Agisoft Metashape

Processing Report
27 February 2026

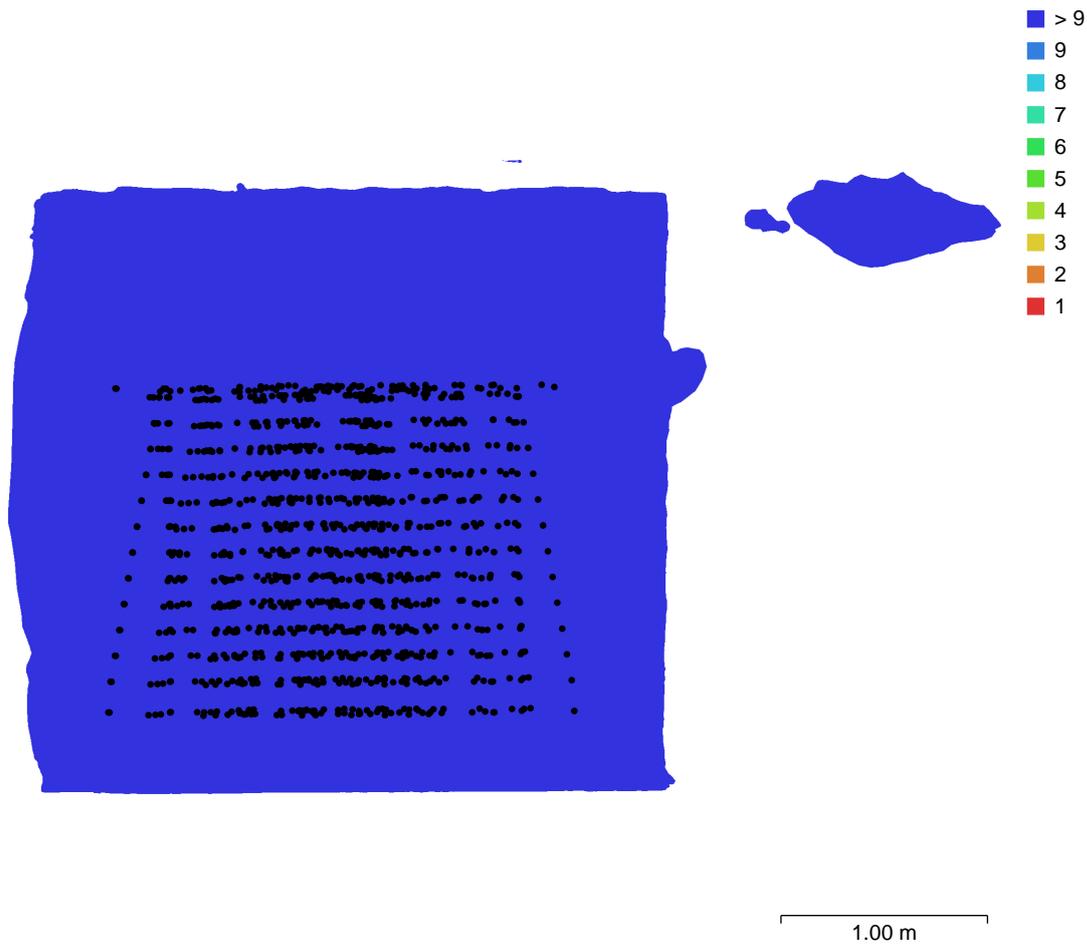# Survey Data

Fig. 1. Camera locations and image overlap.

Number of images:	1,134	Camera stations:	1,134
Flying altitude:	45.1 cm	Tie points:	373,642
Ground resolution:	0.683 mm/pix	Projections:	1,270,866
Coverage area:	9.53 m^2	Reprojection error:	0.397 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
40	8660 x 5784	6 mm	4.17 x 4.17 um	No
41	8660 x 5784	6 mm	4.17 x 4.17 um	No
42	8660 x 5784	6 mm	4.17 x 4.17 um	No
43	8660 x 5784	6 mm	4.17 x 4.17 um	No
44	8660 x 5784	6 mm	4.17 x 4.17 um	No

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
45	8660 x 5784	6 mm	4.17 x 4.17 um	No
46	8660 x 5784	6 mm	4.17 x 4.17 um	No
47	8660 x 5784	6 mm	4.17 x 4.17 um	No
48	8660 x 5784	6 mm	4.17 x 4.17 um	No
49	8660 x 5784	6 mm	4.17 x 4.17 um	No
50	8660 x 5784	6 mm	4.17 x 4.17 um	No
51	8660 x 5784	6 mm	4.17 x 4.17 um	No
52	8660 x 5784	6 mm	4.17 x 4.17 um	No
53	8660 x 5784	6 mm	4.17 x 4.17 um	No

Table 1. Cameras.

Camera Calibration
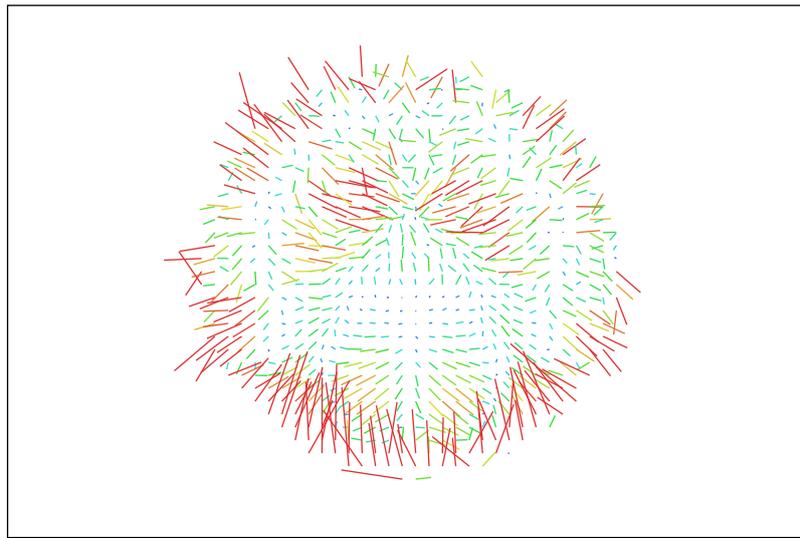
1 pix

Fig. 2. Image residuals for 40.

40

81 images
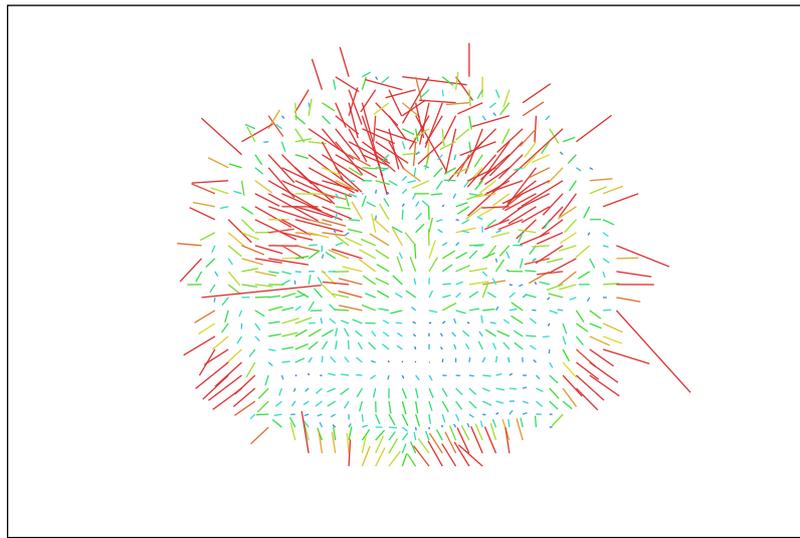
Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1442.84**	0.017	1.00	0.00	-0.14	-0.82	0.73	-0.67	-0.01	0.28
Cx	**17.5295**	0.022		1.00	-0.00	0.00	-0.00	-0.00	-0.59	-0.00
Cy	**-19.5168**	0.037			1.00	0.02	-0.02	0.02	0.00	-0.81
K1	**-0.00885171**	2.8e-05				1.00	-0.97	0.93	0.00	-0.03
K2	**0.00440981**	2.3e-05					1.00	-0.99	-0.00	-0.01
K3	**-0.00216819**	5.8e-06						1.00	-0.00	0.02
P1	**0.000215512**	1.1e-06							1.00	0.00
P2	**0.00066343**	2.6e-06								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix

Fig. 3. Image residuals for 41.

41

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Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1442.77**	0.018	1.00	0.00	0.03	-0.87	0.79	-0.74	-0.00	0.14
Cx	**5.39295**	0.021		1.00	-0.01	0.00	-0.00	0.00	-0.70	0.01
Cy	**-37.7815**	0.037			1.00	0.03	-0.03	0.03	0.01	-0.84
K1	**-0.00740904**	2.6e-05				1.00	-0.98	0.94	-0.00	-0.07
K2	**0.00258448**	1.9e-05					1.00	-0.99	0.01	0.03
K3	**-0.00162217**	4.1e-06						1.00	-0.01	-0.03
P1	**0.000183435**	9.9e-07							1.00	-0.01
P2	**0.000687692**	2.4e-06								1.00

Table 3. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix

Fig. 4. Image residuals for 42.

42

81 images

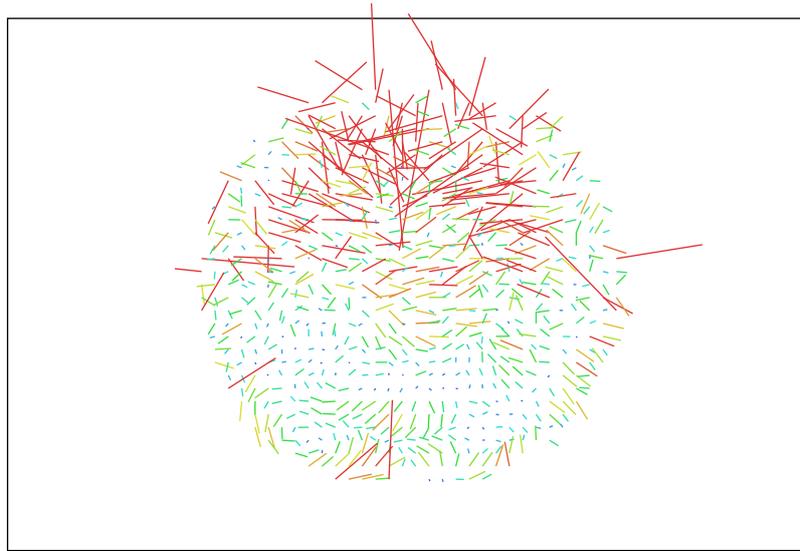| Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1436.67**	0.019	1.00	0.00	0.05	-0.88	0.81	-0.76	-0.00	0.10
Cx	**3.72196**	0.02		1.00	-0.02	-0.00	0.00	-0.00	-0.73	0.02
Cy	**-11.0999**	0.038			1.00	0.02	-0.02	0.01	0.01	-0.87
K1	**-0.0064428**	2.7e-05				1.00	-0.98	0.94	-0.00	-0.06
K2	**0.00176602**	1.9e-05					1.00	-0.99	0.00	0.02
K3	**-0.00149005**	4.2e-06						1.00	-0.00	-0.02
P1	**-0.000171726**	9.8e-07							1.00	-0.01
P2	**7.18179e-05**	2.4e-06								1.00

Table 4. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
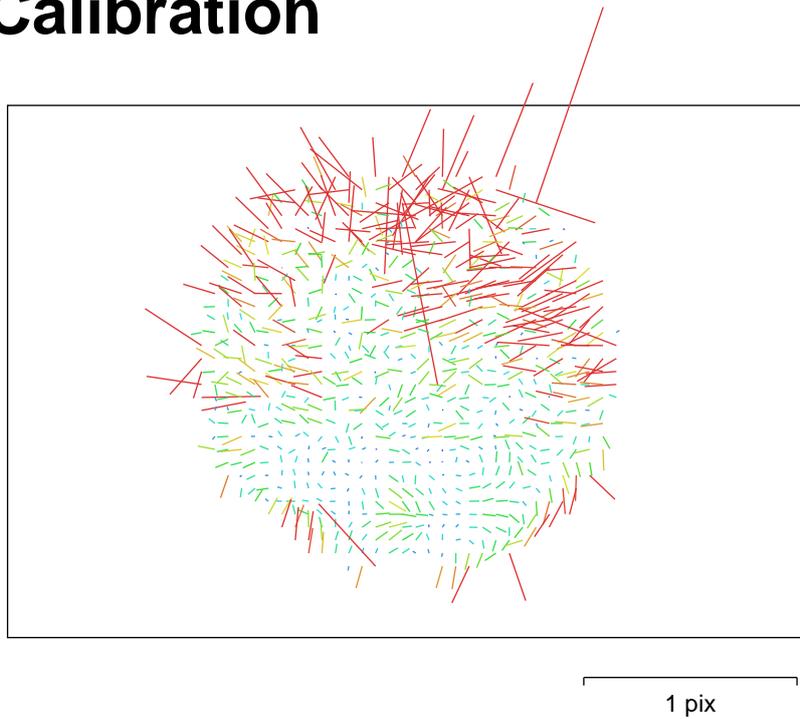
Fig. 5. Image residuals for 43.

43

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Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1449.89**	0.02	1.00	0.00	0.07	-0.88	0.81	-0.76	-0.01	0.07
Cx	**-4.01719**	0.02		1.00	-0.02	-0.00	0.00	-0.01	-0.75	0.01
Cy	**-54.9886**	0.041			1.00	0.01	-0.01	0.01	0.01	-0.89
K1	**-0.00611556**	2.7e-05				1.00	-0.98	0.94	0.00	-0.04
K2	**0.00125939**	1.9e-05					1.00	-0.99	-0.00	0.01
K3	**-0.00138649**	4.2e-06						1.00	0.00	-0.00
P1	**0.000219749**	1e-06							1.00	-0.01
P2	**-0.000134245**	2.5e-06								1.00

Table 5. Calibration coefficients and correlation matrix.

Camera Calibration
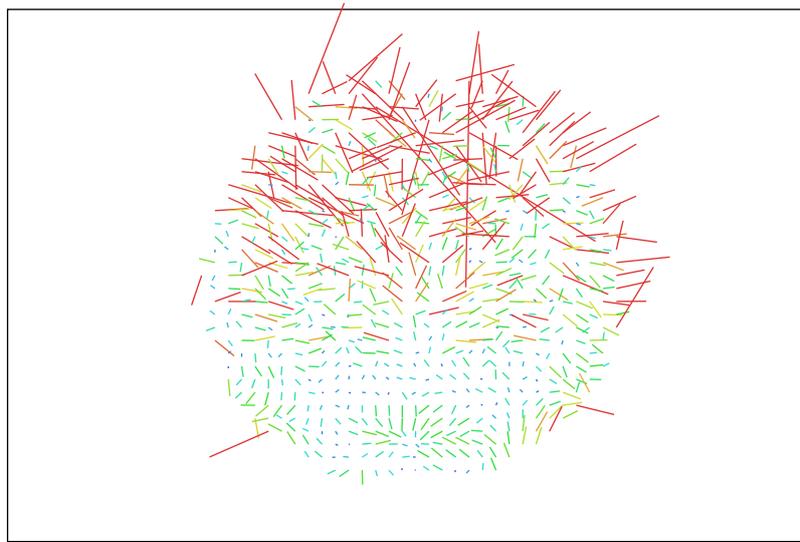
1 pix

Fig. 6. Image residuals for 44.

44

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1444.25**	0.022	1.00	0.01	0.08	-0.89	0.82	-0.77	-0.00	0.04
Cx	**28.9196**	0.02		1.00	-0.02	-0.01	0.01	-0.01	-0.76	0.02
Cy	**7.6989**	0.043			1.00	0.00	-0.00	-0.00	0.01	-0.90
K1	**-0.00578768**	2.9e-05				1.00	-0.98	0.95	0.00	-0.03
K2	**0.00108335**	2e-05					1.00	-0.99	-0.00	-0.00
K3	**-0.00132359**	4.4e-06						1.00	-0.00	0.01
P1	**0.000196343**	1e-06							1.00	-0.01
P2	**0.000607192**	2.6e-06								1.00

Table 6. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix

Fig. 7. Image residuals for 45.

45

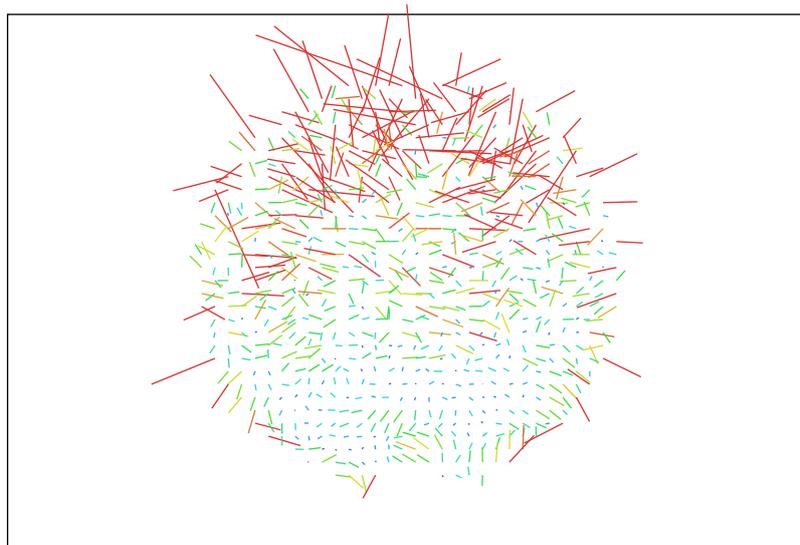81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1450.02**	0.023	1.00	0.01	0.09	-0.89	0.82	-0.77	-0.01	0.02
Cx	**3.5303**	0.02		1.00	-0.01	-0.02	0.02	-0.02	-0.78	0.01
Cy	**-36.4088**	0.045			1.00	-0.00	0.00	-0.00	0.01	-0.91
K1	**-0.00538122**	3e-05				1.00	-0.98	0.95	0.02	-0.02
K2	**0.000611894**	2.1e-05					1.00	-0.99	-0.02	-0.01
K3	**-0.00124792**	4.5e-06						1.00	0.02	0.02
P1	**-0.000147403**	1.1e-06							1.00	-0.00
P2	**-3.61716e-06**	2.7e-06								1.00

Table 7. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix

Fig. 8. Image residuals for 46.

46

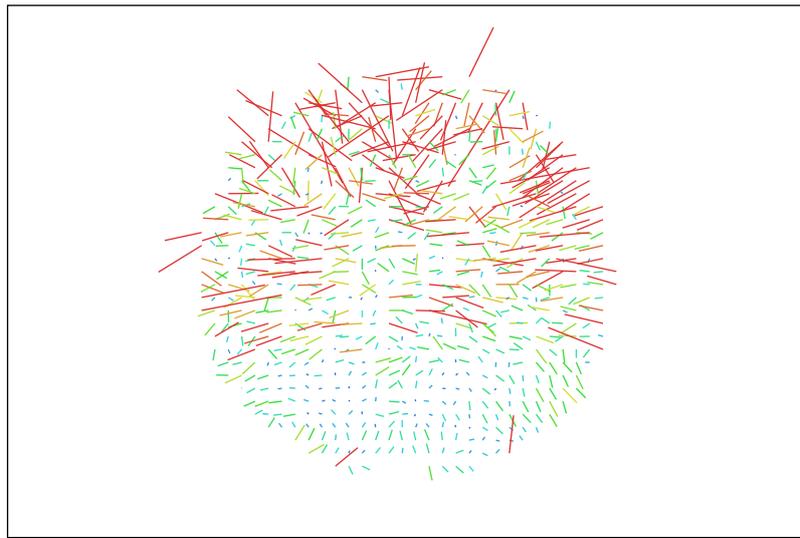81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1437.9**	0.024	1.00	0.01	0.10	-0.89	0.81	-0.76	-0.02	-0.01
Cx	**-13.1958**	0.021		1.00	-0.02	-0.02	0.02	-0.02	-0.79	0.02
Cy	**-14.348**	0.047			1.00	-0.01	0.01	-0.01	0.01	-0.91
K1	**-0.00526381**	3.2e-05				1.00	-0.98	0.94	0.02	-0.01
K2	**0.000430231**	2.2e-05					1.00	-0.99	-0.02	-0.03
K3	**-0.00121639**	4.8e-06						1.00	0.02	0.03
P1	**-0.000184374**	1.1e-06							1.00	-0.01
P2	**0.000144887**	2.9e-06								1.00

Table 8. Calibration coefficients and correlation matrix.

Camera Calibration
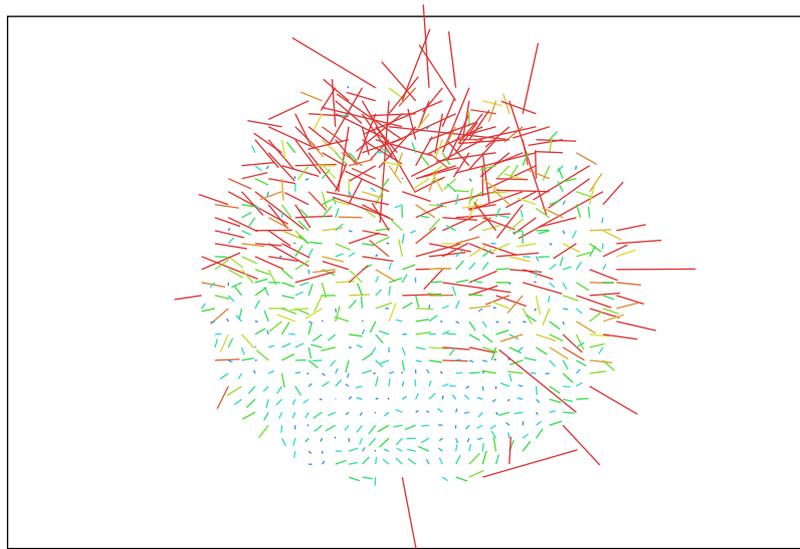
Fig. 9. Image residuals for 47.

47

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Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1449.97**	0.025	1.00	0.01	0.12	-0.89	0.81	-0.76	-0.02	-0.03
Cx	**17.3636**	0.021		1.00	-0.01	-0.01	0.02	-0.02	-0.79	0.00
Cy	**-38.7515**	0.049			1.00	-0.02	0.01	-0.01	0.00	-0.91
K1	**-0.00414984**	3.3e-05				1.00	-0.98	0.94	0.02	-0.00
K2	**-0.000185997**	2.2e-05					1.00	-0.99	-0.02	-0.03
K3	**-0.00110549**	4.8e-06						1.00	0.03	0.04
P1	**-0.000185408**	1.2e-06							1.00	0.00
P2	**0.000236624**	3e-06								1.00

Table 9. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
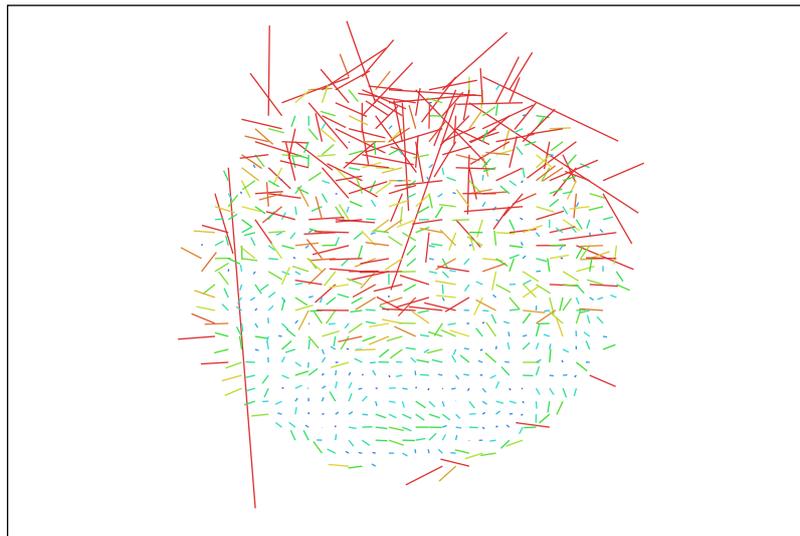
Fig. 10. Image residuals for 48.

48

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1438.15**	0.028	1.00	-0.00	0.11	-0.89	0.82	-0.76	-0.00	-0.03
Cx	**9.89912**	0.022		1.00	-0.01	-0.00	0.01	-0.01	-0.80	0.01
Cy	**-35.4195**	0.051			1.00	-0.02	0.02	-0.02	0.01	-0.91
K1	**-0.00448767**	3.7e-05				1.00	-0.98	0.95	0.01	0.01
K2	**0.000128557**	2.5e-05					1.00	-0.99	-0.01	-0.04
K3	**-0.0011515**	5.5e-06						1.00	0.01	0.04
P1	**0.000352023**	1.3e-06							1.00	0.00
P2	**-2.41814e-05**	3.1e-06								1.00

Table 10. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
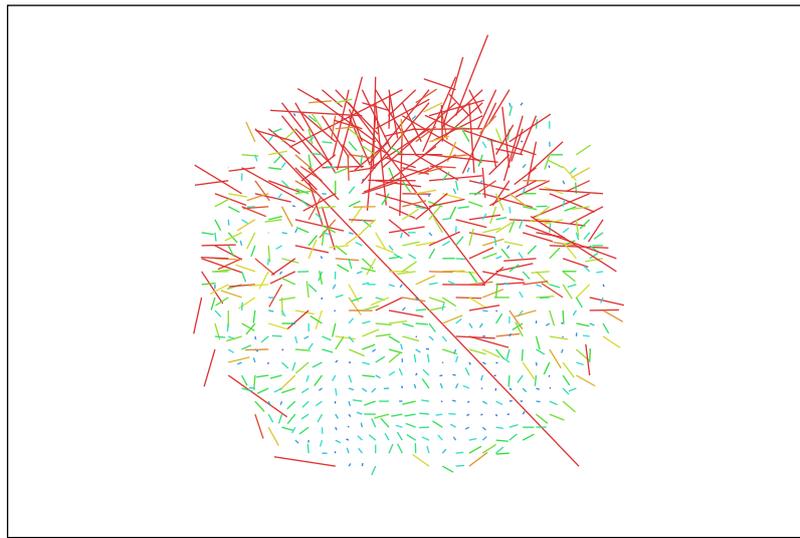
Fig. 11. Image residuals for 49.

49

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Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1436.24**	0.029	1.00	-0.00	0.12	-0.89	0.81	-0.76	0.00	-0.05
Cx	**-10.1968**	0.023		1.00	-0.02	-0.01	0.01	-0.01	-0.81	0.01
Cy	**-17.9518**	0.053			1.00	-0.03	0.02	-0.02	0.01	-0.91
K1	**-0.00461637**	3.8e-05				1.00	-0.98	0.95	0.00	0.01
K2	**6.76902e-05**	2.6e-05					1.00	-0.99	-0.01	-0.04
K3	**-0.00114081**	5.5e-06						1.00	0.01	0.05
P1	**-0.000149087**	1.3e-06							1.00	-0.00
P2	**0.000198531**	3.3e-06								1.00

Table 11. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
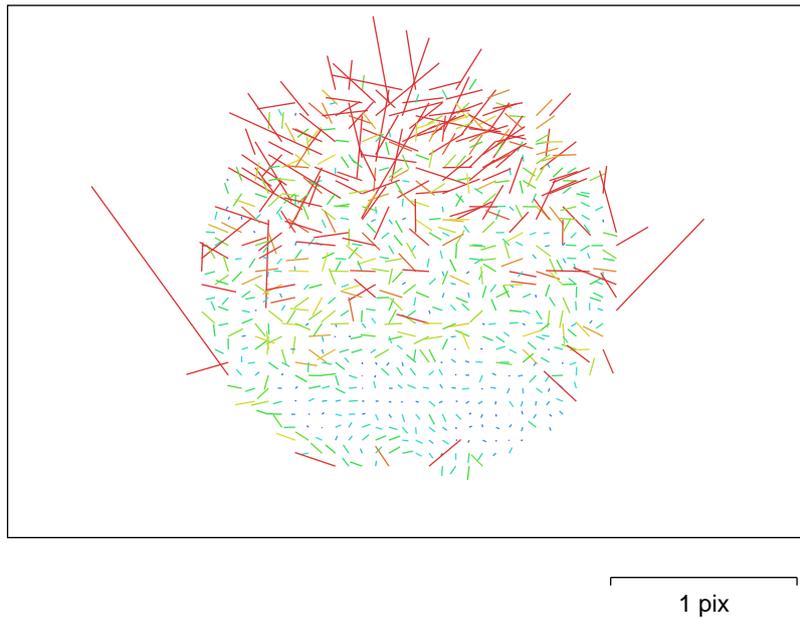
Fig. 12. Image residuals for 50.

50

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1444.55**	0.033	1.00	0.01	0.11	-0.89	0.81	-0.75	-0.01	-0.05
Cx	**12.416**	0.026		1.00	-0.01	-0.02	0.02	-0.02	-0.80	-0.00
Cy	**-23.5435**	0.056			1.00	-0.02	0.02	-0.02	0.00	-0.90
K1	**-0.00522051**	4.3e-05				1.00	-0.98	0.94	0.02	0.01
K2	**0.000189632**	3e-05					1.00	-0.99	-0.02	-0.05
K3	**-0.00116705**	6.4e-06						1.00	0.03	0.05
P1	**0.000226981**	1.5e-06							1.00	0.01
P2	**0.000231706**	3.5e-06								1.00

Table 12. Calibration coefficients and correlation matrix.

Camera Calibration
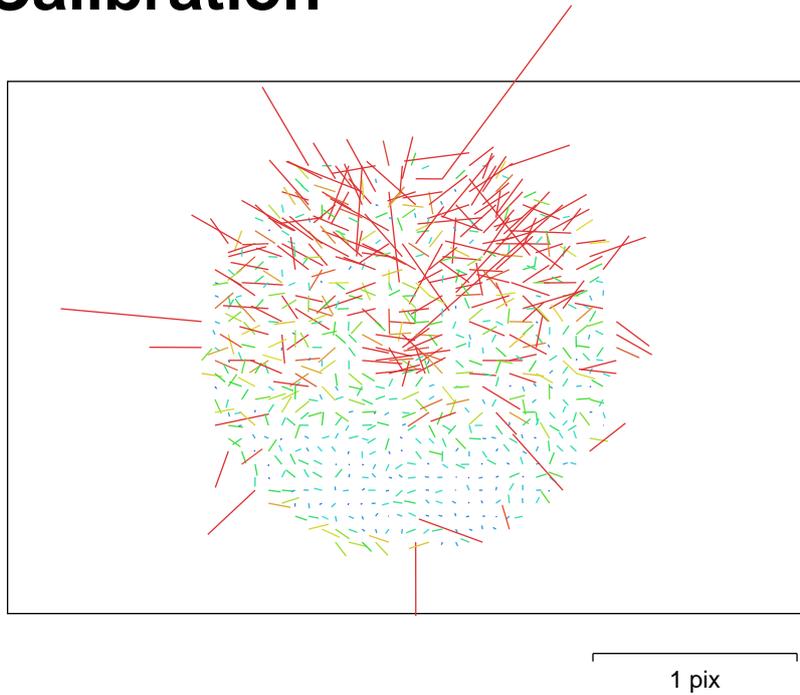
Fig. 13. Image residuals for 51.

51

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1440.86**	0.033	1.00	0.01	0.11	-0.89	0.81	-0.75	-0.01	-0.05
Cx	**1.534**	0.026		1.00	0.00	-0.02	0.02	-0.03	-0.82	-0.02
Cy	**-2.90957**	0.058			1.00	-0.02	0.02	-0.02	-0.01	-0.90
K1	**-0.00393282**	4.2e-05				1.00	-0.98	0.94	0.02	0.01
K2	**-0.000308161**	2.9e-05					1.00	-0.99	-0.03	-0.05
K3	**-0.0010964**	6.2e-06						1.00	0.03	0.05
P1	**-0.000146222**	1.5e-06							1.00	0.02
P2	**-0.000333047**	3.6e-06								1.00

Table 13. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
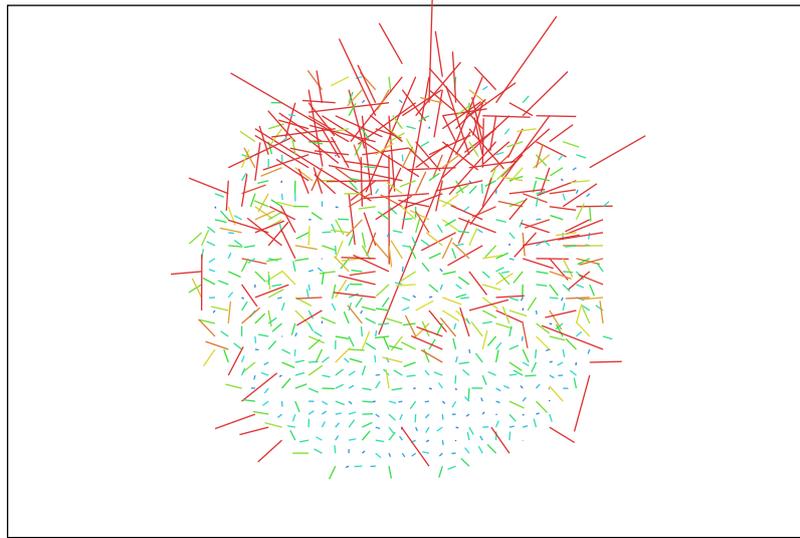
Fig. 14. Image residuals for 52.

52

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1442.27**	0.036	1.00	-0.01	0.10	-0.89	0.81	-0.75	-0.00	-0.04
Cx	**-16.919**	0.028		1.00	0.02	-0.01	0.01	-0.02	-0.82	-0.04
Cy	**-11.4761**	0.061			1.00	-0.02	0.02	-0.02	-0.02	-0.90
K1	**-0.00413024**	4.6e-05				1.00	-0.98	0.94	0.02	0.00
K2	**-0.000327196**	3.1e-05					1.00	-0.99	-0.03	-0.04
K3	**-0.0010602**	6.6e-06						1.00	0.03	0.05
P1	**0.000191884**	1.6e-06							1.00	0.02
P2	**7.41162e-05**	3.9e-06								1.00

Table 14. Calibration coefficients and correlation matrix.

Camera Calibration

1 pix
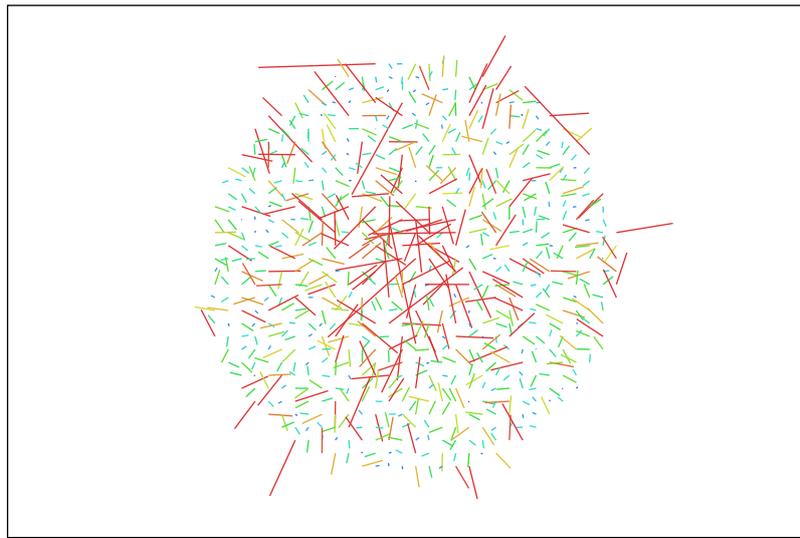
Fig. 15. Image residuals for 53.

53

81 images

Type	Resolution	Focal Length	Pixel Size
Fisheye	**8660 x 5784**	**6 mm**	**4.17 x 4.17 um**

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	**1436.38**	0.15	1.00	-0.01	0.00	-0.91	0.83	-0.77	0.03	0.05
Cx	**27.0758**	0.041		1.00	-0.04	-0.01	0.01	-0.01	-0.84	0.04
Cy	**-52.2512**	0.043			1.00	0.03	-0.04	0.05	0.05	-0.82
K1	**-0.00330963**	0.0002				1.00	-0.98	0.94	-0.01	-0.09
K2	**0.00107989**	0.00014					1.00	-0.99	0.01	0.13
K3	**-0.00162312**	3.2e-05						1.00	-0.01	-0.16
P1	**-0.000235883**	2.9e-06							1.00	-0.04
P2	**-0.00022359**	3.2e-06								1.00

Table 15. Calibration coefficients and correlation matrix.

Scale Bars

Label	Distance (m)	Error (m)
002a. 4-5	0.250454	0.000453791
002b. 5-6	0.250355	0.000454654
005a. 12-13	0.249778	-0.000201833
005b. 13-14	0.249705	-0.000185345
008a. 20-21	0.249769	-0.000260791
008b. 21-22	0.249592	-0.000288313
Total		**0.000326308**

Table 16. Control scale bars.

Digital Elevation Model
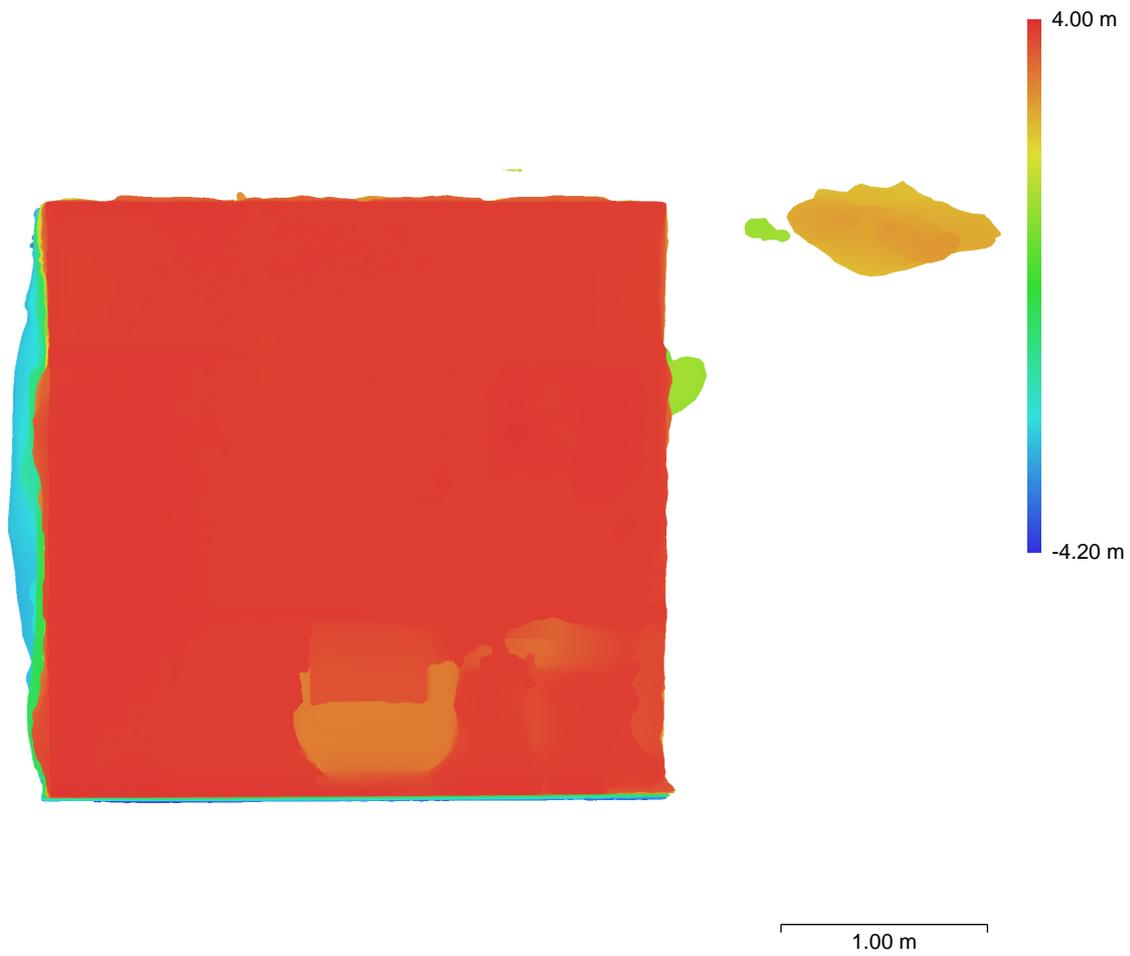

Fig. 16. Reconstructed digital elevation model.

Resolution: 4.47 mm/pix

Point density: 5.00 points/cm^2

Processing Parameters

General

Images	1134
Aligned images	1134
Markers	9
Scale bars	6
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	373,642 of 1,231,104
RMS reprojection error	0.22175 (0.396821 pix)
Max reprojection error	0.847354 (7.55334 pix)
Mean key point size	1.73946 pix
Point colors	3 bands, uint8
Key points	5.37 GB
Average tie point multiplicity	3.82795

Alignment parameters

Accuracy	Highest
Generic preselection	Yes
Reference preselection	Estimated
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	8 minutes 12 seconds
Matching memory usage	14.29 GB
Alignment time	1 minutes 18 seconds
Alignment memory usage	8.71 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Exclude corners	No
Optimization time	2 seconds
Date created	2026:02:27 08:56:32
Software version	2.2.2.21287
File size	5.47 GB

Depth Maps

Count	1089

Depth maps generation parameters

Quality	Medium
Filtering mode	Mild
Max neighbors	16
Processing time	10 minutes 37 seconds
Memory usage	4.14 GB
Date created	2026:02:27 09:17:14
Software version	2.2.2.21287
File size	1.23 GB

Point Cloud

Points	40,101,222
Coordinate precision	0.683 mm

Point attributes
    Color   3 bands, uint8
    Normal

Point classes
    Created (never classified)   40,101,222

Depth maps generation parameters
    Quality   Medium
    Filtering mode   Mild
    Max neighbors   16
    Processing time   10 minutes 37 seconds
    Memory usage   4.14 GB

Point cloud generation parameters
    Source data   Depth maps
    Processing time   57 minutes 21 seconds
    Memory usage   37.09 GB
  Date created   2026:02:27 10:14:35
  Software version   2.2.2.21287
  File size   535.32 MB

Model
  Faces   2,018,422
  Vertices   1,009,301
  Vertex colors   3 bands, uint8
  Texture   16,384 x 16,384, 3 bands, uint8

Depth maps generation parameters
    Quality   Medium
    Filtering mode   Mild
    Max neighbors   16
    Processing time   10 minutes 37 seconds
    Memory usage   4.14 GB

Reconstruction parameters
    Surface type   Arbitrary
    Source data   Depth maps
    Interpolation   Enabled
    Strict volumetric masks   No
    Processing time   2 minutes 34 seconds
    Memory usage   6.91 GB

Texturing parameters
    Mapping mode   Generic
    Blending mode   Mosaic
    Texture size   16,384
    Page count   1
    Enable hole filling   Yes
    Enable ghosting filter   Yes
    UV mapping time   2 minutes 40 seconds
    UV mapping memory usage   1007.06 MB
    Blending time   3 minutes 47 seconds
    Blending memory usage   9.68 GB
    Blending GPU memory usage   7.60 GB
  Date created   2026:02:27 10:17:08
  Software version   2.2.2.21287
  File size   320.99 MB

System
  Software name   Agisoft Metashape Professional
  Software version   2.2.2 build 21287
  OS   Windows 64 bit
  RAM   255.52 GB

CPU   AMD Ryzen Threadripper PRO 7975WX 32-Cores
GPU(s)   NVIDIA GeForce RTX 5090
                                                 NVIDIA GeForce RTX 5090