

Agisoft Metashape_budynek

raport z projektu

05 April 2023



Survey Data

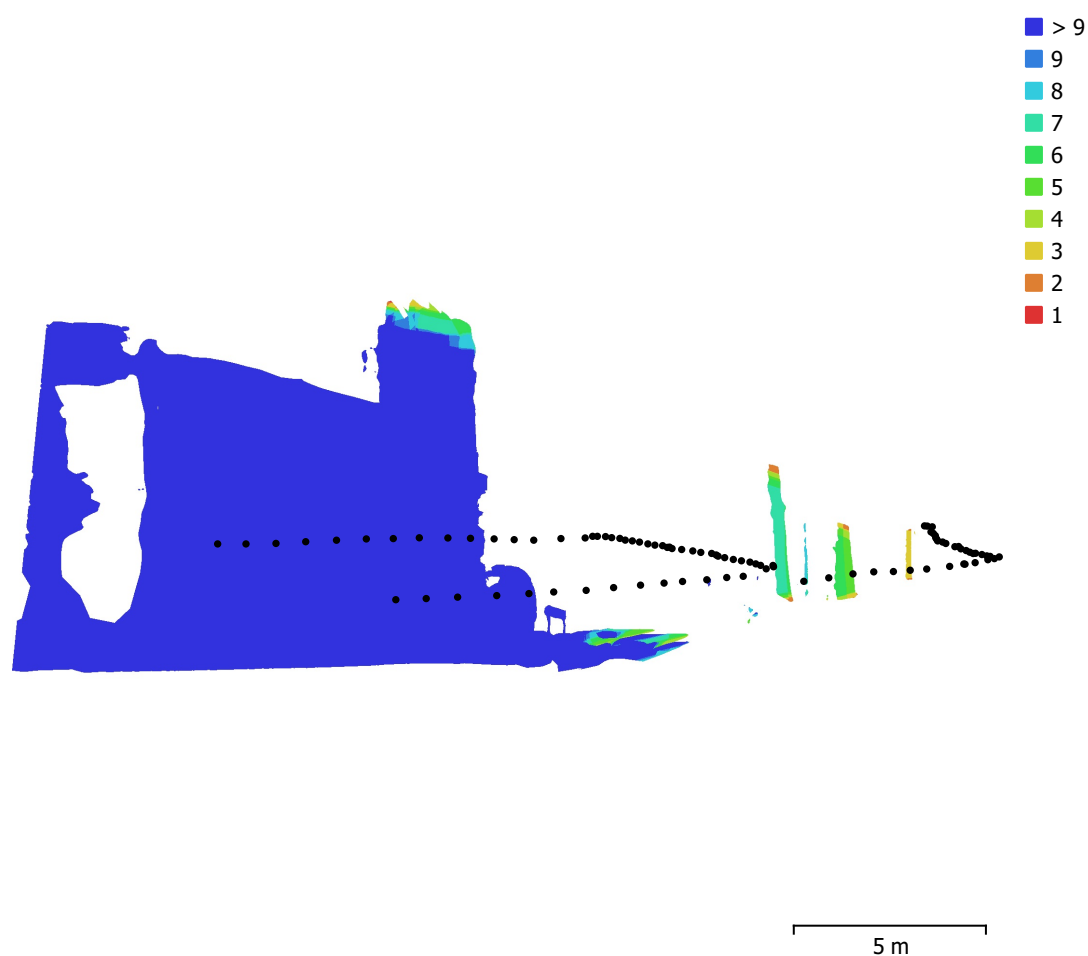


Fig. 1. Camera locations and image overlap.

Number of images:	93	Camera stations:	93
Flying altitude:	9.89 m	Tie points:	16,968
Ground resolution:	1.58 mm/pix	Projections:	79,104
Coverage area:	95.4 m ²	Reprojection error:	1.05 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
Canon EOS 7D, EF24mm...	5184 x 3456	24 mm	4.41 x 4.41 μm	No
Canon EOS 7D, EF24mm...	5184 x 3456	24 mm	4.41 x 4.41 μm	No

Table 1. Cameras.

Camera Calibration

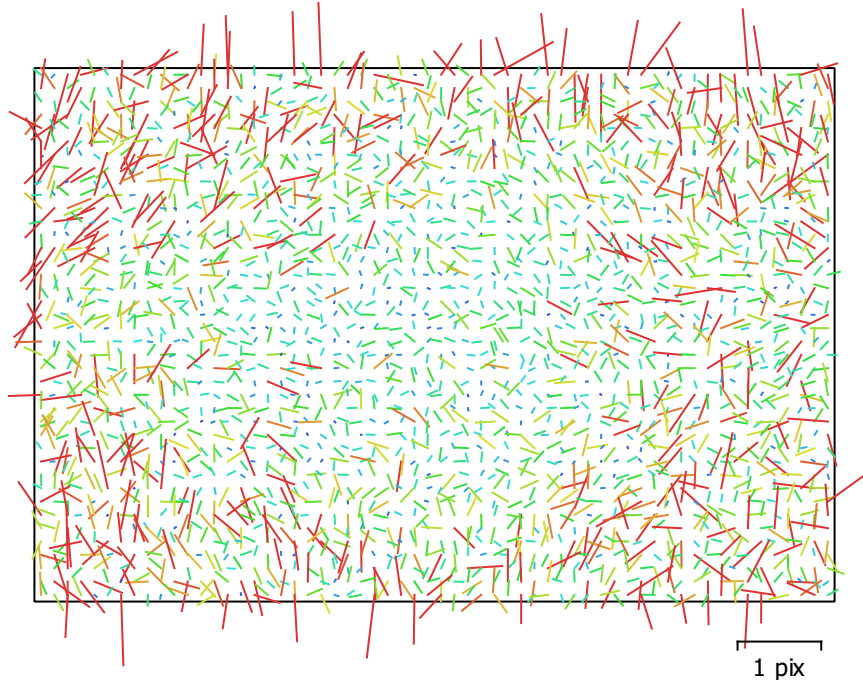


Fig. 2. Image residuals for Canon EOS 7D, EF24mm f/2.8 (24mm).

Canon EOS 7D, EF24mm f/2.8 (24mm)

58 images

Type	Resolution	Focal Length	Pixel Size
Frame	5184 x 3456	24 mm	4.41 x 4.41 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	5659.07	0.88	1.00	-0.04	-0.00	-0.22	0.13	-0.08	-0.02	0.10
Cx	15.0431	1.3		1.00	-0.05	-0.03	0.05	-0.06	0.88	-0.02
Cy	-34.1952	0.99			1.00	-0.00	-0.00	0.01	-0.04	0.47
K1	-0.105611	0.00044				1.00	-0.96	0.90	-0.02	-0.01
K2	0.103288	0.0033					1.00	-0.98	0.05	-0.00
K3	-0.00399278	0.0075						1.00	-0.05	0.01
P1	0.000434254	5.2e-05							1.00	-0.03
P2	-0.000310945	2.3e-05								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Calibration

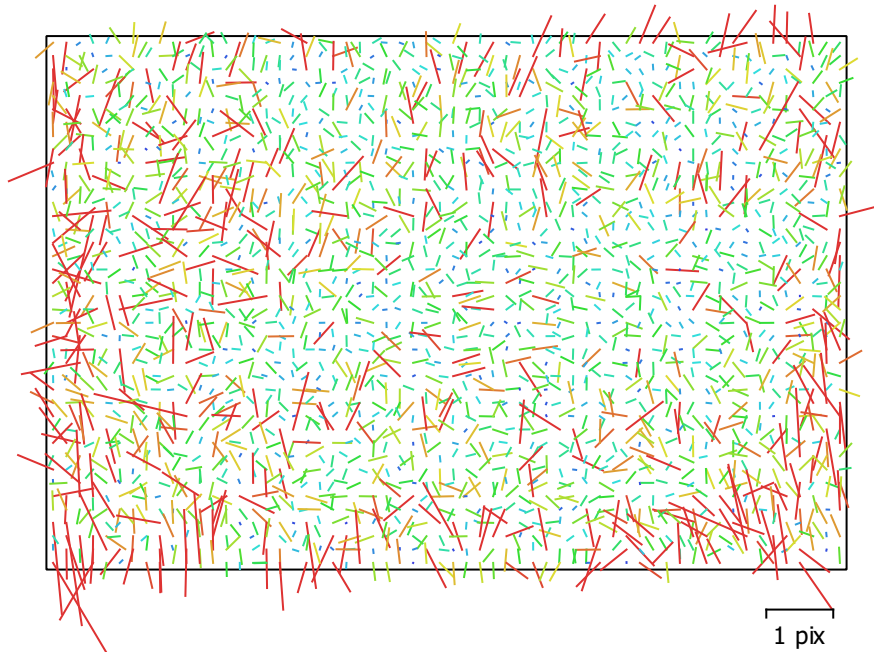


Fig. 3. Image residuals for Canon EOS 7D, EF24mm f/2.8 (24mm).

Canon EOS 7D, EF24mm f/2.8 (24mm)

35 images

Type	Resolution	Focal Length	Pixel Size
Frame	5184 x 3456	24 mm	4.41 x 4.41 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	5643.31	1.6	1.00	0.28	-0.18	-0.06	0.06	-0.04	0.13	-0.05
Cx	24.6759	2.1		1.00	-0.05	0.02	-0.00	-0.00	0.91	-0.13
Cy	-41.9492	1.6			1.00	-0.08	0.06	-0.07	-0.05	0.55
K1	-0.109802	0.00066				1.00	-0.96	0.90	0.03	-0.05
K2	0.125202	0.0049					1.00	-0.98	-0.01	0.02
K3	-0.0431702	0.011						1.00	-0.00	-0.02
P1	0.000427678	8.9e-05							1.00	-0.08
P2	-0.000402252	4.6e-05								1.00

Table 3. Calibration coefficients and correlation matrix.

Ground Control Points

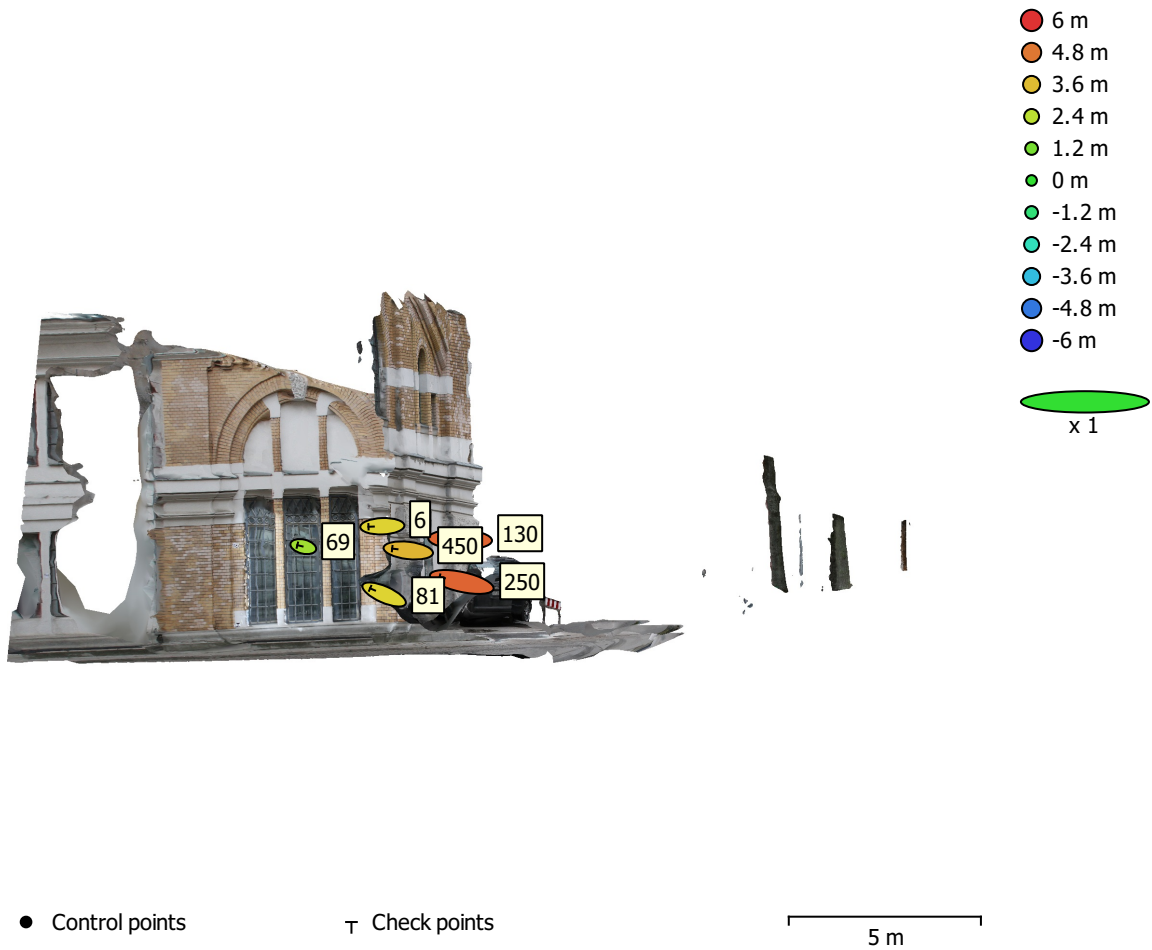


Fig. 4. GCP locations and error estimates.

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)
6	0.864272	0.17561	3.89119	0.881932	3.98988

Table 4. Check points RMSE.

Label	X error (m)	Y error (m)	Z error (m)	Total (m)	Image (pix)
6	-0.721656	-0.0262073	3.21104	3.29124	0.704 (27)
69	-0.309182	0.075255	1.92337	1.94951	0.651 (31)
81	-0.72944	0.320142	3.18786	3.28588	0.712 (25)
130	-1.14275	0.0426857	5.13521	5.261	0.632 (40)
250	-1.15136	0.255415	5.13272	5.26647	0.636 (38)
450	-0.83774	0.0955623	3.73636	3.83032	0.645 (27)
Total	0.864272	0.17561	3.89119	3.98988	0.659

Table 5. Check points.

Scale Bars

Label	Distance (m)	Error (m)
6_450	2.53964	-0.000362952
130_250	1.00023	0.00023045
Total		0.000304008

Table 6. Control scale bars.

Label	Distance (m)	Error (m)
6_81	1.60533	0.00532869
6_81	1.60533	0.00532869
6_450	2.53964	-0.000362952
81_450	2.75047	0.000469049
81_450	2.75047	0.000469049
130_250	1.00023	0.00023045
Total		0.0030934

Table 7. Check scale bars.

Digital Elevation Model

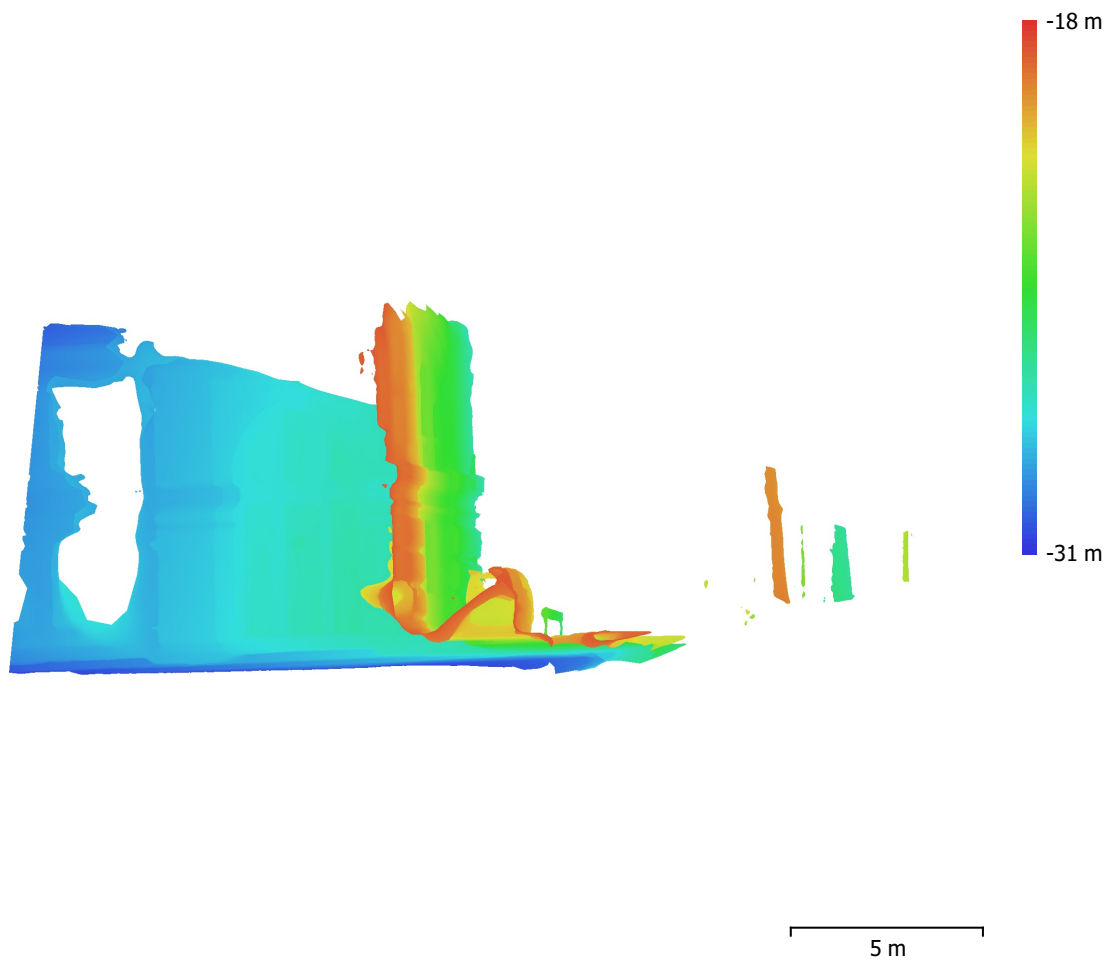


Fig. 5. Reconstructed digital elevation model.

Resolution: 1.46 cm/pix
Point density: 0.466 points/cm²

Processing Parameters

General

Cameras	93
Aligned cameras	93
Markers	6
Scale bars	8
Coordinate system	Local Coordinates (m)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	16,968 of 20,969
RMS reprojection error	0.279227 (1.0476 pix)
Max reprojection error	1.15112 (33.5609 pix)
Mean key point size	3.69463 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	4.92231

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	0 seconds
File size	2.81 MB

Depth Maps

Count	58
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Depth maps generation parameters

Quality	Medium
Filtering mode	Moderate
Max neighbors	40
Processing time	4 minutes 7 seconds
File size	85.60 MB

Dense Point Cloud

Points	20,809,221
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Moderate
Max neighbors	40
Processing time	17 minutes 25 seconds

Dense cloud generation parameters

Processing time	21 minutes 58 seconds
Date created	2023:04:05 13:06:32
Software version	1.7.5.13229
File size	220.21 MB

Model

Faces	288,010
Vertices	144,837
Vertex colors	3 bands, uint8
Texture	4,096 x 4,096, 4 bands, uint8

Depth maps generation parameters

Quality	Medium
Filtering mode	Moderate
Max neighbors	40

Processing time	4 minutes 7 seconds
Reconstruction parameters	
Surface type	Arbitrary
Source data	Depth maps
Interpolation	Enabled
Strict volumetric masks	No
Processing time	1 minutes 57 seconds
Memory usage	1.23 GB
Texturing parameters	
Mapping mode	Generic
Blending mode	Mosaic
Texture size	4,096
Enable hole filling	Yes
Enable ghosting filter	Yes
UV mapping time	58 seconds
UV mapping memory usage	775.49 MB
Blending time	2 minutes 31 seconds
Blending memory usage	5.30 GB
Date created	2023:04:05 13:14:57
Software version	1.7.5.13229
File size	36.81 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.5 build 13229
OS	Windows 64 bit
RAM	15.94 GB
CPU	Intel(R) Core(TM) i7-4770K CPU @ 3.50GHz
GPU(s)	GeForce GTX 1050