

PARQUE IDEA VILARIÑO

Processing Report
28 June 2024



Survey Data

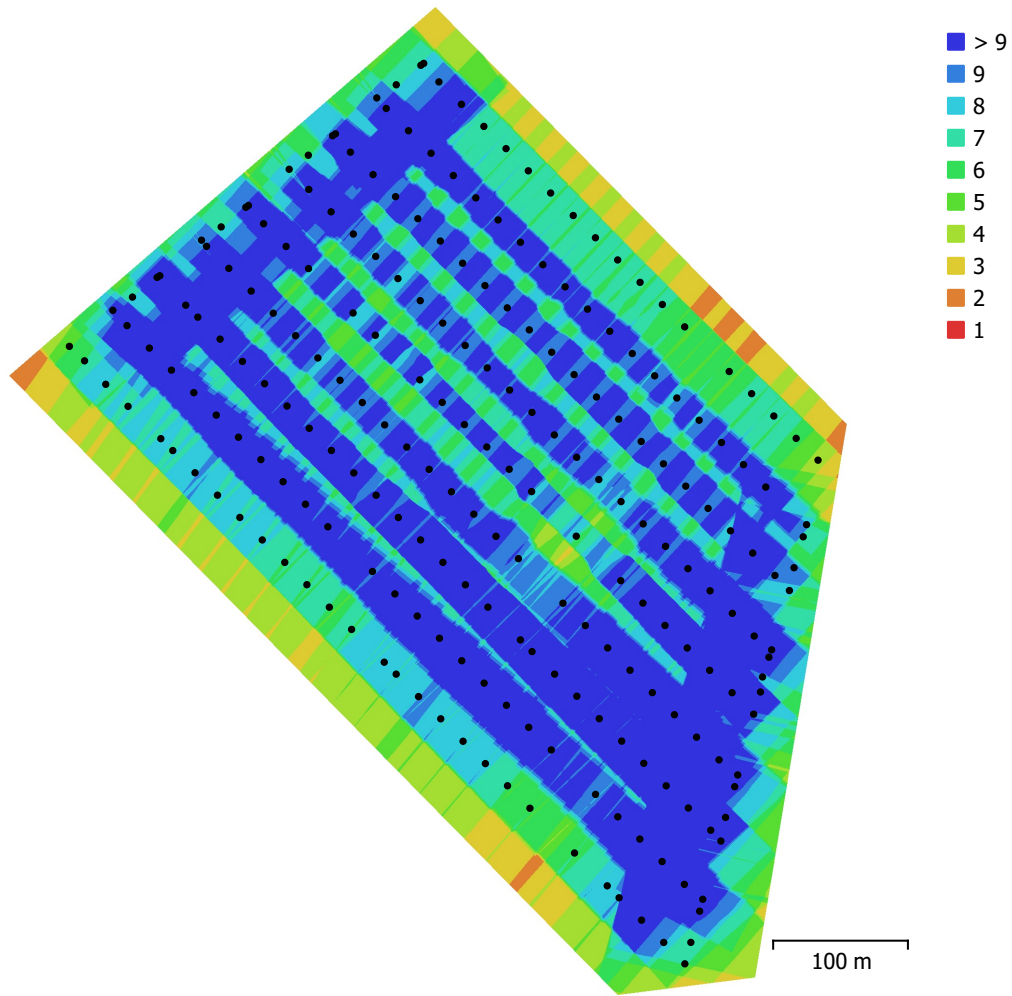


Fig. 1. Camera locations and image overlap.

Number of images:	226	Camera stations:	226
Flying altitude:	86.8 m	Tie points:	169,513
Ground resolution:	2.36 cm/pix	Projections:	852,846
Coverage area:	0.245 km ²	Reprojection error:	0.738 pix

Camera Model	Resolution	Focal Length	Pixel Size	Precalibrated
FC6310 (8.8mm)	4864 x 3648	8.8 mm	2.61 x 2.61 μ m	No

Table 1. Cameras.

Camera Calibration

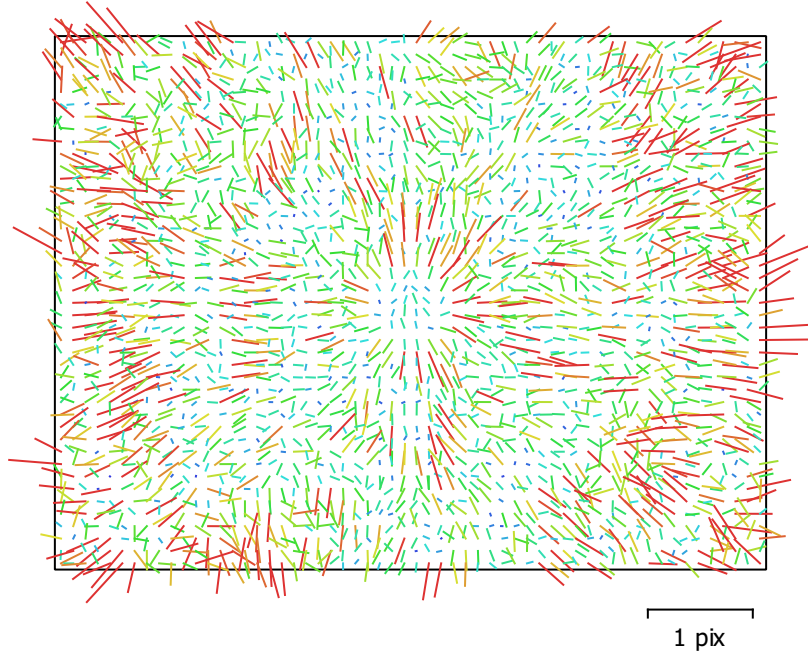


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

226 images

Type	Resolution	Focal Length	Pixel Size
Frame	4864 x 3648	8.8 mm	2.61 x 2.61 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
F	3651.53	0.54	1.00	0.22	0.32	0.02	-0.06	0.05	-0.13	0.18	-0.21	-0.01	-0.06
Cx	-5.71034	0.043		1.00	0.09	-0.09	-0.19	0.01	-0.03	0.04	-0.05	0.36	-0.05
Cy	14.739	0.039			1.00	0.18	-0.10	0.02	-0.05	0.06	-0.07	-0.03	0.38
B1	-0.674259	0.0065				1.00	0.01	0.03	-0.03	0.03	-0.03	-0.04	0.04
B2	-0.486575	0.0065					1.00	-0.00	0.01	-0.01	0.01	-0.05	-0.03
K1	0.0171616	6.6e-05						1.00	-0.97	0.92	-0.87	0.00	-0.00
K2	-0.0975203	0.00038							1.00	-0.99	0.96	-0.00	0.01
K3	0.190501	0.00084								1.00	-0.99	0.00	-0.01
K4	-0.12568	0.00064									1.00	-0.00	0.02
P1	-0.00019985	1.9e-06										1.00	-0.04
P2	-0.000494821	1.8e-06											1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

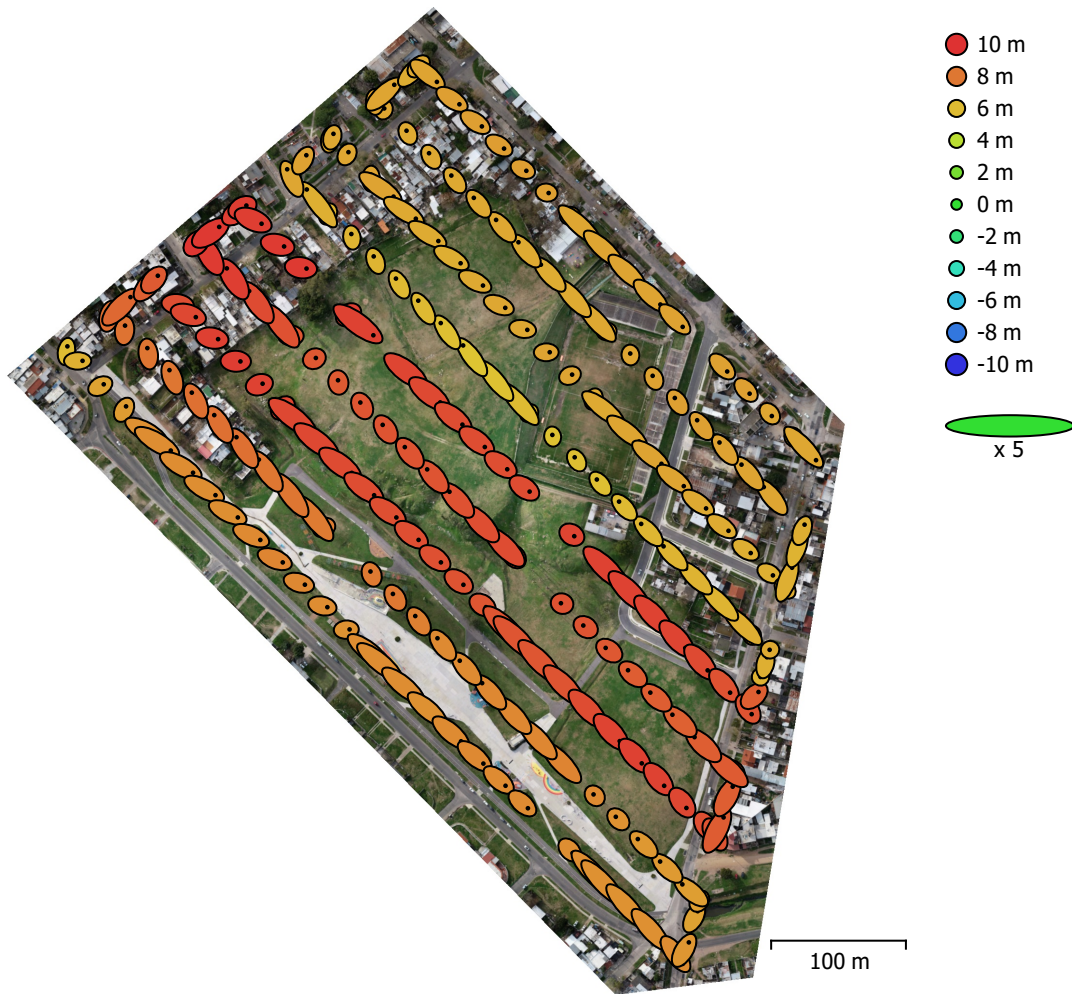


Fig. 3. Camera locations and error estimates.

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 (m)	Y error (m)	Z error (m)	XY error (m)	Total error (m)
2.24949	2.20915	7.77212	3.15286	8.38728

Table 3. Average camera location error.
X - Easting, Y - Northing, Z - Altitude.

Ground Control Points

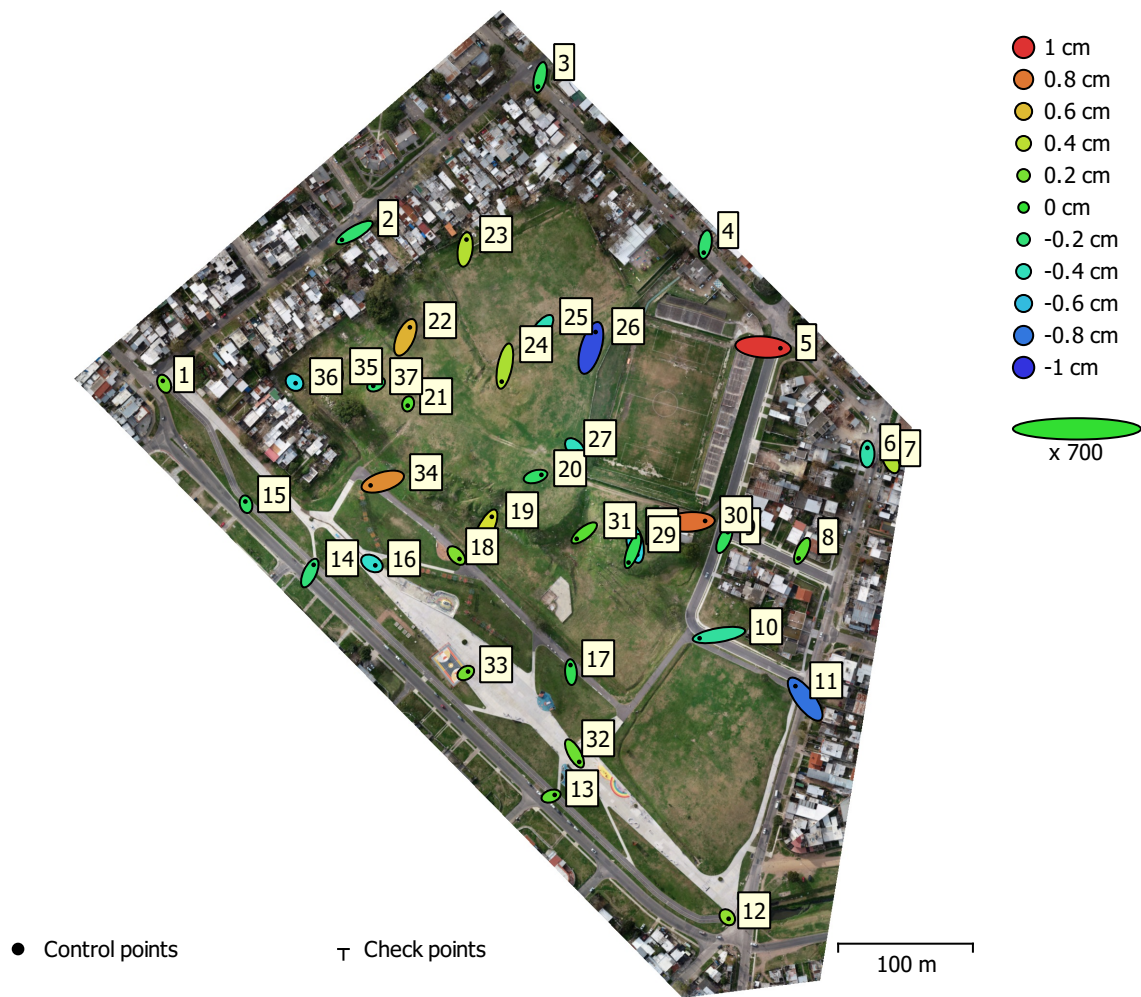


Fig. 4. GCP locations and error estimates.

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)
37	1.44127	1.60597	0.420878	2.15787	2.19854

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	-0.282319	0.613917	0.195244	0.703362	0.583 (8)
2	-2.66515	-1.53928	-0.177898	3.08286	0.779 (14)
3	-0.44682	-1.96923	-0.133357	2.02369	1.009 (5)
4	-0.305414	-1.71261	-0.179649	1.74888	1.034 (4)
5	3.65862	-0.258964	0.985183	3.79778	1.408 (6)
6	0.0202974	1.30987	-0.346272	1.35502	0.965 (5)
7	-0.573833	1.27255	0.370477	1.44427	1.305 (4)
8	-0.753338	-1.58081	0.11285	1.75477	0.649 (13)
9	0.748069	1.61983	-0.118879	1.78818	0.715 (10)
10	-4.09415	-0.685753	-0.309792	4.16273	1.378 (8)
11	-2.06922	2.76546	-0.813682	3.54845	1.120 (13)
12	0.288972	-0.321257	0.280081	0.514933	0.728 (10)
13	0.769558	0.25468	0.135981	0.821932	0.624 (7)
14	0.814663	1.74561	-0.205194	1.93725	1.293 (4)
15	-0.149588	0.579319	-0.151284	0.61715	0.409 (5)
16	0.7163	-0.412262	-0.45111	0.941565	0.749 (7)
17	-0.0995041	1.49961	-0.0951677	1.50592	0.624 (7)
18	0.661546	-0.716286	0.231031	1.00204	0.615 (7)
19	1.45901	3.00234	0.473389	3.37147	0.827 (11)
20	1.23611	0.351582	-0.153495	1.29428	0.655 (7)
21	-0.0872056	-0.375458	0.104355	0.399328	0.577 (10)
22	0.948042	2.12943	0.631743	2.41503	1.166 (5)
23	0.282312	2.0989	0.378448	2.15135	1.031 (6)
24	-0.659985	-3.2909	0.349143	3.37454	1.121 (9)
25	-1.27356	-1.72651	-0.383928	2.17949	0.908 (10)
26	1.00171	3.37605	-0.923375	3.64057	1.141 (9)
27	0.666778	-0.701483	-0.411402	1.05163	0.631 (10)
28	0.461805	-2.35188	-0.525964	2.45382	1.577 (4)
29	-0.912329	-2.43644	-0.100188	2.60358	1.621 (4)
30	3.30791	0.202907	0.822185	3.41459	1.224 (9)
31	-1.59957	-1.23997	0.113741	2.02709	0.779 (9)

Label	X error (cm)	Y error (cm)	Z error (cm)	Total (cm)	Image (pix)
32	1.00425	-1.7842	0.167605	2.05425	0.769 (8)
33	0.487686	0.305884	0.192081	0.606875	0.837 (8)
34	-2.58226	-0.805228	0.740262	2.80436	0.920 (11)
35	0.387547	1.30689	-0.158852	1.37237	0.588 (11)
36	0.231034	-0.200715	-0.504243	0.589851	0.445 (8)
37	-0.601795	-0.326444	-0.183419	0.708777	0.481 (7)
Total	1.44127	1.60597	0.420878	2.19854	0.904

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

Digital Elevation Model

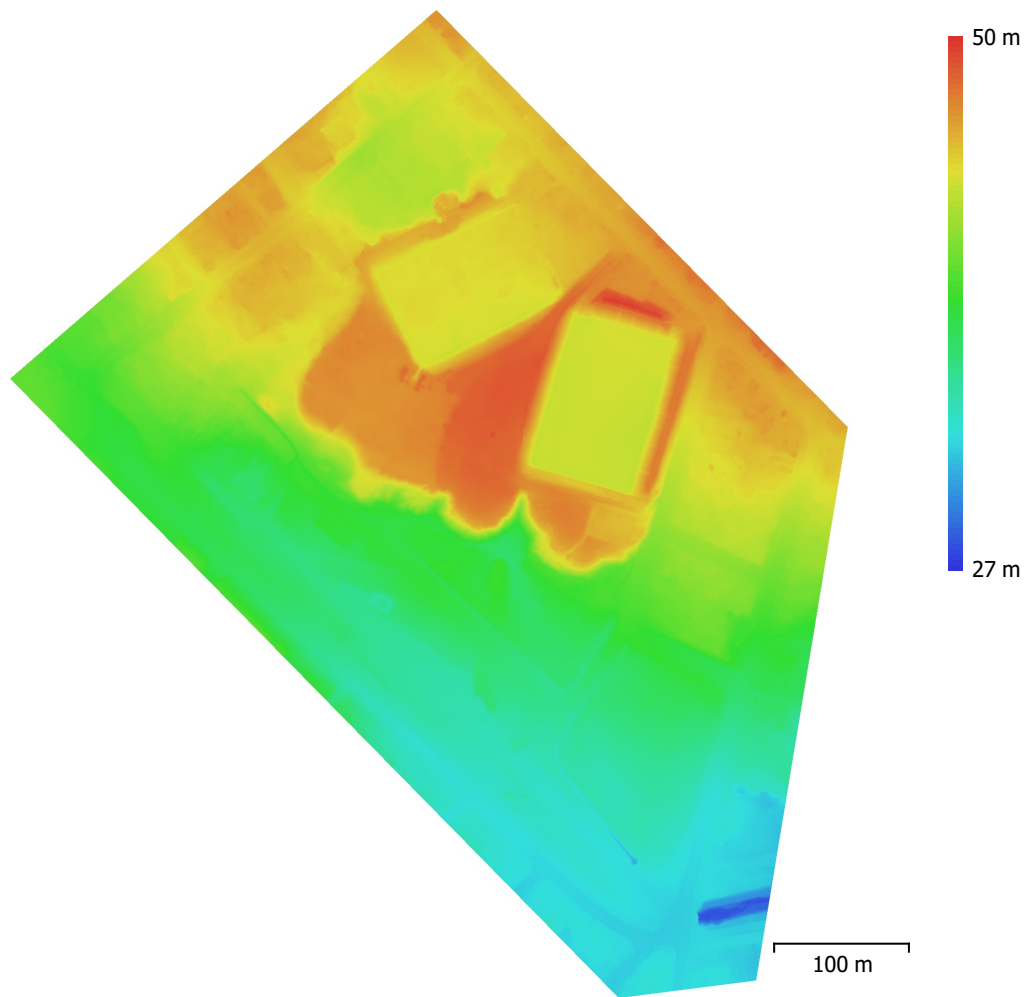


Fig. 5. Reconstructed digital elevation model.

Resolution: 4.72 cm/pix
Point density: 450 points/m²

Processing Parameters

General

Cameras	226
Aligned cameras	226
Markers	37
Shapes	
LineString	29219
Polygon	3
Coordinate system	WGS 84 / UTM zone 21S EGM08
Rotation angles	Yaw, Pitch, Roll

Tie Points

Points	169,513 of 190,317
RMS reprojection error	0.199903 (0.738389 pix)
Max reprojection error	0.903553 (34.5079 pix)
Mean key point size	3.56247 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	5.10722

Alignment parameters

Accuracy	High
Generic preselection	No
Reference preselection	Source
Key point limit	40,000
Tie point limit	4,000
Exclude stationary tie points	Yes
Guided image matching	No
Adaptive camera model fitting	Yes
Matching time	12 minutes 23 seconds
Matching memory usage	1.58 GB
Alignment time	2 minutes 8 seconds
Alignment memory usage	150.30 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	Yes
Optimization time	2 seconds
Date created	2023:08:01 09:30:38
Software version	1.7.2.12070
File size	19.29 MB

Depth Maps

Count	226
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Processing time	1 hours 4 minutes
Memory usage	3.92 GB
Date created	2023:08:01 11:36:08
Software version	1.7.2.12070
File size	1.47 GB

Point Cloud

Points	154,208,116
Point attributes	

Color	3 bands, uint8
Normal	
Confidence	1 - 16
Point classes	
Created (never classified)	53,049,362
Ground	101,126,101
Low Point (noise)	32,653
Depth maps generation parameters	
Quality	High
Filtering mode	Aggressive
Processing time	1 hours 4 minutes
Memory usage	3.92 GB
Point cloud generation parameters	
Processing time	14 minutes 19 seconds
Memory usage	4.51 GB
Ground points classification parameters	
Max angle (°)	15
Max distance (m)	0.2
Cell size (m)	50
Classification time	6 minutes 37 seconds
Classification memory usage	6.07 GB
Date created	2023:08:01 11:50:28
Software version	1.7.2.12070
File size	2.18 GB
DEM	
Size	22,961 x 23,914
Coordinate system	WGS 84 / UTM zone 21S EGM08
Reconstruction parameters	
Source data	Point cloud
Interpolation	Enabled
Processing time	2 minutes 44 seconds
Memory usage	390.58 MB
Date created	2023:08:01 13:33:56
Software version	1.7.2.12070
File size	510.60 MB
Orthomosaic	
Size	28,091 x 33,455
Coordinate system	WGS 84 / UTM zone 21S EGM08
Colors	3 bands, uint8
Reconstruction parameters	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	6 minutes 57 seconds
Memory usage	2.37 GB
Date created	2023:08:01 12:48:32
Software version	1.7.2.12070
File size	3.61 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

