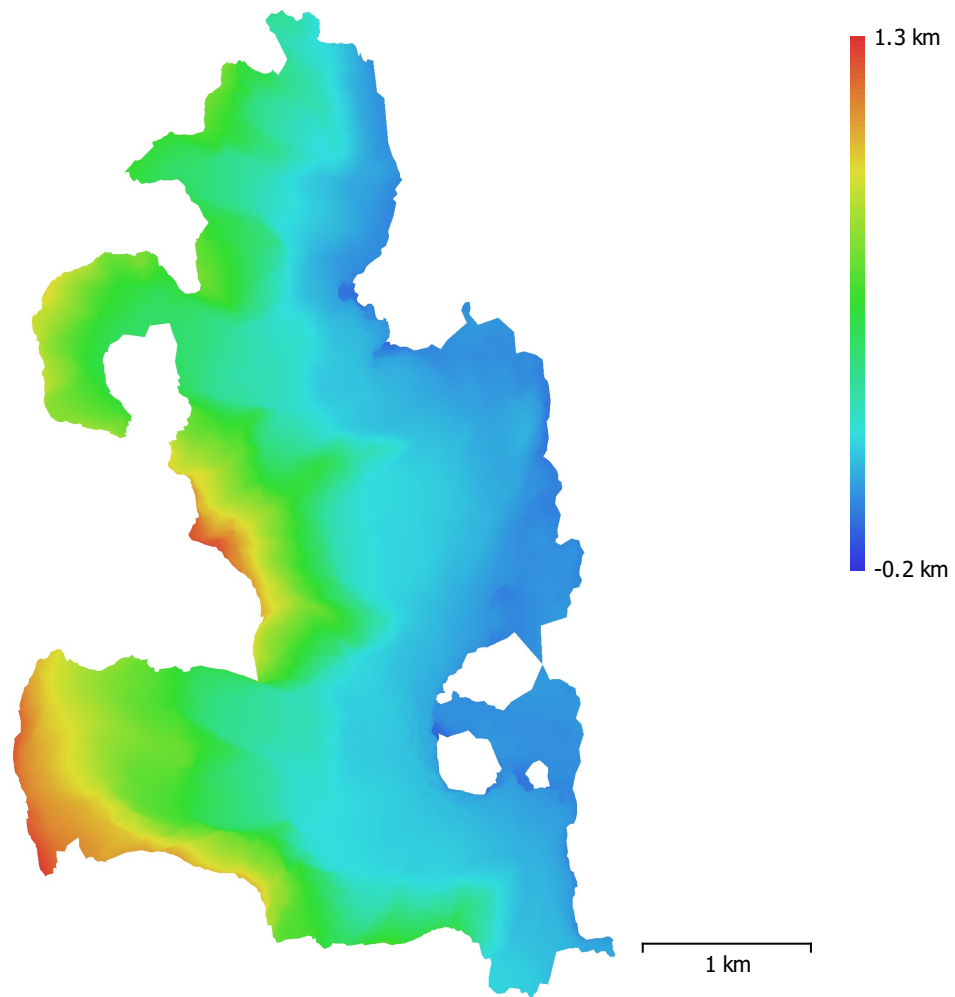


Fig. 6. Reconstructed digital elevation model.

Resolution: 1.15 m/pix
Point density: 0.757 points/m²

Processing Parameters

General

Cameras	278
Aligned cameras	270
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	75,048 of 993,734
RMS reprojection error	0.144227 (0.251114 pix)
Max reprojection error	0.505882 (1.96553 pix)
Mean key point size	1.72781 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.87859

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	4 minutes 39 seconds
Matching memory usage	1.50 GB
Alignment time	9 minutes 45 seconds
Alignment memory usage	1.14 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	3 seconds
Date created	2024:07:10 15:08:16
Software version	2.1.0.17532
File size	63.41 MB

Depth Maps

Count	265
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Depth maps generation parameters

Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	4 minutes 5 seconds
Memory usage	1.13 GB
Date created	2024:07:10 15:50:12
Software version	2.1.0.17532
File size	346.50 MB

Point Cloud

Points	8,845,416
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Point attributes

Color	3 bands, uint8
Normal	

Confidence	6 - 122
Point classes	
Created (never classified)	8,845,416
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	4 minutes 5 seconds
Memory usage	1.13 GB
Point cloud generation parameters	
Processing time	13 minutes 49 seconds
Memory usage	4.58 GB
Date created	2024:07:10 16:04:02
Software version	2.1.0.17532
File size	173.13 MB
Model	
Faces	1,352,716
Vertices	676,874
Vertex colors	3 bands, uint8
Texture	8,192 x 8,192 x 10, 4 bands, uint8
Depth maps generation parameters	
Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	4 minutes 5 seconds
Memory usage	1.13 GB
Point cloud generation parameters	
Processing time	13 minutes 49 seconds
Memory usage	4.58 GB
Reconstruction parameters	
Surface type	Arbitrary
Source data	Point cloud
Interpolation	Enabled
Strict volumetric masks	No
Processing time	2 minutes 6 seconds
Memory usage	3.38 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	8,192
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	1 minutes 6 seconds
UV mapping memory usage	2.54 GB
Blending time	26 minutes 49 seconds
Blending memory usage	48.28 GB
Date created	2024:07:10 16:48:59
Software version	2.1.0.17532
File size	594.88 MB
Tiled Model	
Texture	3 bands, uint8
Reconstruction parameters	
Source data	Model
Tile size	256
Face count	Medium
Enable ghosting filter	No

Processing time	17 minutes 6 seconds
Memory usage	4.72 GB
Date created	2024:07:11 11:26:21
Software version	2.1.0.17532
File size	137.54 MB

System

Software name	Agisoft Metashape Professional
Software version	2.1.0 build 17532
OS	Windows 64 bit
RAM	127.78 GB
CPU	Intel(R) Core(TM) i9-9900K CPU @ 3.60GHz
GPU(s)	GeForce RTX 2080