Agisoft Metashape

Processing Report
24 June 2024

Survey Data
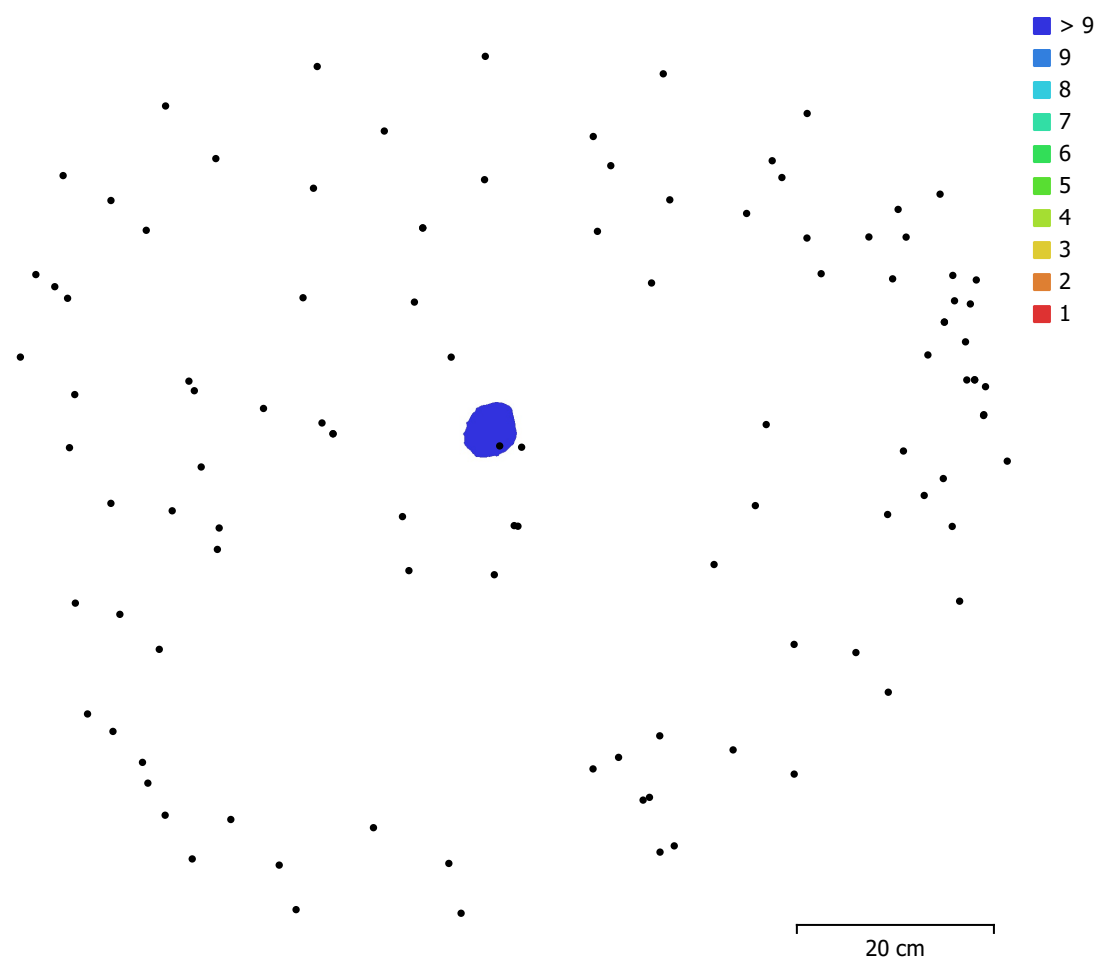
Fig. 1. Camera locations and image overlap.

Number of images:	107	Camera stations:	107
Flying altitude:	48.4 cm	Tie points:	135,119
Ground resolution:	0.0457 mm/pix	Projections:	447,756
Coverage area:	23.6 cm²	Reprojection error:	0.685 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
DMC-G7 (39mm)	4592 x 2584	39 mm	3.77 x 3.77 µm	No
DMC-G7 (39mm)	4592 x 2584	39 mm	3.77 x 3.77 µm	No

Table 1. Cameras.

Camera Calibration

Fig. 2. Image residuals for DMC-G7 (39mm).
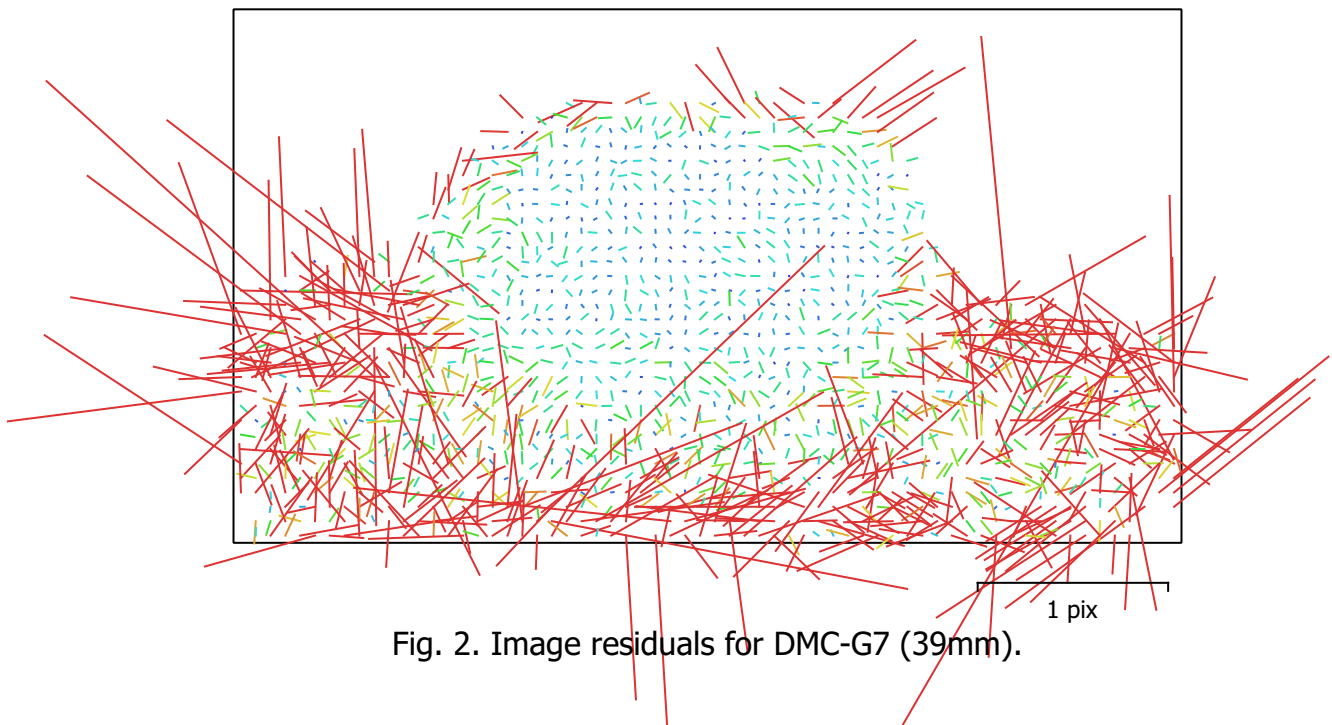
DMC-G7 (39mm)

50 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4592 x 2584**	**39 mm**	**3.77 x 3.77 μm**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**10551.8**	2.3	1.00	0.23	-0.64	-0.10	0.12	-0.07	0.24	-0.48
Cx	**87.4998**	5.9		1.00	-0.18	0.07	-0.11	0.15	0.99	-0.13
Cy	**52.7006**	7.8			1.00	-0.04	-0.01	-0.01	-0.16	0.91
K1	**0.0171027**	0.0023				1.00	-0.92	0.83	0.06	-0.04
K2	**0.564165**	0.11					1.00	-0.97	-0.10	-0.02
K3	**-9.84449**	1.4						1.00	0.15	0.00
P1	**0.00502166**	0.0002							1.00	-0.12
P2	**-0.00190103**	0.00019								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration
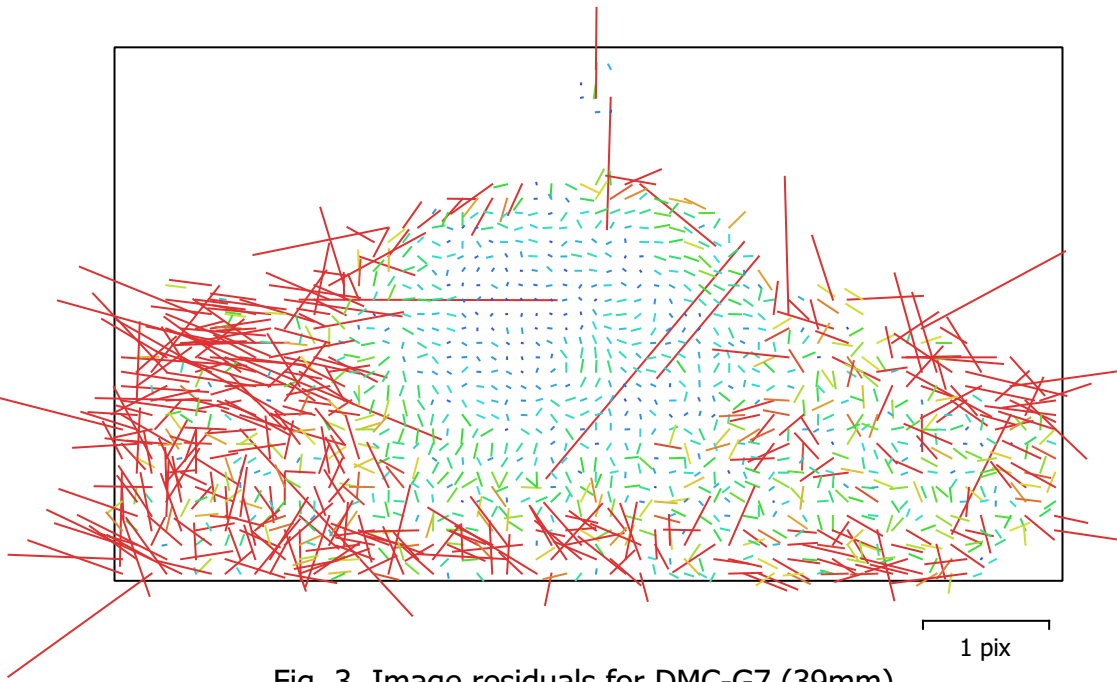
Fig. 3. Image residuals for DMC-G7 (39mm).

DMC-G7 (39mm)

57 images

Type	Resolution	Focal Length	Pixel Size
Frame	**4592 x 2584**	**39 mm**	**3.77 x 3.77 µm**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**10617.4**	2.5	1.00	0.50	-0.58	0.09	0.10	-0.17	0.42	-0.33
Cx	**495.132**	5.8		1.00	-0.29	0.09	0.22	-0.34	0.96	-0.30
Cy	**-12.7943**	6.2			1.00	-0.15	-0.07	0.16	-0.21	0.79
K1	**0.122954**	0.0023				1.00	-0.83	0.70	0.15	-0.28
K2	**-2.30219**	0.069					1.00	-0.97	0.23	0.01
K3	**17.8174**	0.64						1.00	-0.34	0.10
P1	**0.0204217**	0.00022							1.00	-0.28
P2	**-0.000541712**	0.00016								1.00

Table 3. Calibration coefficients and correlation matrix.

Ground Control Points

25 m
20 m
15 m
10 m
5 m
0 m
-5 m
-10 m
-15 m
-20 m
-25 m

x 1

target 65

target 65

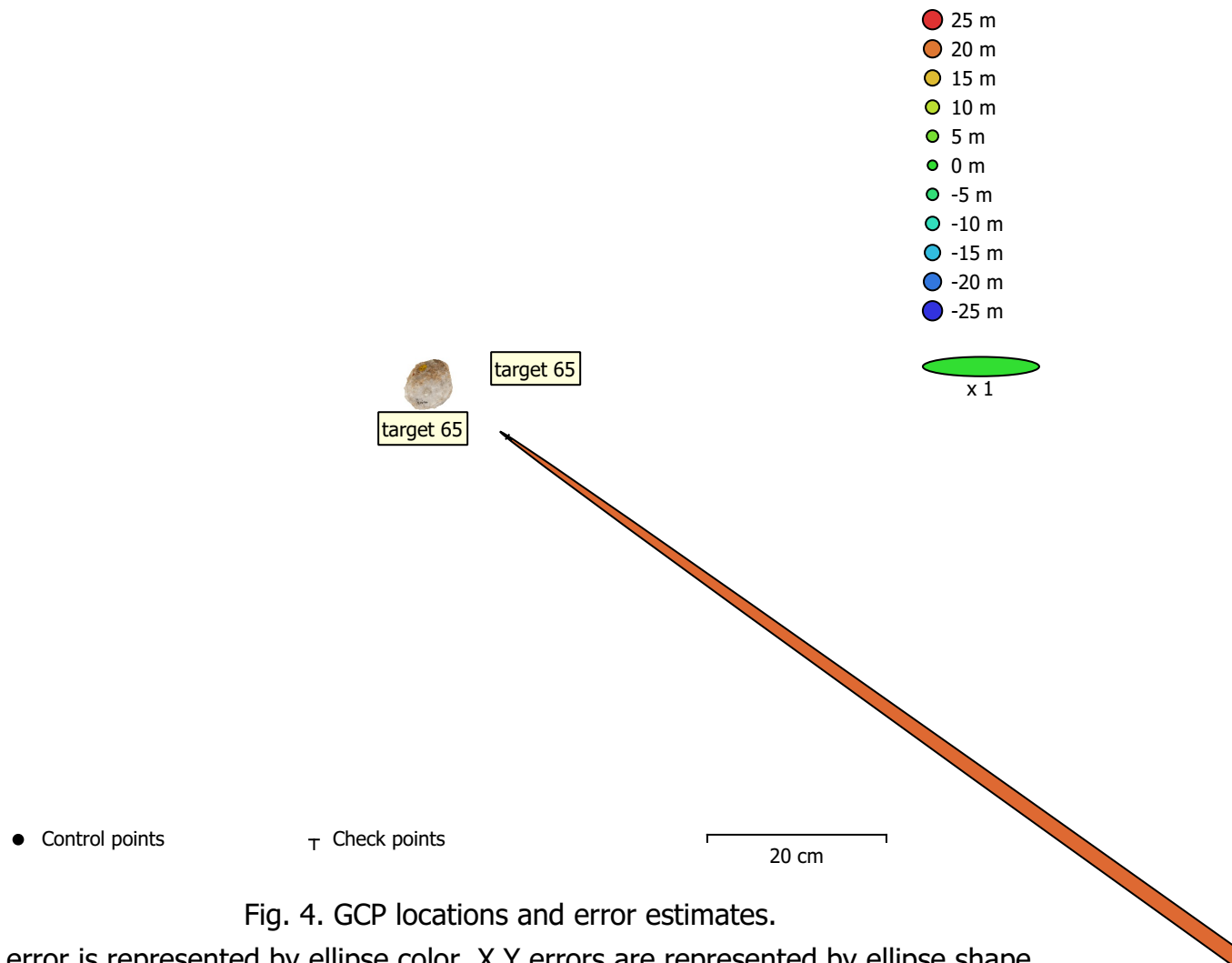● Control points   ⊤ Check points

|_____| 20 cm

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	2.41831	1.72832	21.0111	2.97242	21.2204

Table 4. Check points RMSE.

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
target 65					1.046 (7)
target 65					4.278 (7)
point 1	-2.41831	1.72832	21.0111	21.2204	0.001 (95)
Total	**2.41831**	**1.72832**	**21.0111**	**21.2204**	**0.001**

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
target 65_point 1	0.15	-2.57572e-14
Total		**2.57572e-14**

Table 6. Control scale bars.

Digital Elevation Model

-52 cm

-55.2 cm

20 cm
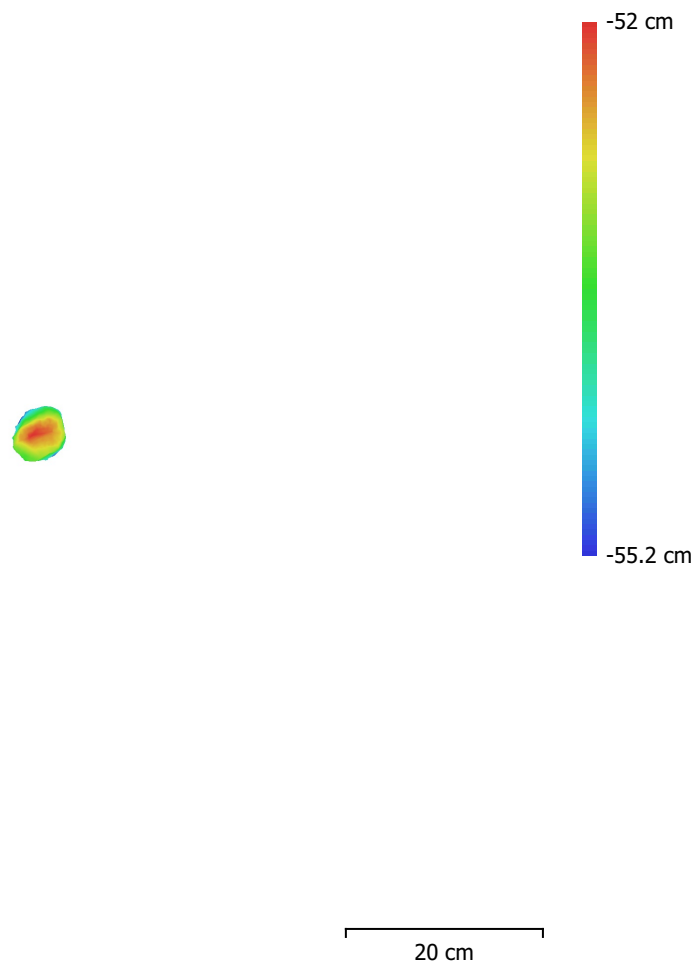
Fig. 5. Reconstructed digital elevation model.

Resolution: 0.153 mm/pix
Point density: 42.8 points/mm²

Processing Parameters

General

Cameras	107
Aligned cameras	107
Markers	3
Scale bars	1
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	135,119 of 169,191
RMS reprojection error	0.191804 (0.685031 pix)
Max reprojection error	0.654191 (31.0122 pix)
Mean key point size	3.08835 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.50771
File size	12.65 MB

Depth Maps

Count	107

Depth maps generation parameters

Quality	Ultra High
Filtering mode	Mild
Max neighbors	16
Processing time	6 minutes 0 seconds
Memory usage	4.70 GB
Date created	2024:06:15 13:52:13
Software version	1.8.4.14671
File size	128.53 MB

Model

Faces	335,450
Vertices	167,729
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	6 minutes 0 seconds
Memory usage	4.70 GB

Reconstruction parameters

Surface type	Arbitrary
Source data	Depth maps
Interpolation	Enabled
Strict volumetric masks	No
Processing time	1 minutes 25 seconds
Memory usage	8.24 GB

Texturing parameters

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

Enable ghosting filter	Yes
UV mapping time	13 seconds
UV mapping memory usage	744.46 MB
Blending time	1 minutes 19 seconds
Blending memory usage	12.90 GB
Blending GPU memory usage	11.90 GB
Date created	2024:06:15 13:53:38
Software version	1.8.4.14671
File size	191.85 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