

MERCADO MODELO

Processing Report

27 May 2024



Survey Data

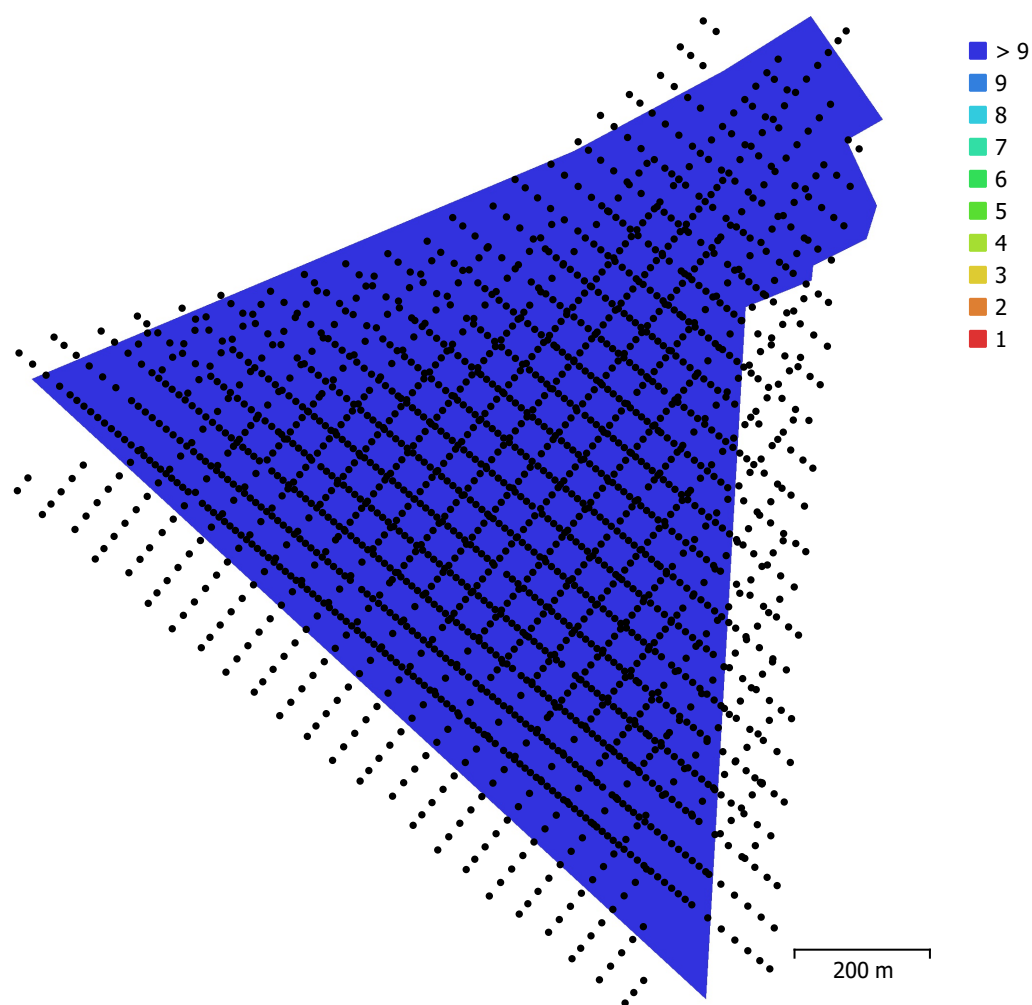


Fig. 1. Camera locations and image overlap.

Number of images:	2,048	Camera stations:	2,048
Flying altitude:	139 m	Tie points:	778,431
Ground resolution:	4.48 cm/pix	Projections:	5,942,712
Coverage area:	0.777 km ²	Reprojection error:	1.27 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
M3E (12.29mm)	5280 x 3956	12.29 mm	3.36 x 3.36 µm	Yes

Table 1. Cameras.

Camera Calibration

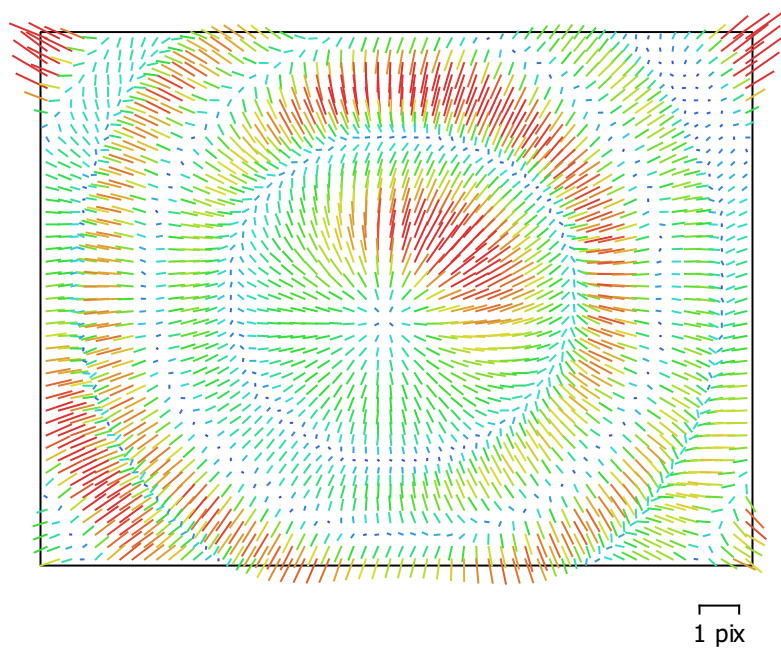


Fig. 2. Image residuals for M3E (12.29mm).

M3E (12.29mm)

2048 images, precalibrated

Type	Resolution	Focal Length	Pixel Size
Frame	5280 x 3956	12.29 mm	3.36 x 3.36 μm

	Value	Error	F	Cx	Cy	K1	K2	K3	P1	P2
F	3704.56	0.0047	1.00	-0.01	0.01	-0.69	0.61	-0.55	0.00	0.02
Cx	23.3515	0.0054		1.00	0.00	0.01	-0.01	0.02	0.75	-0.00
Cy	-64.5621	0.0049			1.00	-0.02	0.03	-0.03	0.00	0.52
K1	-0.106121	8e-06				1.00	-0.97	0.92	0.01	-0.04
K2	0.000798444	2e-05					1.00	-0.98	-0.01	0.05
K3	-0.0174063	1.5e-05						1.00	0.02	-0.06
P1	8.99314e-06	2.8e-07							1.00	-0.00
P2	-0.000216507	2.8e-07								1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

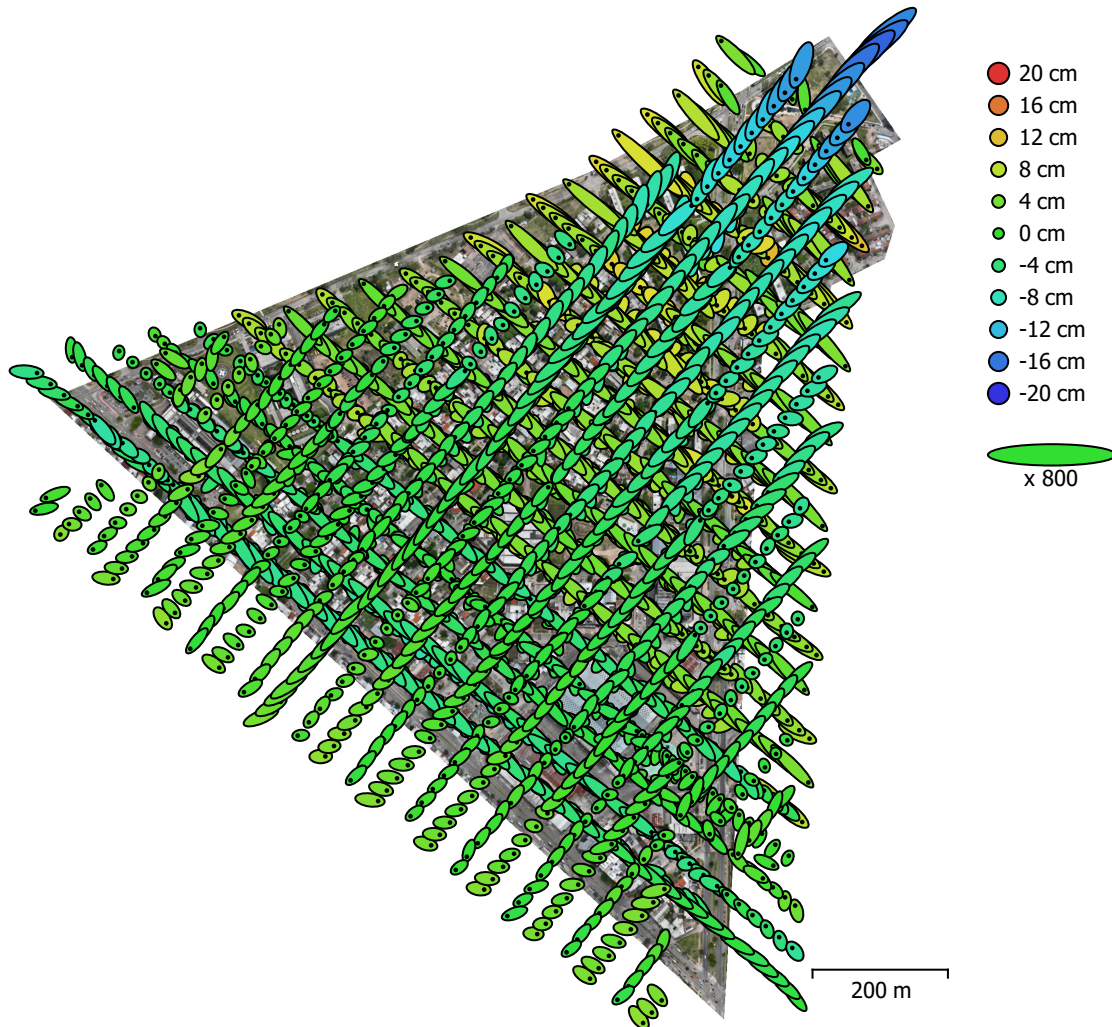


Fig. 3. Camera locations and error estimates.

Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.

Estimated camera locations are marked with a black dot.

X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
2.87335	2.76106	4.5667	3.98492	6.06089

Table 3. Average camera location error.

X - Easting, Y - Northing, Z - Altitude.

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 (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total (cm)
8	0.982509	1.99733	2.23344	2.2259	3.15324

Table 4. Control points RMSE.

X - Easting, Y - Northing, Z - Altitude.

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
1	0.365081	-2.8293	2.3456	3.69325	1.657 (12)
2	0.922904	-0.682728	2.5661	2.81118	1.393 (13)
3	-0.726664	0.962369	2.2739	2.57387	1.181 (15)
4	-0.948637	-0.531933	1.76295	2.07144	1.598 (11)
5	-0.0117787	-0.431572	-0.643978	0.775307	0.798 (20)
6	-2.13186	-3.87323	-1.43366	4.64781	1.283 (38)
7	-0.819105	-0.231348	4.0403	4.12898	0.853 (219)
8	0.3061	-2.64436	0.86405	2.79874	0.957 (294)
Total	0.982509	1.99733	2.23344	3.15324	0.991

Table 5. Control points.
X - Easting, Y - Northing, Z - Altitude.

Digital Elevation Model

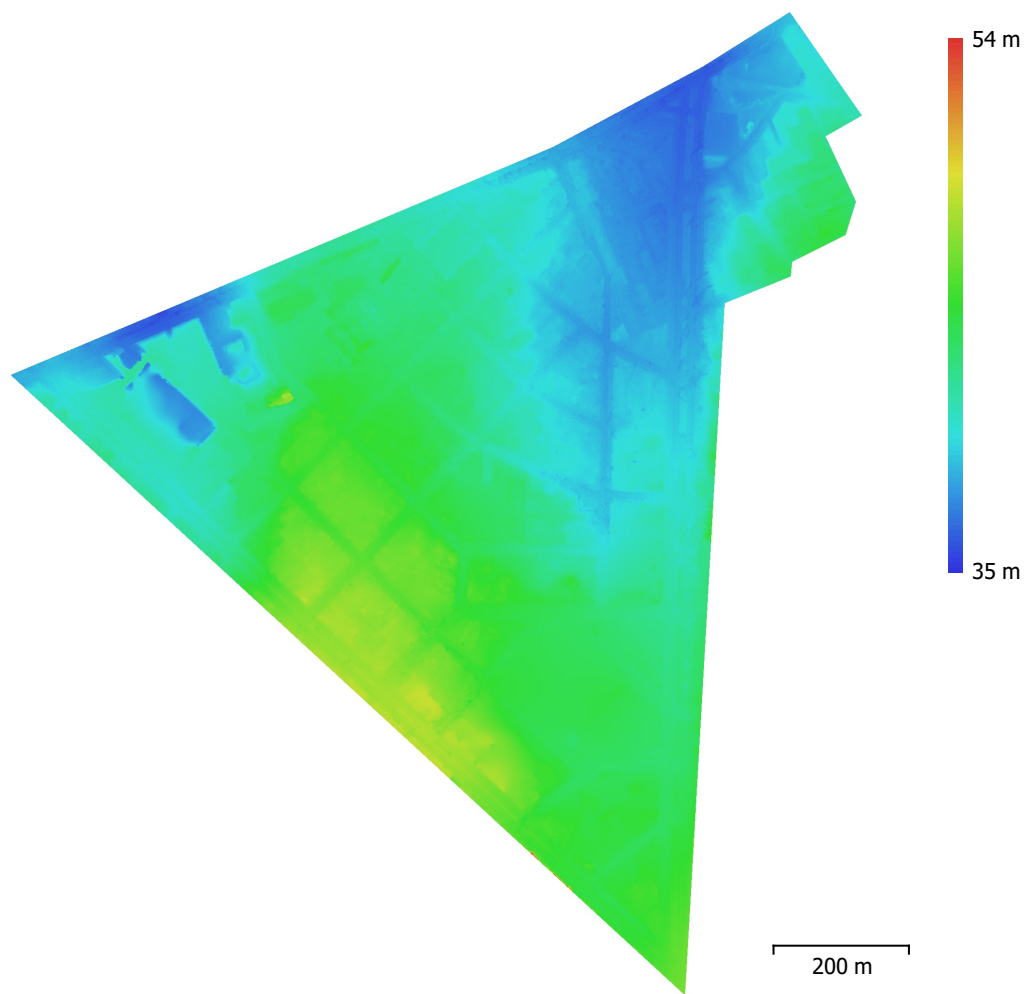


Fig. 5. Reconstructed digital elevation model.

Resolution: 25 cm/pix
Point density: 16 points/m²

Processing Parameters

General

Cameras	2048
Aligned cameras	2048
Markers	8
Shapes	
LineString	5778
Polygon	4
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	778,431 of 934,270
RMS reprojection error	0.263233 (1.2695 pix)
Max reprojection error	0.998148 (85.9709 pix)
Mean key point size	3.71354 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	9.52038

Alignment parameters

Accuracy	High
Generic preselection	Yes
Reference preselection	Source
Key point limit	40,000
Key point limit per Mpx	1,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	1 hours 51 minutes
Matching memory usage	15.61 GB
Alignment time	30 minutes 27 seconds
Alignment memory usage	5.30 GB

Optimization parameters

Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	No
Optimization time	1 minutes 5 seconds
Date created	2024:03:05 15:56:35
Software version	2.1.0.17532
File size	156.48 MB

Depth Maps

Count	2048
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Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	16 hours 41 minutes
Memory usage	10.93 GB
Date created	2024:03:13 09:29:14
Software version	2.1.0.17532
File size	16.08 GB

Point Cloud

Points	361,039,733
Coordinate precision	2.24 cm
Point attributes	
Color	3 bands, uint8
Normal	
Confidence	1 - 216
Point classes	
Created (never classified)	275,766,343
Unclassified	23,827,104
Ground	46,476,905
Low Point (noise)	4,963,385
Man-made Object	10,005,996
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	16 hours 41 minutes
Memory usage	10.93 GB
Point cloud generation parameters	
Processing time	16 hours 6 minutes
Memory usage	47.63 GB
Ground points classification parameters	
Max angle (°)	7
Max terrain slope (deg)	5
Max distance (m)	0.1
Cell size (m)	50
Classification time	49 minutes 8 seconds
Classification memory usage	7.98 GB
Date created	2024:03:14 01:35:35
Software version	2.1.0.17532
File size	5.20 GB
Tiled Model	
Texture	3 bands, uint8
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	16 hours 41 minutes
Memory usage	10.93 GB
Reconstruction parameters	
Source data	Depth maps
Tile size	256
Face count	High
Enable ghosting filter	Yes
Processing time	16 hours 10 minutes
Memory usage	27.92 GB
Date created	2024:03:16 07:30:54
Software version	2.1.0.17532
File size	2.08 GB
DEM	
Size	5,022 x 5,801
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
File size	54.36 MB
Orthomosaic	
Size	38,614 x 44,074
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)

Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	1 hours 57 minutes
Memory usage	2.53 GB
Date created	2024:03:15 12:08:00
Software version	2.1.0.17532
File size	70.97 GB
System	
Software name	Agisoft Metashape Professional
Software version	2.1.0 build 17532
OS	Windows 64 bit
RAM	63.93 GB
CPU	Intel(R) Core(TM) i7-9700F CPU @ 3.00GHz
GPU(s)	Intel(R) FPGA Emulation Device Radeon(TM) RX 460 Graphics (Baffin)