Agisoft Metashape

Processing Report
24 June 2024

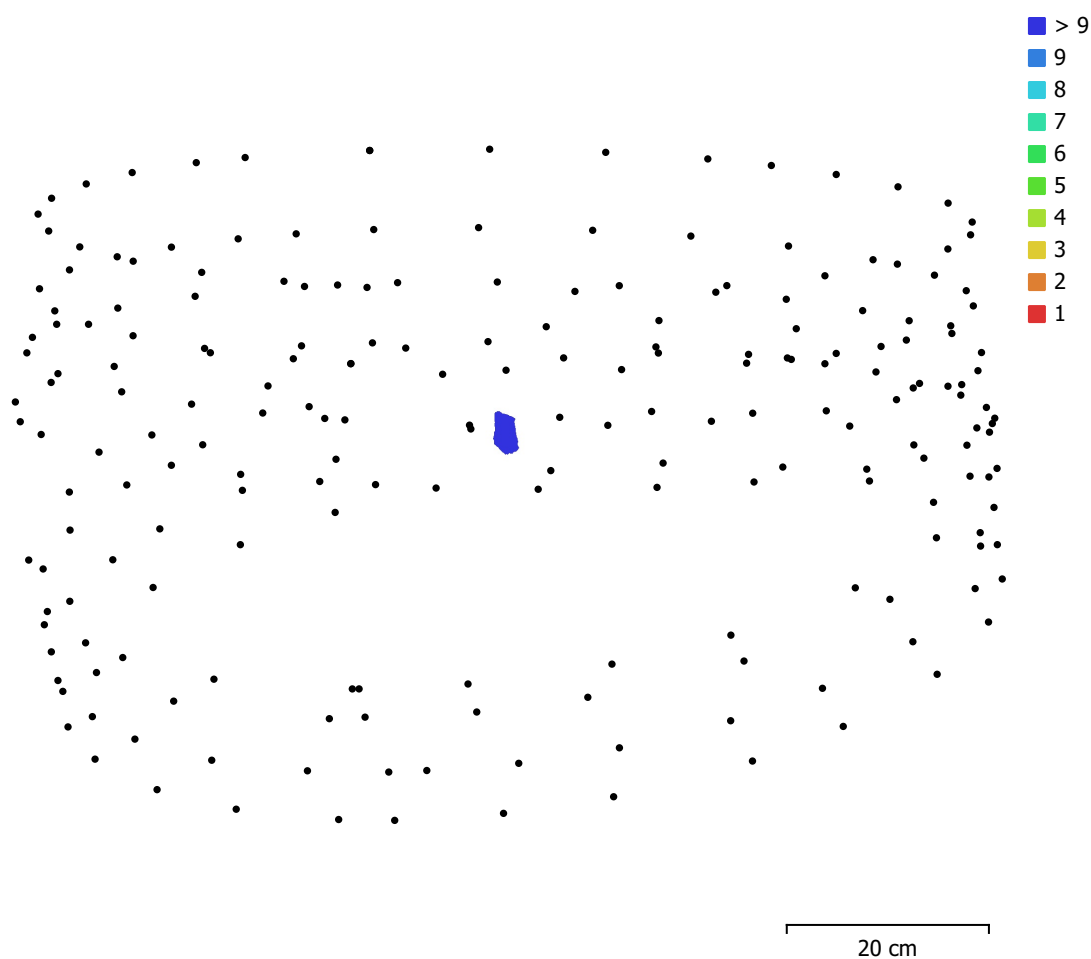# Survey Data

Fig. 1. Camera locations and image overlap.

Number of images:	212	Camera stations:	212
Flying altitude:	47.6 cm	Tie points:	339,896
Ground resolution:	0.0433 mm/pix	Projections:	914,314
Coverage area:	8.02 cm²	Reprojection error:	1.02 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
DMC-G7 (40mm)	4592 x 2584	40 mm	3.78 x 3.78 µm	No
DMC-G7 (40mm)	4592 x 2584	40 mm	3.78 x 3.78 µm	No

Table 1. Cameras.

Camera Calibration
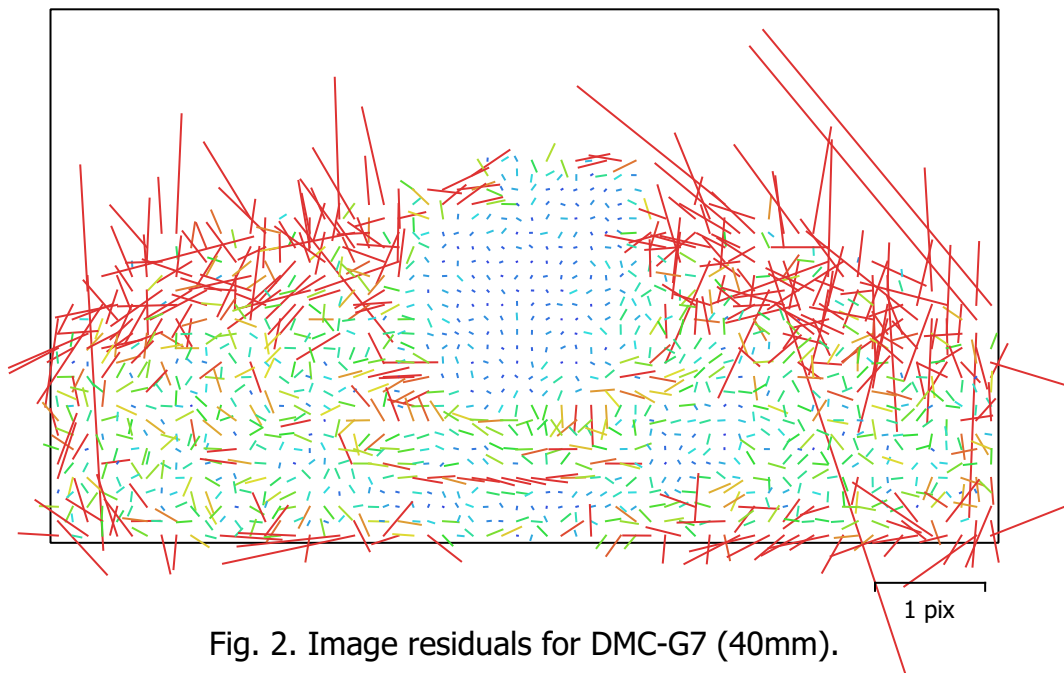
Fig. 2. Image residuals for DMC-G7 (40mm).

DMC-G7 (40mm)

114 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4592 x 2584**	**40 mm**	**3.78 x 3.78 µm**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**10900.3**	2.5	1.00	0.18	-0.52	-0.28	0.27	-0.24	0.18	-0.17
Cx	**36.3651**	5.5		1.00	-0.07	-0.32	0.36	-0.35	0.98	-0.04
Cy	**74.1052**	6.6			1.00	0.05	-0.19	0.24	-0.09	0.74
K1	**0.304293**	0.0058				1.00	-0.91	0.83	-0.32	-0.11
K2	**-8.48189**	0.24					1.00	-0.98	0.38	-0.09
K3	**85.1247**	3						1.00	-0.37	0.15
P1	**0.00309959**	0.0002							1.00	-0.07
P2	**-0.00198116**	0.00024								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration
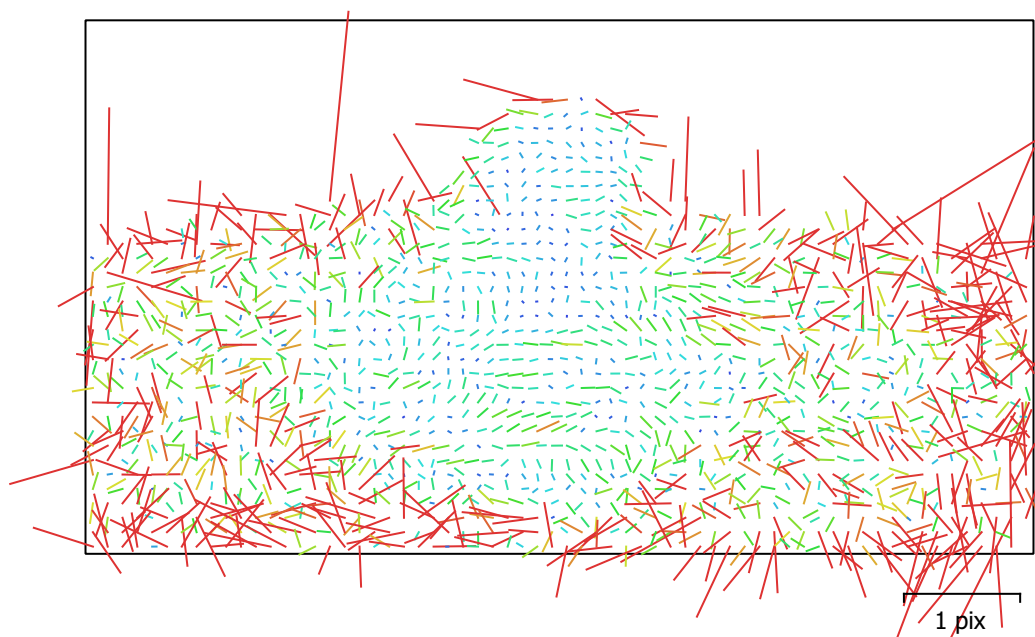
Fig. 3. Image residuals for DMC-G7 (40mm).

DMC-G7 (40mm)

98 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4592 x 2584**	**40 mm**	**3.78 x 3.78 µm**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**11018.8**	2.7	1.00	-0.16	-0.62	-0.10	-0.03	0.07	-0.09	0.25
Cx	**-391.53**	3.4		1.00	0.22	-0.39	0.55	-0.62	0.92	0.10
Cy	**5.97095**	4.8			1.00	-0.06	0.26	-0.32	0.14	0.11
K1	**-0.332639**	0.0035				1.00	-0.85	0.75	-0.35	-0.22
K2	**13.9203**	0.17					1.00	-0.98	0.40	0.13
K3	**-149.065**	2.2						1.00	-0.47	-0.12
P1	**-0.0116341**	0.00011							1.00	0.13
P2	**-0.00485334**	0.00011								1.00

Table 3. Calibration coefficients and correlation matrix.
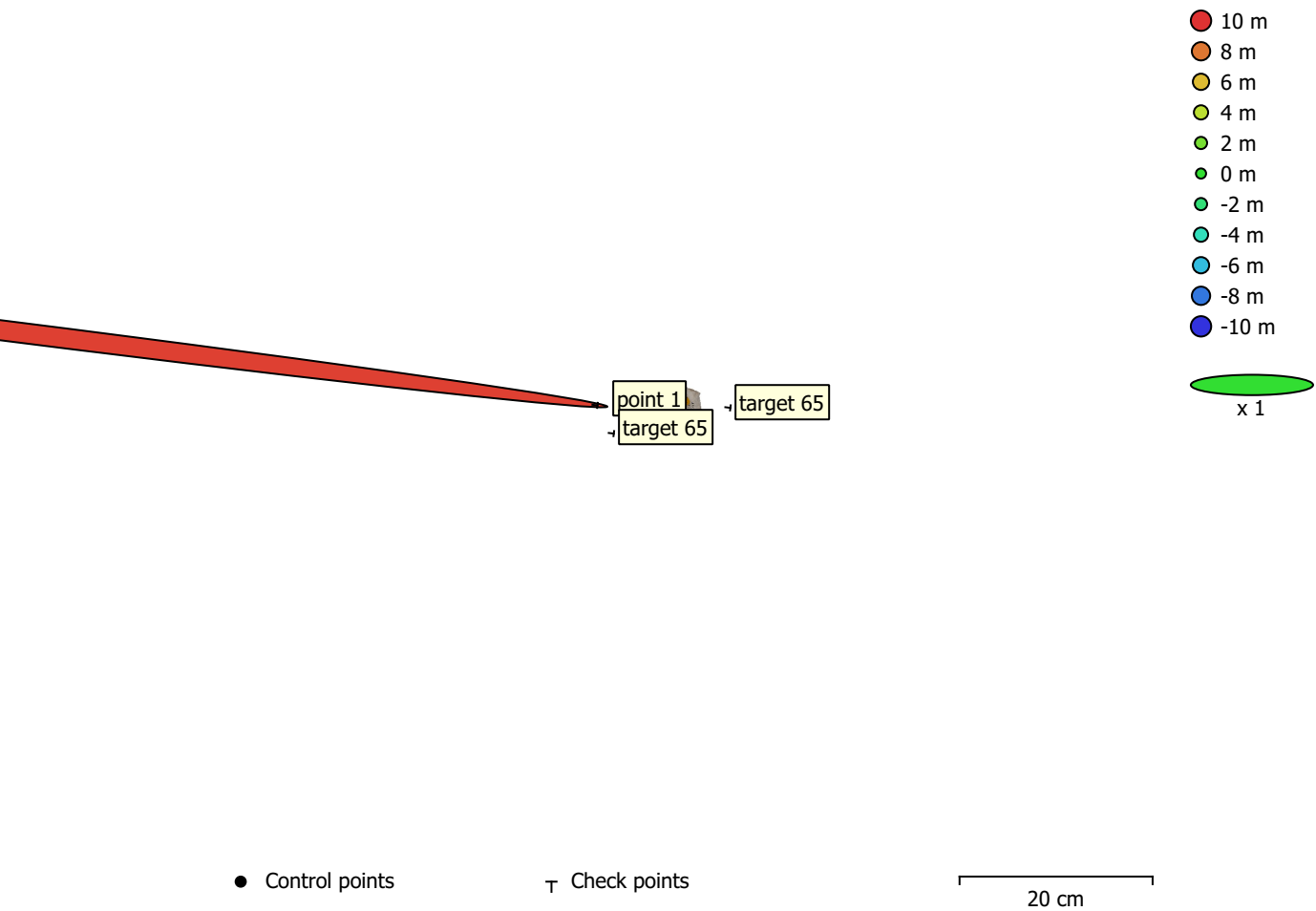
Ground Control Points

Fig. 4. 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 (m)	Y error (m)	Z error (m)	XY error (m)	Total (m)
1	1.21928	0.153553	9.61581	1.22891	9.69402

Table 4. Check points RMSE.

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
point 1	1.21928	-0.153553	9.61581	9.69402	0.000 (93)
target 65					2.940 (28)
target 65					21.740 (37)
Total	**1.21928**	**0.153553**	**9.61581**	**9.69402**	**0.000**

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 65_point 1	0.15	5.22637e-14
Total		**5.22637e-14**

Table 6. Control scale bars.

Digital Elevation Model

-48.8 cm

-50.3 cm

20 cm
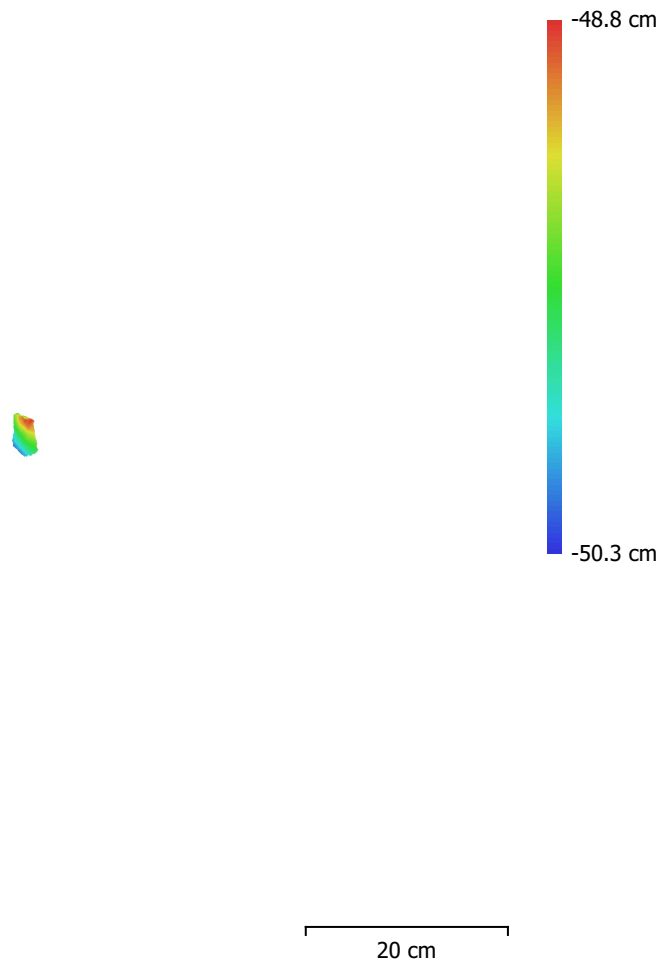
Fig. 5. Reconstructed digital elevation model.

Resolution: 0.141 mm/pix
Point density: 50.2 points/mm²

Processing Parameters

General

Cameras	212
Aligned cameras	212
Markers	4
Scale bars	1
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	339,896 of 594,730
RMS reprojection error	0.448277 (1.01942 pix)
Max reprojection error	1.46065 (68.5284 pix)
Mean key point size	1.93358 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.00699
File size	36.80 MB

Depth Maps

Count	212

    Depth maps generation parameters

Quality	Ultra High
Filtering mode	Mild
Max neighbors	16
Processing time	10 minutes 56 seconds
Memory usage	5.79 GB
Date created	2024:06:15 17:45:04
Software version	1.8.4.14671
File size	103.27 MB

Model

Faces	75,428
Vertices	37,720
Vertex colors	3 bands, uint8
Texture	16,000 x 16,000 x 2, 4 bands, uint8

    Depth maps generation parameters

Quality	Ultra High
Filtering mode	Mild
Max neighbors	16
Processing time	10 minutes 56 seconds
Memory usage	5.79 GB

    Reconstruction parameters

Surface type	Arbitrary
Source data	Depth maps
Interpolation	Enabled
Strict volumetric masks	No
Processing time	2 minutes 29 seconds
Memory usage	11.41 GB

    Texturing parameters

Mapping mode	Generic
Blending mode	Mosaic
Texture size	16,000
Enable hole filling	Yes

Enable ghosting filter	Yes
UV mapping time	8 seconds
UV mapping memory usage	597.24 MB
Blending time	1 minutes 22 seconds
Blending memory usage	12.75 GB
Blending GPU memory usage	11.89 GB
Date created	2024:06:15 17:47:34
Software version	1.8.4.14671
File size	99.16 MB

System

Software name	Agisoft Metashape Professional
Software version	1.8.4 build 14671
OS	Windows 64 bit
RAM	127.71 GB
CPU	Intel(R) Core(TM) i9-10940X CPU @ 3.30GHz
GPU(s)	Quadro RTX 5000