

Agisoft Metashape

Processing Report

27 June 2024



Survey Data

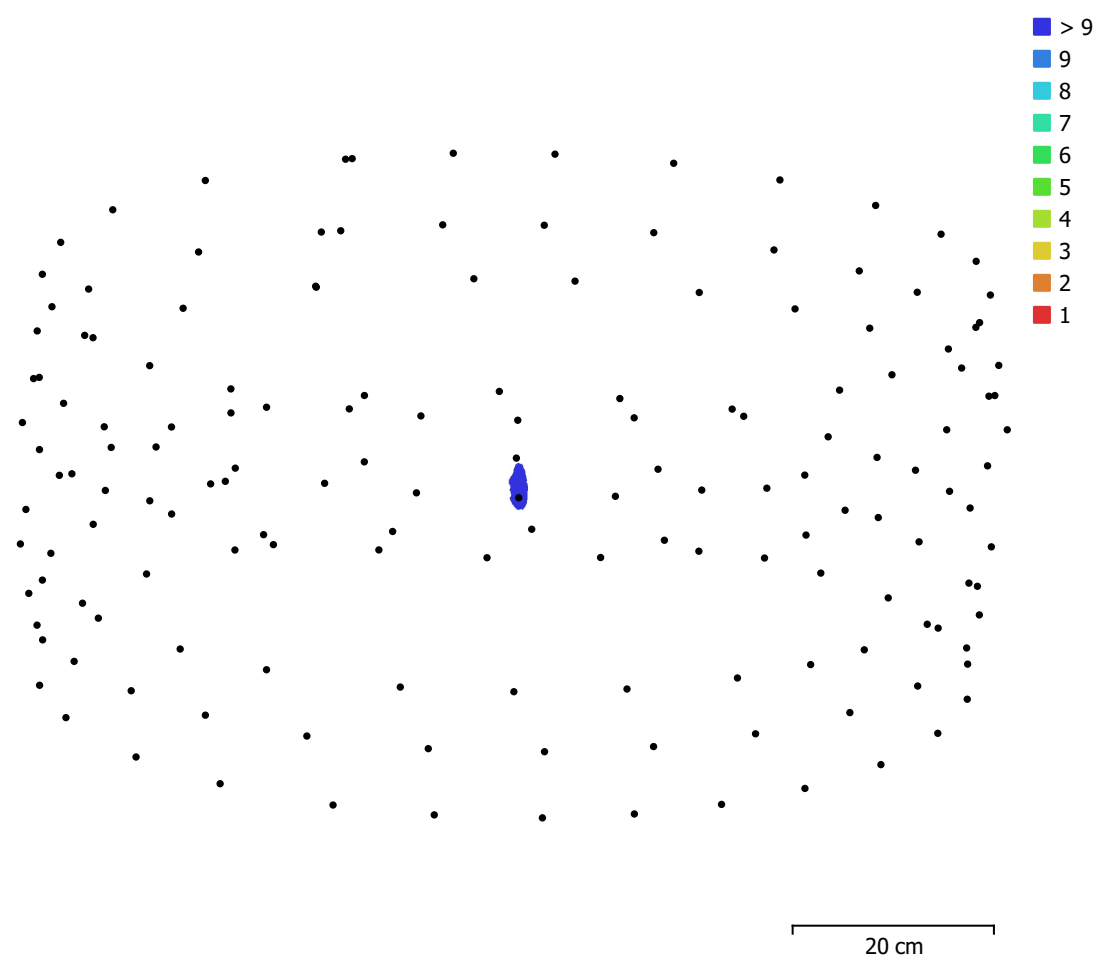


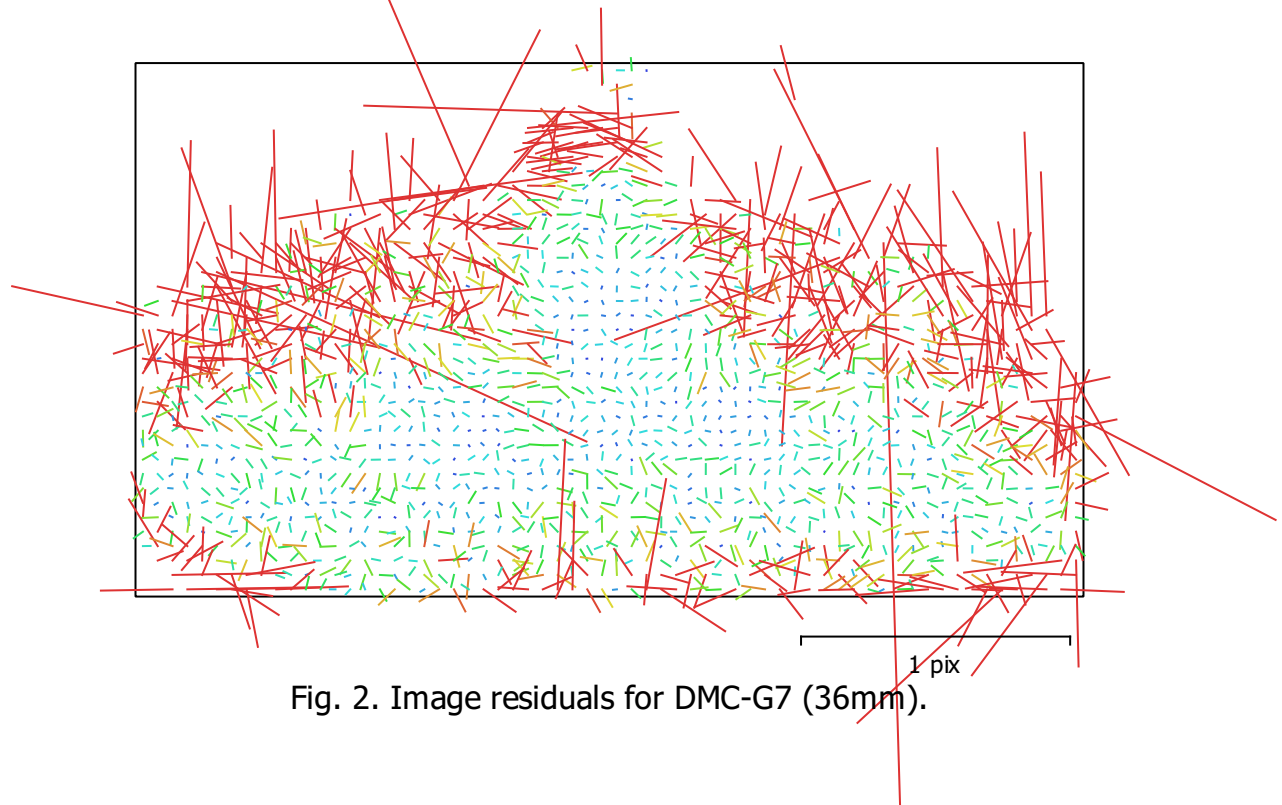
Fig. 1. Camera locations and image overlap.

| | | | |
|--------------------|----------------------|---------------------|----------|
| Number of images: | 160 | Camera stations: | 160 |
| Flying altitude: | 46.6 cm | Tie points: | 290,770 |
| Ground resolution: | 0.0473 mm/pix | Projections: | 735,356 |
| Coverage area: | 6.59 cm ² | Reprojection error: | 0.66 pix |

| Camera Model | Resolution | Focal Length | Pixel Size | Precalibrated |
|---------------|-------------|--------------|----------------|---------------|
| DMC-G7 (36mm) | 4592 x 2584 | 36 mm | 3.79 x 3.79 μm | No |
| DMC-G7 (36mm) | 4592 x 2584 | 36 mm | 3.79 x 3.79 μm | No |

Table 1. Cameras.

Camera Calibration



DMC-G7 (36mm)

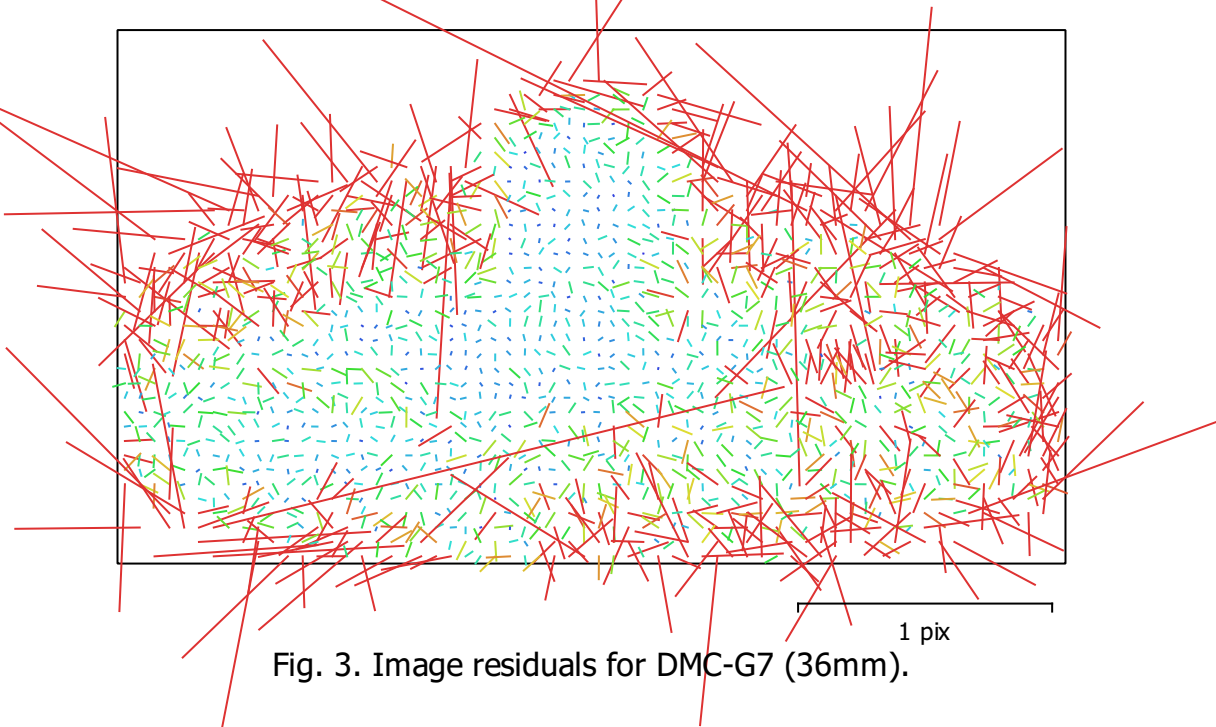
81 images

| | | | |
|--------------|--------------------|--------------|--------------------------------------|
| Type | Resolution | Focal Length | Pixel Size |
| Frame | 4592 x 2584 | 36 mm | 3.79 x 3.79 μm |

| | Value | Error | F | Cx | Cy | K1 | K2 | K3 | P1 | P2 |
|-----------|--------------------|---------|------|------|-------|-------|-------|-------|-------|-------|
| F | 9984.62 | 1.1 | 1.00 | 0.15 | -0.43 | -0.26 | 0.25 | -0.21 | 0.16 | -0.32 |
| Cx | 15.0206 | 4.3 | | 1.00 | -0.08 | 0.05 | -0.13 | 0.19 | 0.99 | 0.02 |
| Cy | -109.92 | 2.9 | | | 1.00 | 0.03 | -0.14 | 0.16 | -0.08 | 0.87 |
| K1 | 0.122184 | 0.0018 | | | | 1.00 | -0.93 | 0.83 | 0.03 | -0.07 |
| K2 | -1.98441 | 0.059 | | | | | 1.00 | -0.97 | -0.12 | -0.08 |
| K3 | 16.6347 | 0.59 | | | | | | 1.00 | 0.17 | 0.12 |
| P1 | 0.00272089 | 0.00016 | | | | | | | 1.00 | 0.01 |
| P2 | -0.00462239 | 0.00012 | | | | | | | | 1.00 |

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration



DMC-G7 (36mm)

79 images

| | | | |
|-------|-------------|--------------|----------------|
| Type | Resolution | Focal Length | Pixel Size |
| Frame | 4592 x 2584 | 36 mm | 3.79 x 3.79 μm |

| | Value | Error | F | Cx | Cy | K1 | K2 | K3 | P1 | P2 |
|----|-------------|---------|------|------|-------|-------|-------|-------|-------|-------|
| F | 9807.67 | 1.4 | 1.00 | 0.13 | -0.56 | -0.00 | -0.05 | 0.07 | 0.12 | -0.34 |
| Cx | -40.6497 | 4.8 | | 1.00 | -0.03 | -0.01 | 0.03 | -0.05 | 0.99 | 0.00 |
| Cy | 189.948 | 3.7 | | | 1.00 | -0.17 | 0.13 | -0.13 | -0.01 | 0.77 |
| K1 | -0.0515297 | 0.0031 | | | | 1.00 | -0.92 | 0.83 | -0.02 | 0.07 |
| K2 | 2.09093 | 0.12 | | | | | 1.00 | -0.97 | 0.06 | -0.10 |
| K3 | -18.9177 | 1.3 | | | | | | 1.00 | -0.07 | 0.09 |
| P1 | 0.00109703 | 0.00017 | | | | | | | 1.00 | -0.00 |
| P2 | -0.00289255 | 0.00012 | | | | | | | | 1.00 |

Table 3. Calibration coefficients and correlation matrix.

Ground Control Points

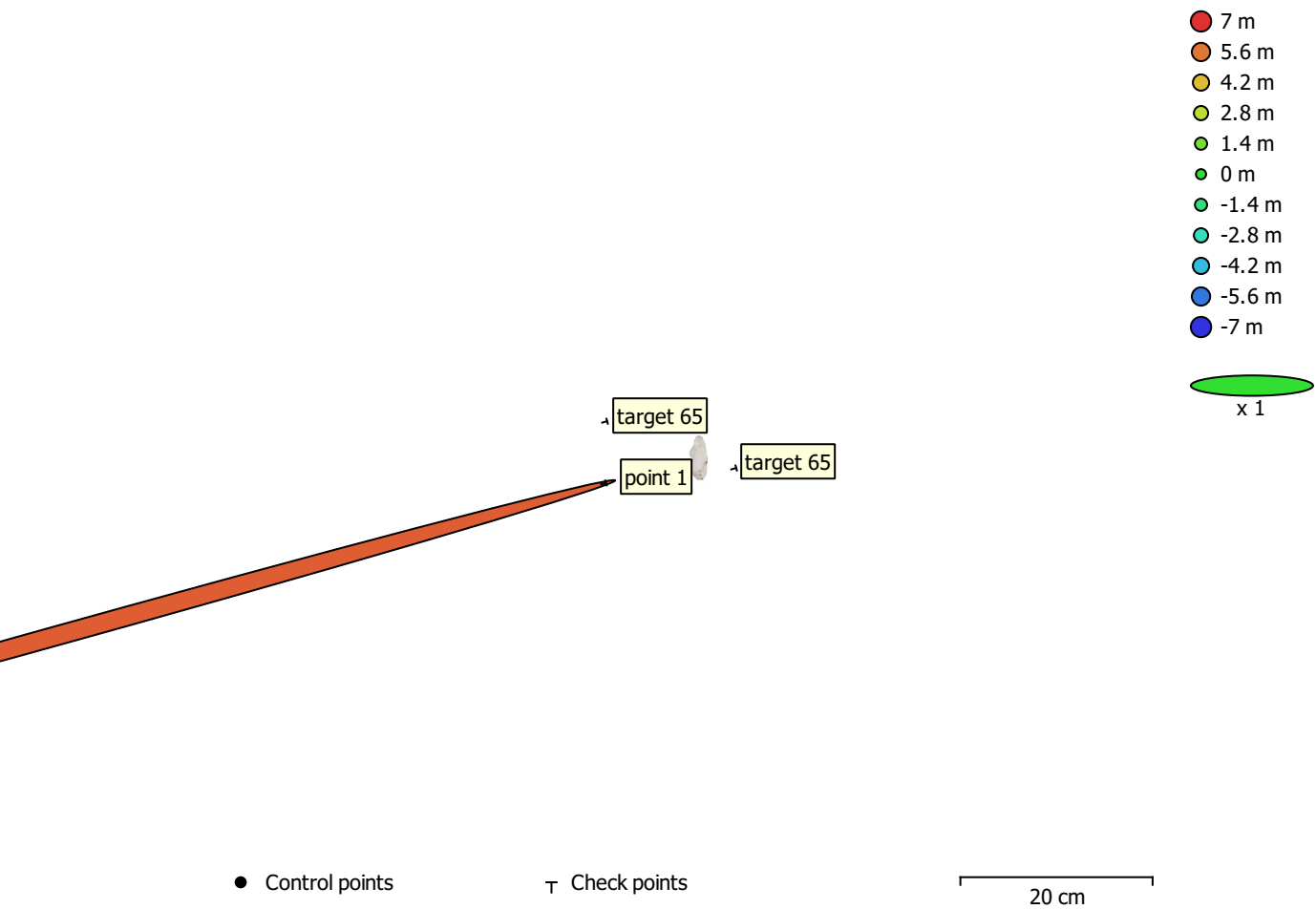


Fig. 4. GCP locations and error estimates.

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 | 1.10901 | 0.308574 | 6.13662 | 1.15114 | 6.24365 |

Table 4. Check points RMSE.

| Label | X error (m) | Y error (m) | Z error (m) | Total (m) | Image (pix) |
|--------------|--------------------|--------------------|--------------------|------------------|--------------------|
| point 1 | 1.10901 | 0.308574 | 6.13662 | 6.24365 | 0.000 (81) |
| target 65 | | | | | 1.011 (19) |
| target 65 | | | | | 0.837 (21) |
| Total | 1.10901 | 0.308574 | 6.13662 | 6.24365 | 0.000 |

Table 5. Check points.

Scale Bars

| Label | Distance (m) | Error (m) |
|-------------------|--------------|--------------------|
| target 65_point 1 | 0.15 | 2.77556e-17 |
| Total | | 2.77556e-17 |

Table 6. Control scale bars.

Digital Elevation Model

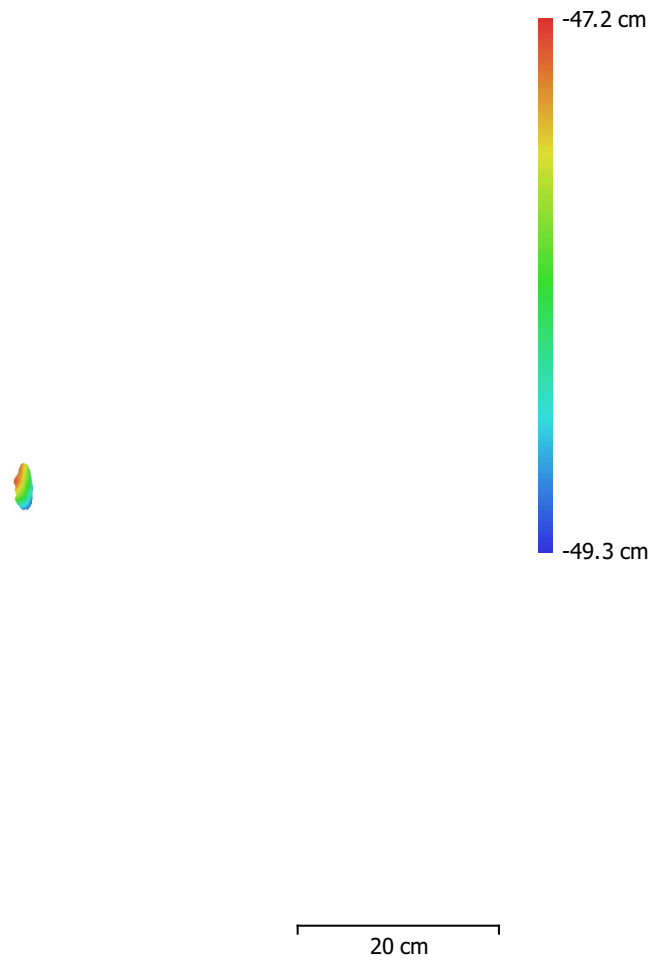


Fig. 5. Reconstructed digital elevation model.

Resolution: 0.179 mm/pix
Point density: 31.1 points/mm²

Processing Parameters

General

| | |
|-----------------|-----|
| Cameras | 160 |
| Aligned cameras | 160 |
| Markers | 3 |
| Scale bars | 1 |

Tie Points

| | |
|--------------------------------|------------------------|
| Points | 290,770 of 509,309 |
| RMS reprojection error | 0.268248 (0.66038 pix) |
| Max reprojection error | 0.856072 (35.8588 pix) |
| Mean key point size | 1.91799 pix |
| Point colors | 3 bands, uint8 |
| Key points | No |
| Average tie point multiplicity | 2.78846 |
| File size | 29.80 MB |

Model

| | |
|---------------|-------------------------------|
| Faces | 50,000 |
| Vertices | 25,002 |
| Vertex colors | 3 bands, uint8 |
| Texture | 8,192 x 8,192, 4 bands, uint8 |

Depth maps generation parameters

| | |
|-----------------|----------------------|
| Quality | Ultra High |
| Filtering mode | Mild |
| Max neighbors | 16 |
| Processing time | 7 minutes 51 seconds |
| Memory usage | 5.83 GB |

Reconstruction parameters

| | |
|-------------------------|----------------------|
| Surface type | Arbitrary |
| Source data | Depth maps |
| Interpolation | Enabled |
| Strict volumetric masks | No |
| Processing time | 1 minutes 18 seconds |
| Memory usage | 11.85 GB |

Texturing parameters

| | |
|---------------------------|---------------------|
| Mapping mode | Generic |
| Blending mode | Mosaic |
| Texture size | 8,192 |
| Enable hole filling | Yes |
| Enable ghosting filter | Yes |
| UV mapping time | 3 seconds |
| UV mapping memory usage | 59.49 MB |
| Blending time | 36 seconds |
| Blending memory usage | 2.52 GB |
| Blending GPU memory usage | 1.87 GB |
| Date created | 2024:06:15 17:25:26 |
| Software version | 1.8.4.14671 |
| File size | 27.64 MB |

System

| | |
|------------------|----------------------------|
| Software name | Agisoft Metashape Standard |
| Software version | 2.1.1 build 17821 |
| OS | Windows 64 bit |

RAM
CPU
GPU(s)

15.70 GB
Intel(R) Core(TM) i9-9980HK CPU @ 2.40GHz
Quadro T2000