

Barrio Brazos Unidos

Processing Report
09 September 2021



Survey Data

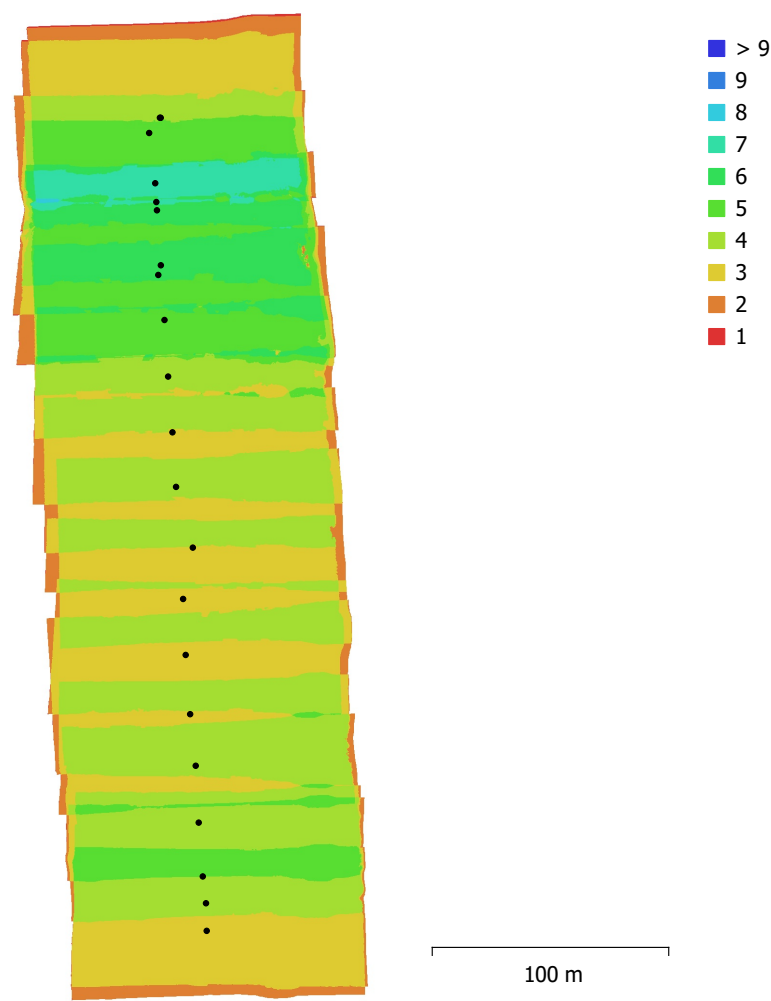


Fig. 1. Camera locations and image overlap.

Number of images:	21	Camera stations:	21
Flying altitude:	110 m	Tie points:	30,119
Ground resolution:	1.97 cm/pix	Projections:	76,551
Coverage area:	0.052 km ²	Reprojection error:	0.629 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
ILCE-6000 (20 mm)	6000 x 4000	20 mm	4 x 4 μm	No

Table 1. Cameras.

Camera Calibration

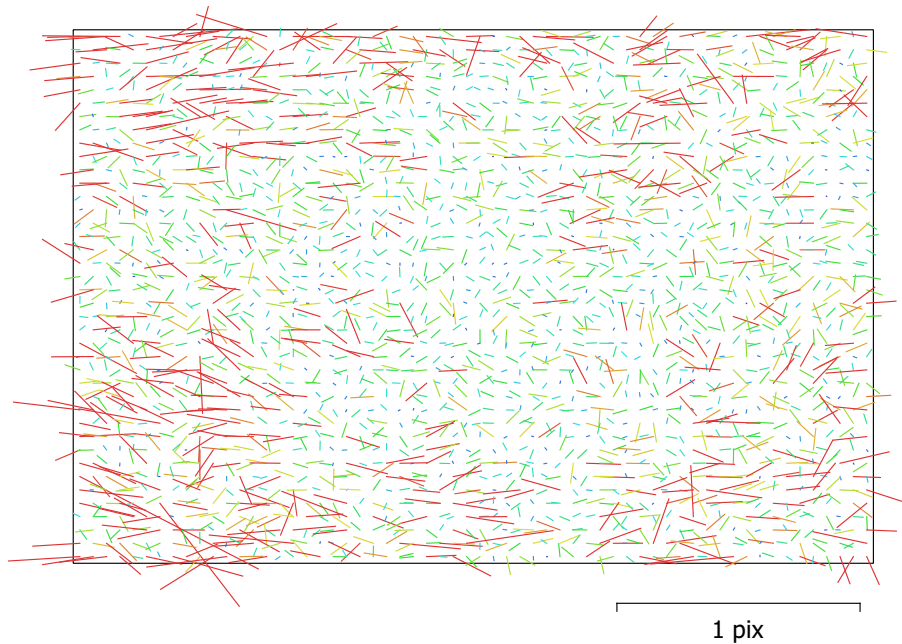


Fig. 2. Image residuals for ILCE-6000 (20 mm).

ILCE-6000 (20 mm)

21 images, rolling shutter

Type
Frame

Resolution
6000 x 4000

Focal Length
20 mm

Pixel Size
4 x 4 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2	P3	P4
F	5256.62	6.1	1.00	0.02	-0.04	-0.47	0.07	-0.78	0.40	-0.04	0.01	0.00	-0.01	-0.03	0.03
Cx	-35.3729	2.6		1.00	-0.36	0.00	-0.13	0.03	-0.07	0.09	-0.10	0.11	0.31	-0.50	-0.22
Cy	13.3299	2.8			1.00	0.08	0.22	0.01	0.03	-0.02	0.01	0.48	-0.42	0.70	0.52
B1	-3.84976	3.3				1.00	0.02	0.19	-0.15	0.09	-0.09	-0.16	0.22	-0.08	-0.20
B2	6.7848	1.1					1.00	-0.09	0.02	0.02	-0.02	0.05	-0.06	0.08	0.12
K1	-0.169497	0.00042						1.00	-0.76	0.46	-0.41	0.06	-0.05	0.05	0.03
K2	0.155674	0.0018							1.00	-0.91	0.86	-0.03	-0.01	0.01	0.03
K3	0.0111486	0.005								1.00	-0.99	0.02	0.03	-0.01	-0.04
K4	-0.0278065	0.0051									1.00	-0.03	-0.03	0.00	0.04
P1	-0.000505806	0.00011										1.00	-0.87	0.66	0.90
P2	0.00117723	0.00023											1.00	-0.82	-0.95
P3	-0.0590761	0.18												1.00	0.71
P4	2.93236	0.45													1.00

Table 2. Calibration coefficients and correlation matrix.

Ground Control Points

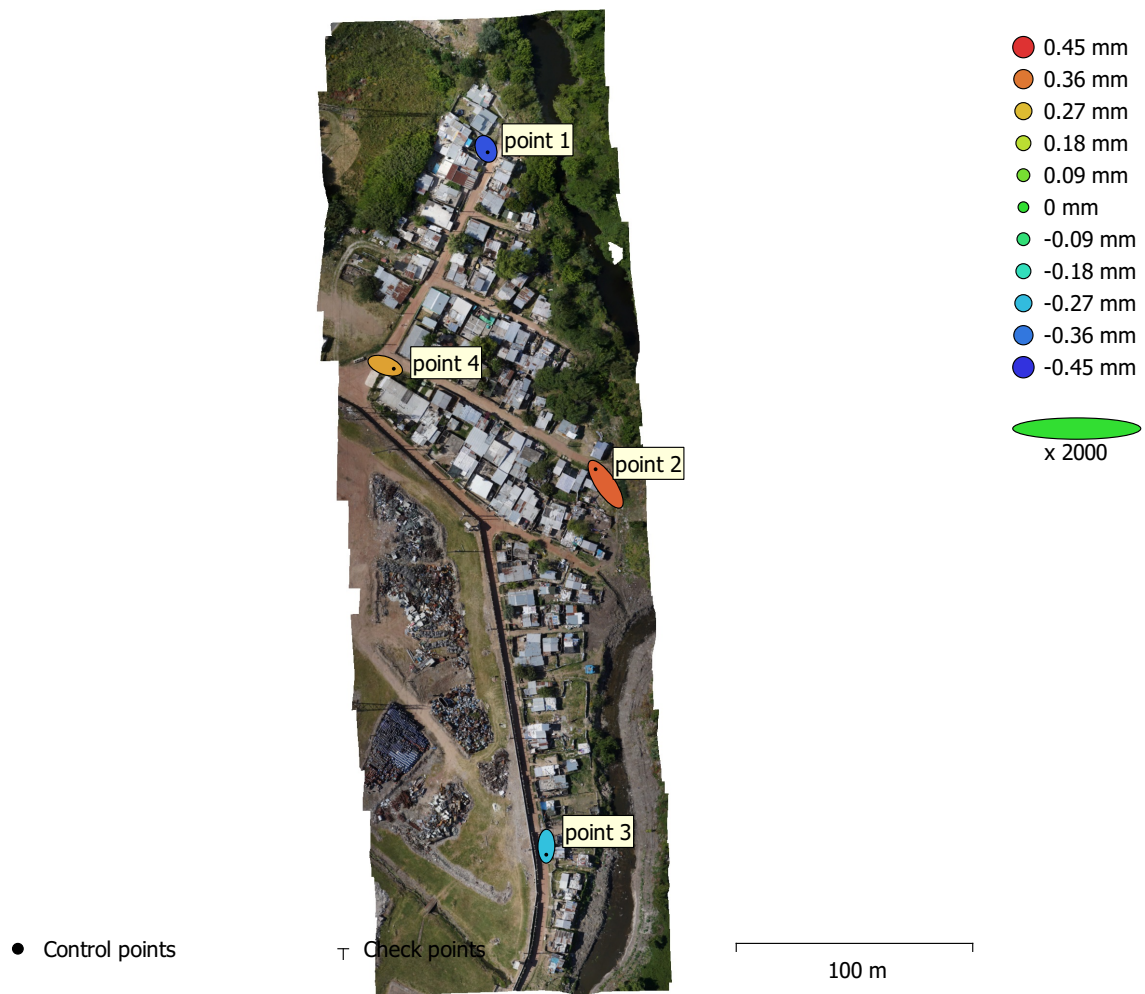


Fig. 3. GCP locations and error estimates.

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 (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
4	2.80622	3.77333	0.346263	4.70243	4.71516

Table 3. Control points RMSE.

X - Longitude, Y - Latitude, Z - Altitude.

Label	X error (mm)	Y error (mm)	Z error (mm)	Total (mm)	Image (pix)
point 1	0.706803	-1.44476	-0.408739	1.65951	0.302 (5)
point 2	-4.23615	6.34705	0.38837	7.64073	0.256 (4)
point 3	-0.0392809	-3.59123	-0.26234	3.60101	0.318 (5)
point 4	3.61295	-1.29723	0.304748	3.85085	0.056 (4)
Total	2.80622	3.77333	0.346263	4.71516	0.262

Table 4. Control points.
X - Longitude, Y - Latitude, Z - Altitude.

Digital Elevation Model

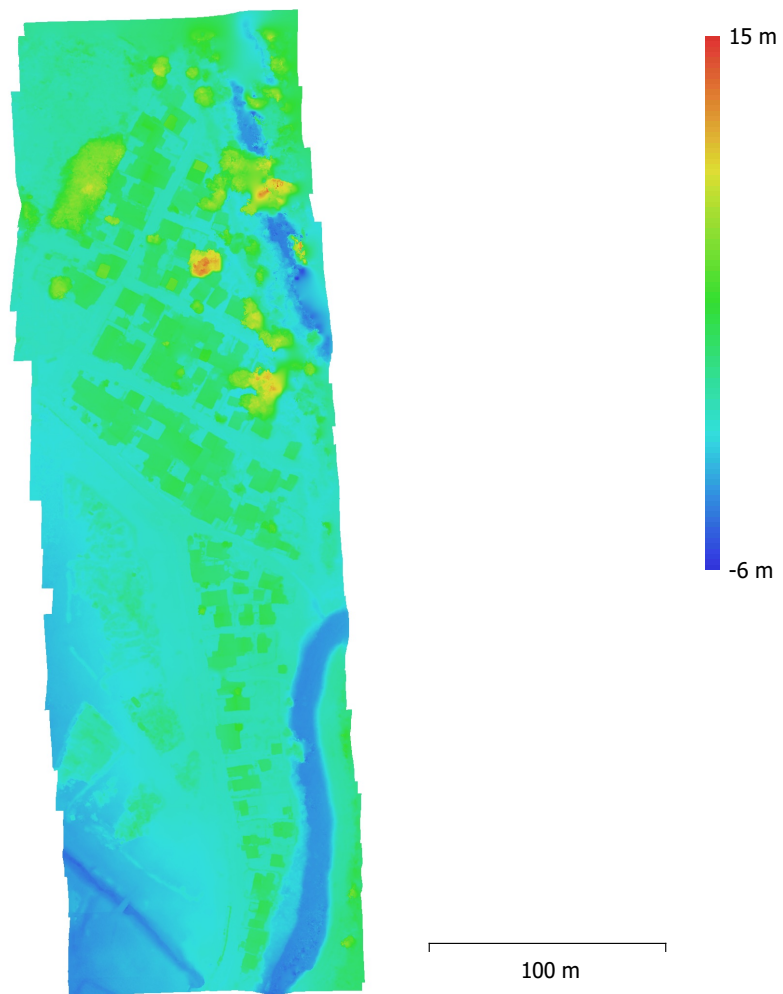


Fig. 4. Reconstructed digital elevation model.

Resolution: 3.94 cm/pix
Point density: 646 points/m²

Processing Parameters

General

Cameras	21
Aligned cameras	21
Markers	4
Coordinate system	WGS 84 (EPSG::4326)
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	30,119 of 32,109
RMS reprojection error	0.121591 (0.628535 pix)
Max reprojection error	0.78773 (13.5535 pix)
Mean key point size	3.90607 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	2.58716

Alignment parameters

Accuracy	Highest
Generic preselection	No
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	30 seconds
Alignment time	5 seconds

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1-p4
Fit rolling shutter	Yes
Optimization time	3 seconds
File size	2.05 MB

Dense Point Cloud

Points	34,577,216
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Processing time	2 minutes 8 seconds

Dense cloud generation parameters

Processing time	1 minutes 23 seconds
File size	492.33 MB

Model

Faces	6,915,443
Vertices	3,465,015
Vertex colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive

Reconstruction parameters

Surface type	Arbitrary
Source data	Dense cloud
Interpolation	Enabled
Processing time	37 minutes 58 seconds

File size	158.39 MB
DEM	
Size	6,831 x 14,857
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	1 minutes 39 seconds
File size	178.82 MB
Orthomosaic	
Size	7,515 x 21,145
Coordinate system	WGS 84 / UTM zone 21S (EPSG::32721)
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable color correction	Yes
Enable hole filling	Yes
Processing time	2 minutes 56 seconds
File size	614.60 MB
System	
Software name	Agisoft Metashape Professional
Software version	1.7.2 build 12070
OS	Windows 64 bit
RAM	63.93 GB
CPU	Intel(R) Core(TM) i7-9700F CPU @ 3.00GHz
GPU(s)	Radeon(TM) RX 460 Graphics (Baffin)