VISTA LINDA

Processing Report
27 May 2024

Survey Data

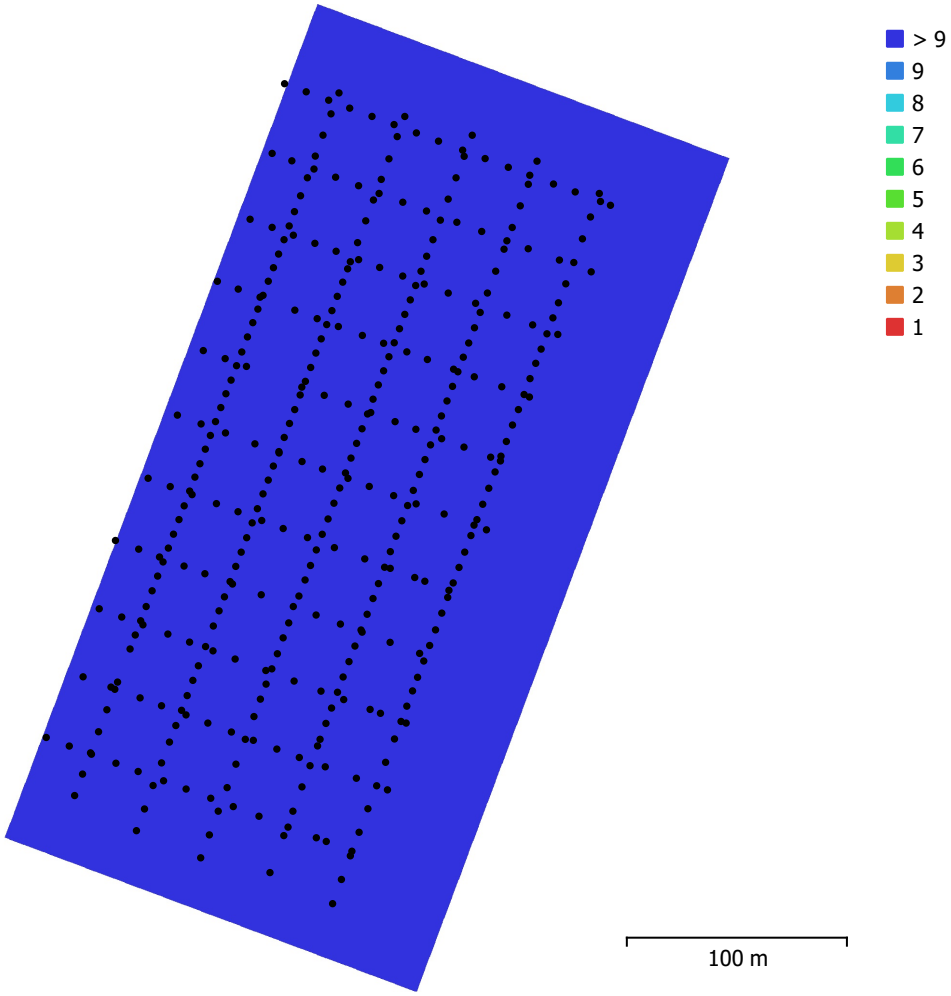

Fig. 1. Camera locations and image overlap.

Number of images:	369	Camera stations:	369
Flying altitude:	89.7 m	Tie points:	136,569
Ground resolution:	2.83 cm/pix	Projections:	1,011,496
Coverage area:	0.0807 km²	Reprojection error:	1.21 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

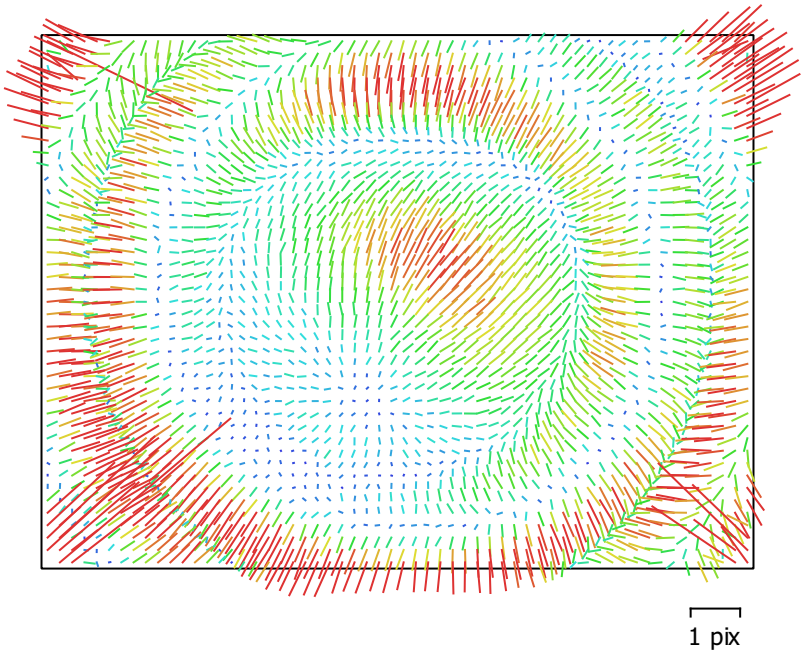

Fig. 2. Image residuals for M3E (12.29mm).

M3E (12.29mm)

369 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	B1	B2	K1	K2	K3	K4	P1	P2
F	**3702.7**	0.0097	1.00	-0.01	-0.01	-0.55	-0.00	-0.58	0.52	-0.47	0.42	0.00	-0.02
Cx	**23.4147**	0.0066		1.00	0.01	0.01	-0.04	-0.01	0.01	-0.01	0.02	0.70	0.00
Cy	**-64.4737**	0.006			1.00	-0.00	0.01	0.02	-0.02	0.03	-0.04	0.01	0.46
B1	**0.156344**	0.0035				1.00	-0.00	0.05	-0.05	0.04	-0.03	0.01	0.04
B2	**-0.288476**	0.0027					1.00	-0.00	0.00	-0.00	0.01	-0.06	0.01
K1	**-0.089663**	2e-05						1.00	-0.98	0.93	-0.88	-0.01	0.03
K2	**-0.0753537**	8.4e-05							1.00	-0.99	0.96	0.01	-0.04
K3	**0.111483**	0.00014								1.00	-0.99	-0.01	0.05
K4	**-0.0722699**	7.5e-05									1.00	0.01	-0.06
P1	**-5.99955e-06**	3.4e-07										1.00	-0.01
P2	**-0.000211341**	3.4e-07											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

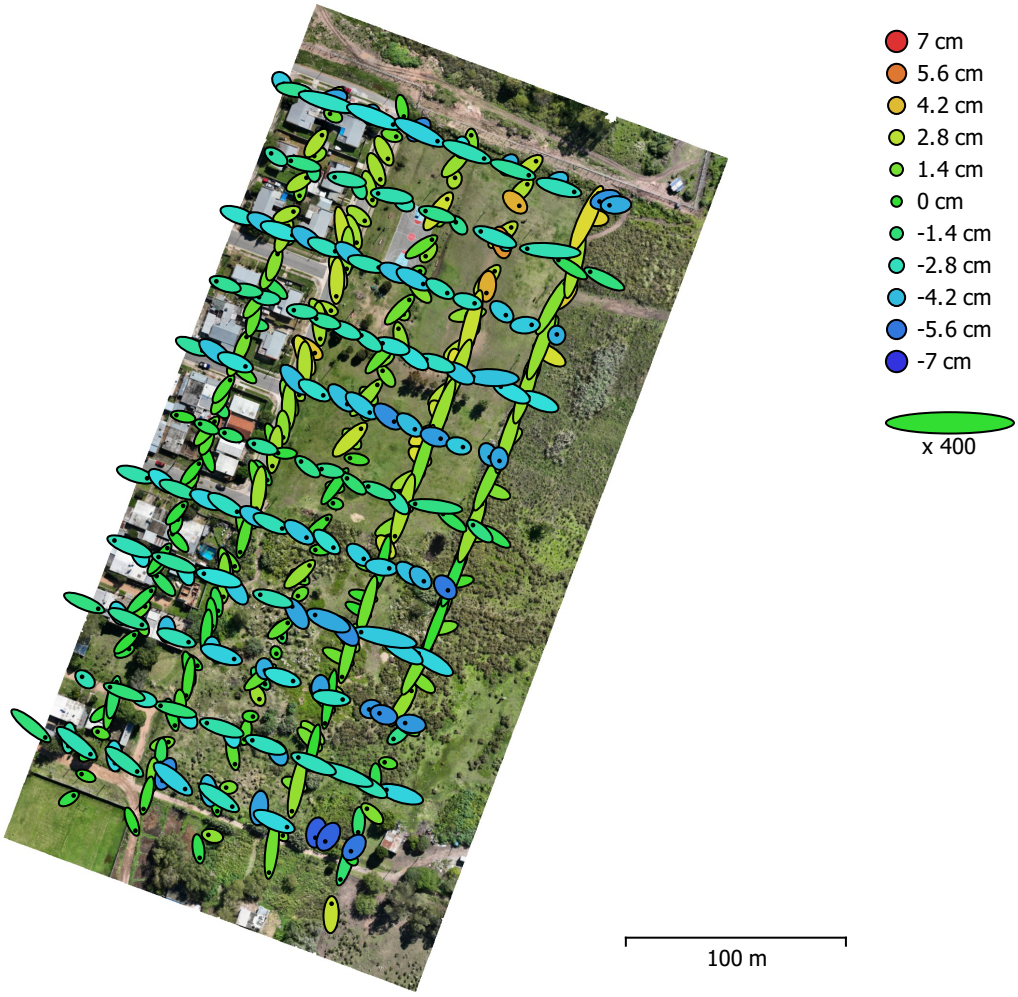

Fig. 3. Camera locations and error estimates.
Z error is represented by ellipse color. X,Y errors are represented by ellipse shape.
Estimated camera locations are marked with a black dot.

X error (cm)	Y error (cm)	Z error (cm)	XY error (cm)	Total error (cm)
1.76833	2.12016	2.59146	2.76081	3.78652

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)
4	1.51036	1.43966	0.909815	2.08657	2.2763

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	0.787292	-2.23771	0.787918	2.4996	0.627 (16)
2	2.70451	-0.37836	1.44017	3.08733	0.660 (19)
3	0.74545	1.1417	0.740669	1.5517	0.633 (15)
4	0.796755	-1.35517	0.259936	1.59338	0.584 (11)
Total	**1.51036**	**1.43966**	**0.909815**	**2.2763**	**0.631**

Table 5. Control points.

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

Digital Elevation Model

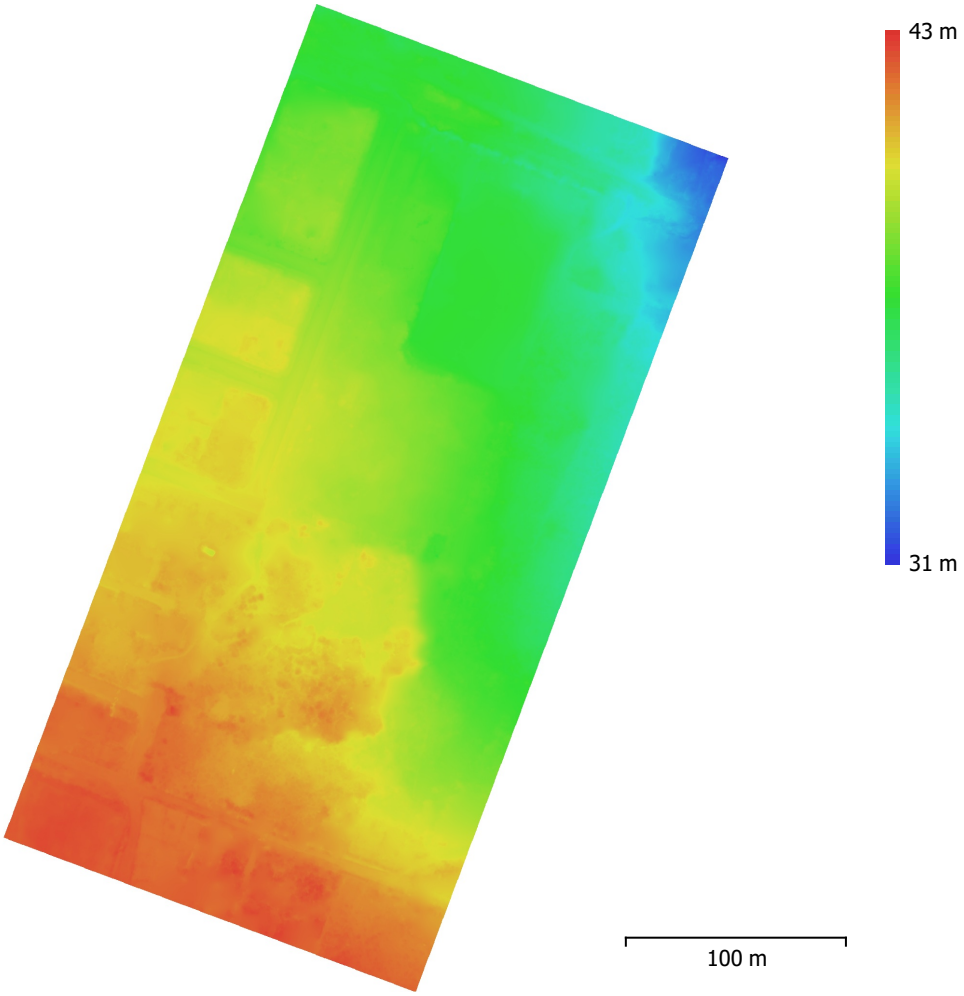

Fig. 5. Reconstructed digital elevation model.

Resolution:	5.66 cm/pix
Point density:	312 points/m²

Processing Parameters

General	
Cameras	369
Aligned cameras	369
Markers	4
Shapes	
LineString	3750
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
Rotation angles	Yaw, Pitch, Roll
Tie Points	
Points	136,569 of 171,118
RMS reprojection error	0.256859 (1.21129 pix)
Max reprojection error	3.72332 (65.6637 pix)
Mean key point size	3.55194 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	9.31754
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	57 minutes 3 seconds
Matching memory usage	4.90 GB
Alignment time	12 minutes 18 seconds
Alignment memory usage	1.88 GB
Optimization parameters	
Parameters	f, cx, cy, k1-k3, p1, p2
Adaptive camera model fitting	Yes
Optimization time	59 seconds
Date created	2024:04:04 15:07:03
Software version	2.1.0.17532
File size	27.99 MB
Depth Maps	
Count	369
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	3 hours 15 minutes
Memory usage	6.96 GB
Date created	2024:04:05 09:46:31
Software version	2.1.0.17532
File size	2.95 GB
Point Cloud	
Points	117,529,976

Coordinate precision	1.42 cm
Point attributes	
Color	3 bands, uint8
Normal	
Confidence	1 - 102
Point classes	
Created (never classified)	83,556,504
Ground	33,422,303
Low Point (noise)	551,169
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Max neighbors	16
Processing time	3 hours 15 minutes
Memory usage	6.96 GB
Point cloud generation parameters	
Processing time	2 hours 19 minutes
Memory usage	15.28 GB
Ground points classification parameters	
Max angle (°)	5
Max terrain slope (deg)	5
Max distance (m)	0.05
Cell size (m)	50
Classification time	9 minutes 16 seconds
Classification memory usage	4.60 GB
Date created	2024:04:05 12:05:36
Software version	2.1.0.17532
File size	1.67 GB
DEM	
Size	5,807 x 7,920
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
Reconstruction parameters	
Source data	Point cloud
Interpolation	Enabled
Source classes	Ground
Processing time	21 seconds
Memory usage	78.22 MB
Date created	2024:04:09 10:44:11
Software version	2.1.0.17532
File size	99.93 MB
Orthomosaic	
Size	11,614 x 15,839
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	8 minutes 6 seconds
Memory usage	1.90 GB
Date created	2024:04:05 13:27:31
Software version	2.1.0.17532
File size	8.25 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)