# Agisoft Metashape

**Processing Report**
**03 July 2024**

# Survey Data



| | |
|---|---|
| > 9 | (dark blue) |
| 9 | (blue) |
| 8 | (cyan) |
| 7 | (teal) |
| 6 | (green) |
| 5 | (green) |
| 4 | (yellow-green) |
| 3 | (yellow) |
| 2 | (orange) |
| 1 | (red) |

20 cm
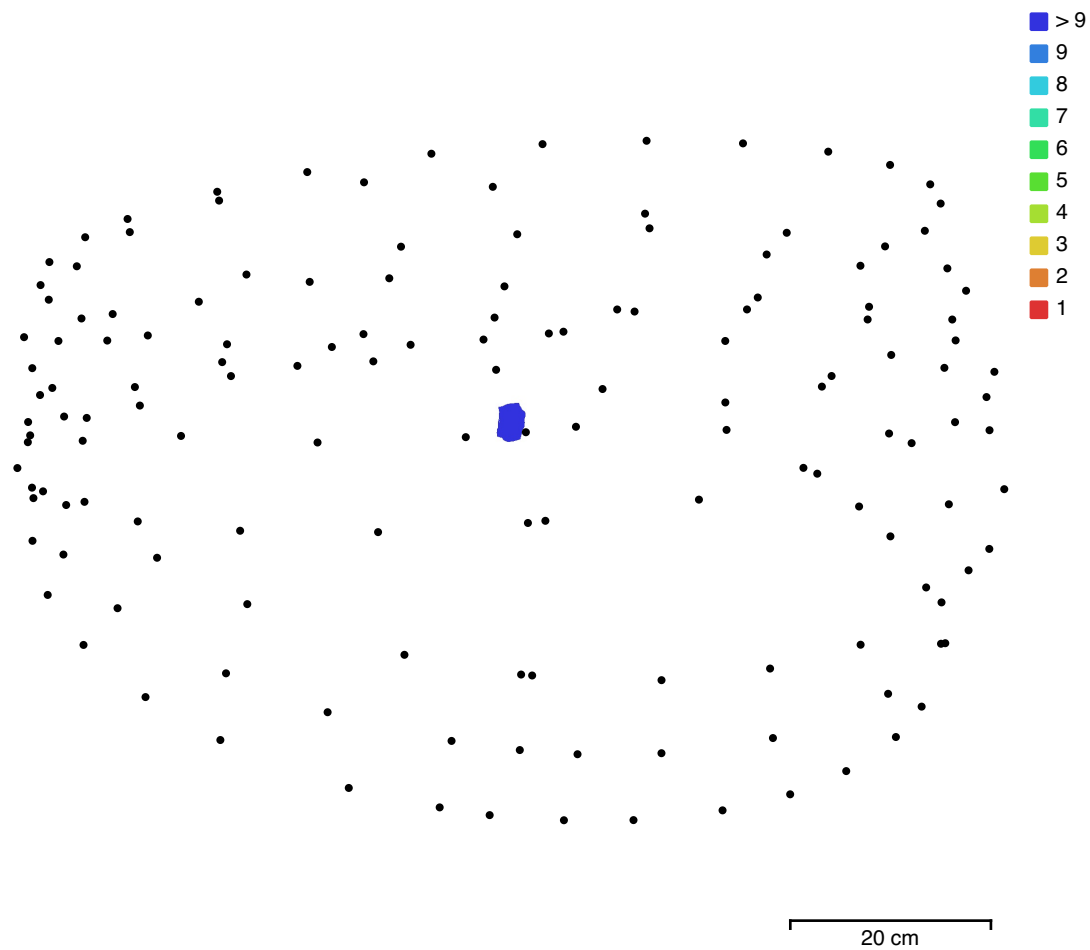
Fig. 1. Camera locations and image overlap.

| | | | | |
|---|---|---|---|---|
| Number of images: | 150 | Camera stations: | 150 |
| Flying altitude: | 45.7 cm | Tie points: | 198,540 |
| Ground resolution: | 0.0294 mm/pix | Projections: | 668,580 |
| Coverage area: | 8.89 cm² | Reprojection error: | 0.534 pix |

| Camera Model | Resolution | Focal Length | Pixel Size | Precalibrated |
|---|---|---|---|---|
| DMC-G7 (60mm) | 4592 x 2584 | 60 mm | 3.79 x 3.79 μm | No |
| DMC-G7 (60mm) | 4592 x 2584 | 60 mm | 3.79 x 3.79 μm | No |

Table 1. Cameras.

# Camera Calibration
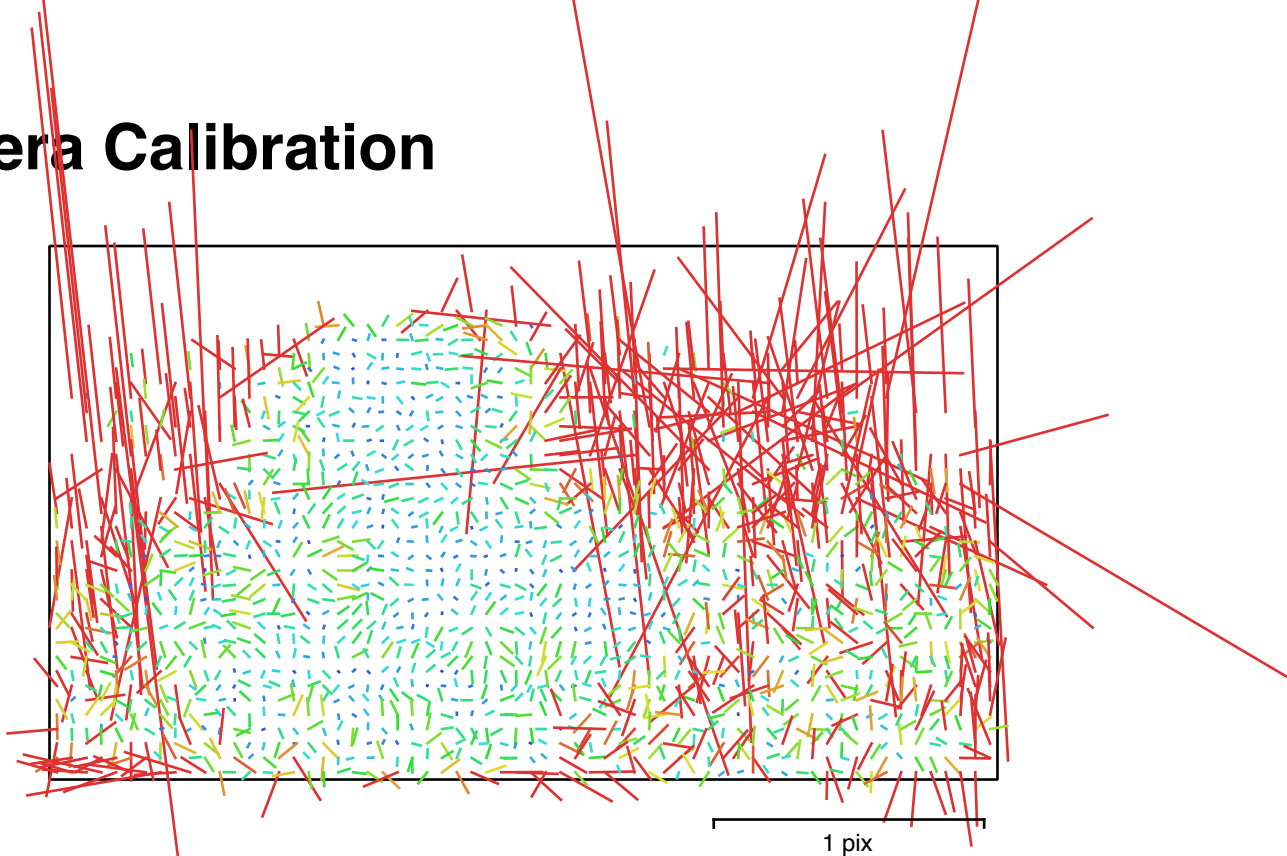


Fig. 2. Image residuals for DMC-G7 (60mm).

**DMC-G7 (60mm)**

72 images

| Type | Resolution | Focal Length | Pixel Size |
|---|---|---|---|
| **Frame** | **4592 x 2584** | **60 mm** | **3.79 x 3.79 µm** |

|  | Value | Error | F | B2 | K1 | K2 | P1 | P2 |
|---|---|---|---|---|---|---|---|---|
| **F** | **15508.7** | 2.7 | 1.00 | -0.10 | -0.21 | -0.02 | -0.04 | 0.18 |
| **B2** | **20.3056** | 0.59 |  | 1.00 | 0.01 | 0.07 | -0.48 | 0.47 |
| **K1** | **0.1352** | 0.0023 |  |  | 1.00 | -0.85 | 0.41 | -0.37 |
| **K2** | **-2.70353** | 0.076 |  |  |  | 1.00 | -0.30 | 0.16 |
| **P1** | **-0.000862921** | 7.1e-05 |  |  |  |  | 1.00 | -0.38 |
| **P2** | **-0.00486148** | 9.1e-05 |  |  |  |  |  | 1.00 |

Table 2. Calibration coefficients and correlation matrix.

# Camera Calibration
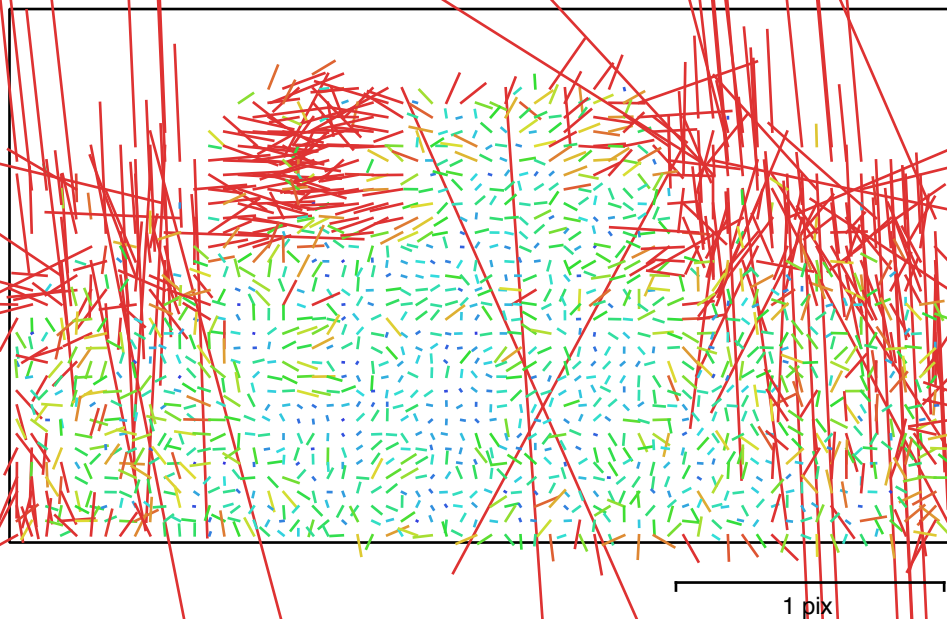


Fig. 3. Image residuals for DMC-G7 (60mm).

**DMC-G7 (60mm)**

78 images

| Type | Resolution | Focal Length | Pixel Size |
|------|------------|--------------|------------|
| **Frame** | **4592 x 2584** | **60 mm** | **3.79 x 3.79 µm** |

| | Value | Error | F | K1 | K2 | K3 | P1 | P2 |
|---|-------|-------|---|----|----|----|----|----|
| **F** | **15728.8** | 3.6 | 1.00 | 0.10 | -0.09 | 0.10 | 0.14 | 0.04 |
| **K1** | **0.284938** | 0.0022 | | 1.00 | -0.93 | 0.85 | 0.06 | -0.08 |
| **K2** | **-15.0559** | 0.19 | | | 1.00 | -0.98 | -0.00 | -0.08 |
| **K3** | **302.233** | 5 | | | | 1.00 | -0.01 | 0.09 |
| **P1** | **-0.000155825** | 4.9e-05 | | | | | 1.00 | -0.14 |
| **P2** | **-0.00644359** | 5.8e-05 | | | | | | 1.00 |

Table 3. Calibration coefficients and correlation matrix.

# Scale Bars

| Label | Distance (m) | Error (m) |
|---|---|---|
| point 1_point 2 | 0.0500054 | 5.44299e-06 |
| point 3_point 4 | 0.0499946 | -5.44402e-06 |
| **Total** | | **5.4435e-06** |

Table 4. Control scale bars.

# Digital Elevation Model



-46.7 cm

-48.7 cm

20 cm
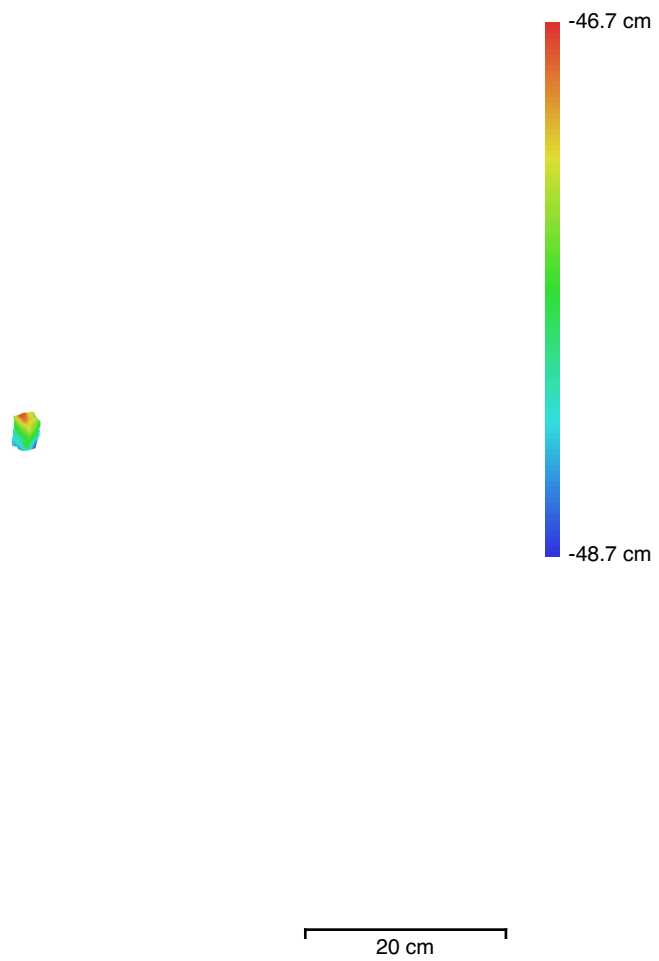
Fig. 4. Reconstructed digital elevation model.

Resolution:           0.0849 mm/pix

Point density:        139 points/mm²

# Processing Parameters

**General**

| | |
|---|---|
| Images | 150 |
| Aligned images | 150 |
| Markers | 4 |
| Scale bars | 2 |
| Coordinate system | Local Coordinates (m) |
| Rotation angles | Yaw, Pitch, Roll |

**Tie Points**

| | |
|---|---|
| Points | 198,540 of 258,852 |
| RMS reprojection error | 0.19517 (0.533842 pix) |
| Max reprojection error | 0.716895 (14.5525 pix) |
| Mean key point size | 2.44262 pix |
| Point colors | 3 bands, uint8 |
| Key points | No |
| Average tie point multiplicity | 4.08903 |
| File size | 21.46 MB |

**Depth Maps**

| | |
|---|---|
| Count | 150 |

**Depth maps generation parameters**

| | |
|---|---|
| Quality | Medium |
| Filtering mode | Mild |
| Max neighbors | 16 |
| Processing time | 1 minutes 52 seconds |
| Memory usage | 685.21 MB |
| Date created | 2024:07:03 14:27:39 |
| Software version | 2.1.1.17821 |
| File size | 9.28 MB |

**Model**

| | |
|---|---|
| Faces | 519,442 |
| Vertices | 259,717 |
| Vertex colors | 3 bands, uint8 |
| Texture | 8,192 x 8,192 x 2, 4 bands, uint8 |

**Texturing parameters**

| | |
|---|---|
| Mapping mode | Generic |
| Blending mode | Mosaic |
| Texture size | 8,192 |
| Enable hole filling | Yes |
| Enable ghosting filter | Yes |
| UV mapping time | 44 seconds |
| UV mapping memory usage | 425.35 MB |
| Blending time | 7 minutes 26 seconds |
| Blending memory usage | 8.22 GB |
| File size | 68.48 MB |

**System**

| | |
|---|---|
| Software name | Agisoft Metashape Professional |
| Software version | 2.1.2 build 18358 |
| OS | Mac OS 64 bit |
| RAM | 8.00 GB |
| CPU | |
| GPU(s) | Apple M1 |