

Playa Honda

Processing Report
13 September 2021



Survey Data

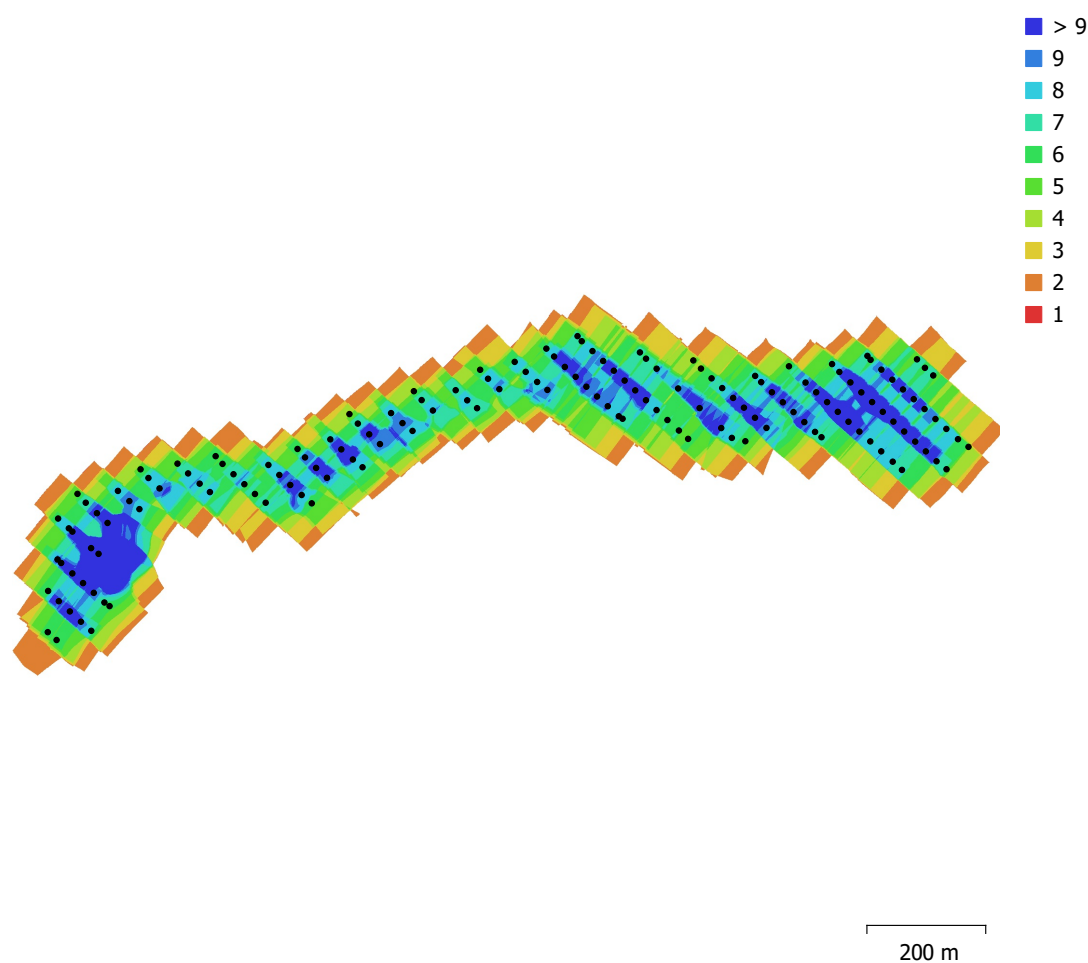


Fig. 1. Camera locations and image overlap.

Number of images:	154	Camera stations:	154
Flying altitude:	104 m	Tie points:	148,441
Ground resolution:	2.56 cm/pix	Projections:	541,837
Coverage area:	0.347 km ²	Reprojection error:	0.678 pix

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

Table 1. Cameras.

Camera Calibration

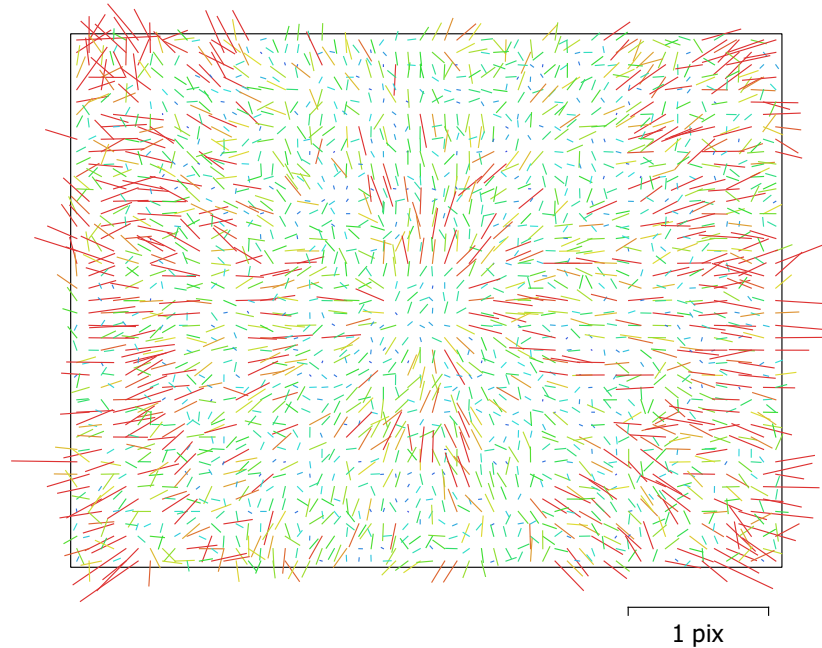


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

154 images

Type
Frame

Resolution
4864 x 3648

Focal Length
8.8 mm

Pixel Size
2.61 x 2.61 μm

	Value	Error	F	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2	P3	P4
F	3650.77	0.9	1.00	0.18	0.04	0.01	0.06	0.10	-0.19	0.26	-0.30	-0.00	0.08	0.02	-0.02
Cx	-5.17089	0.097		1.00	0.13	0.11	0.07	0.02	-0.04	0.05	-0.06	0.34	0.09	0.02	-0.04
Cy	15.4922	0.087			1.00	-0.10	0.05	0.01	-0.02	0.02	-0.02	0.16	0.36	0.02	-0.04
B1	-2.34163	0.063				1.00	0.07	0.01	-0.01	0.02	-0.02	-0.06	0.01	-0.01	0.01
B2	-0.209904	0.061					1.00	-0.00	-0.01	0.01	-0.02	-0.05	-0.05	-0.00	0.00
K1	0.0181679	8.2e-05						1.00	-0.97	0.92	-0.86	0.01	0.02	0.02	-0.02
K2	-0.103224	0.00048							1.00	-0.98	0.95	-0.02	-0.04	-0.03	0.03
K3	0.203182	0.0011								1.00	-0.99	0.02	0.05	0.04	-0.04
K4	-0.135443	0.00084									1.00	-0.02	-0.06	-0.06	0.06
P1	-0.000254117	4.9e-06										1.00	0.49	0.57	-0.54
P2	-0.000450668	5.8e-06											1.00	0.69	-0.62
P3	-0.216443	0.04												1.00	-0.97
P4	-0.124101	0.052													1.00

Table 2. Calibration coefficients and correlation matrix.

Camera Locations

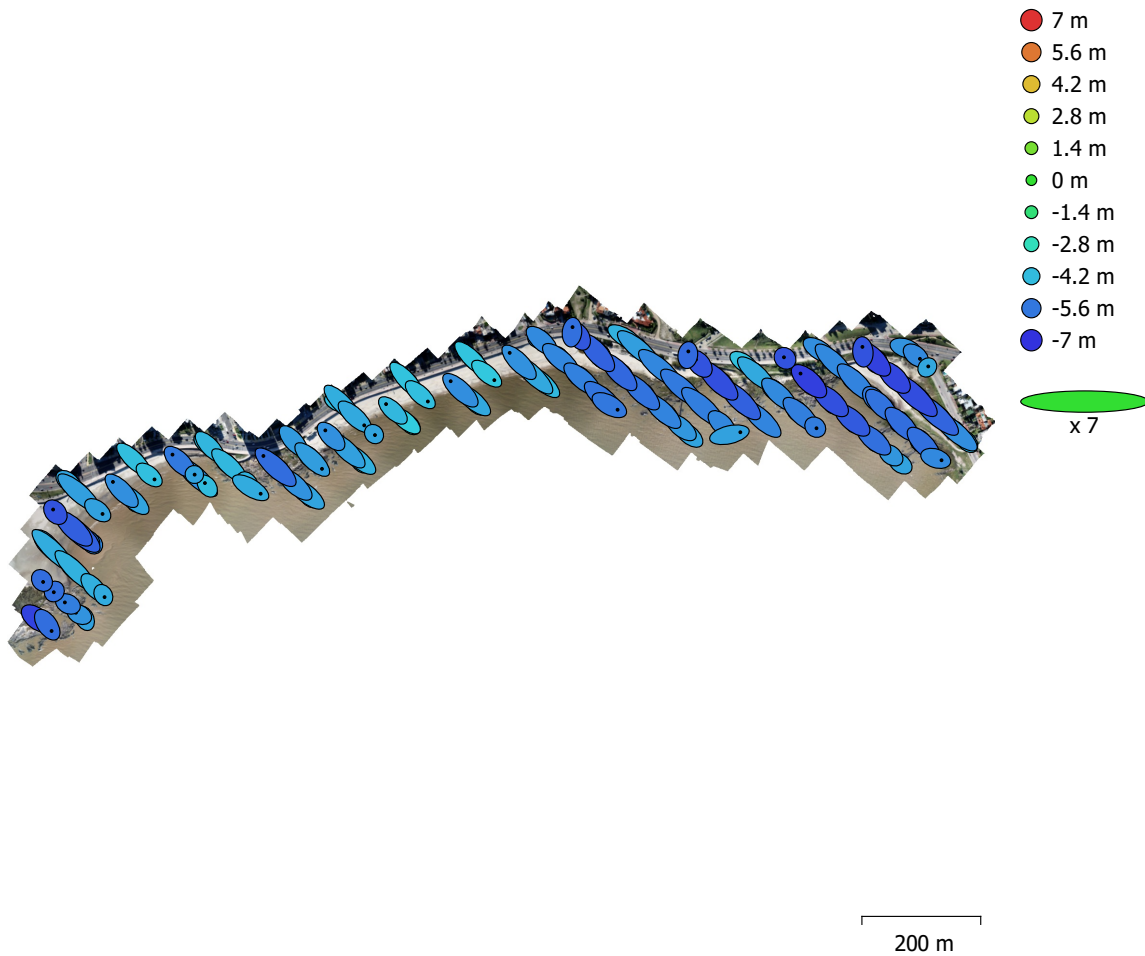


Fig. 3. Camera locations and error estimates.

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)
3.56212	3.25022	5.18848	4.8221	7.08329

Table 3. Average camera location error.

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

Ground Control Points

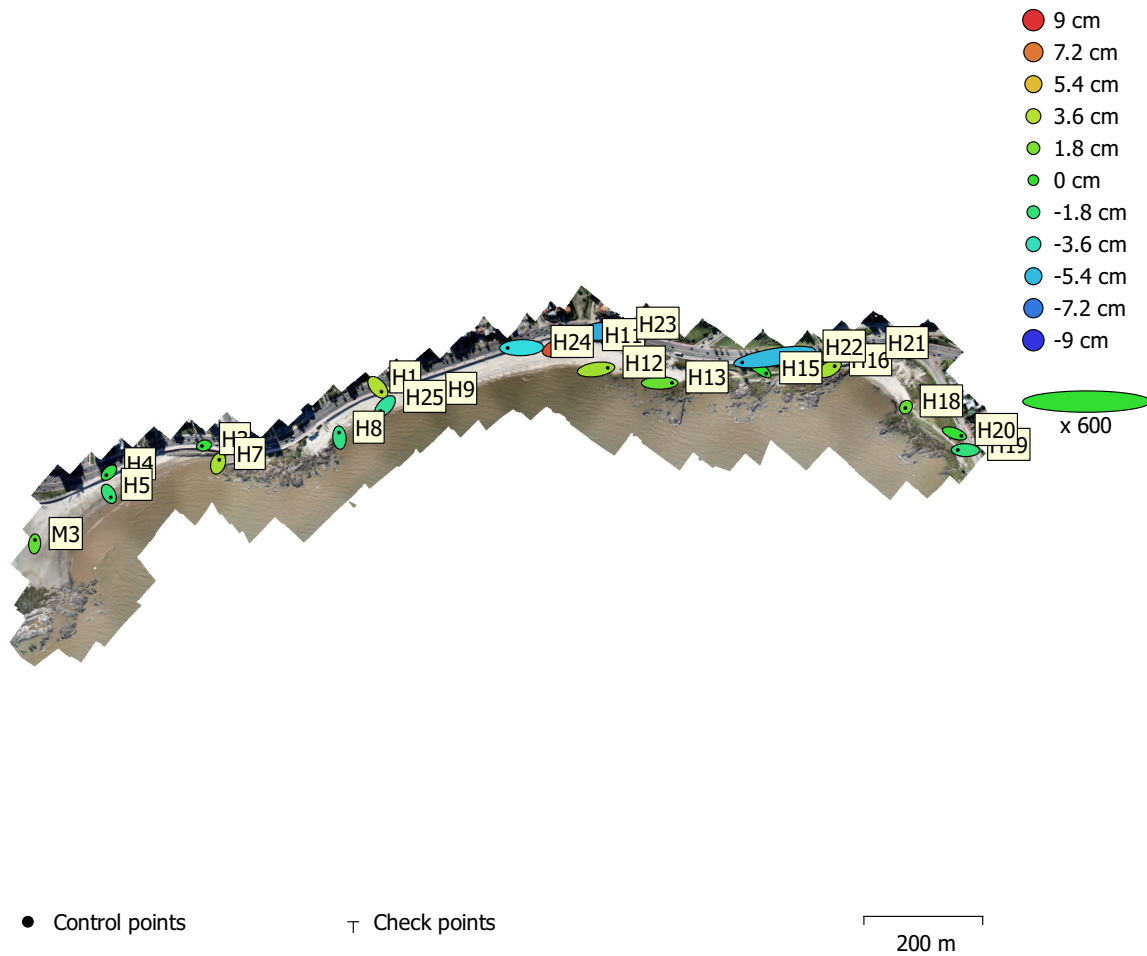


Fig. 4. GCP locations and error estimates.

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)
21	6.05731	2.08673	3.19966	6.40667	7.16124

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)
M3	0.16321	2.23226	1.11197	2.49922	0.117 (5)
H1	2.03439	-2.4006	3.33715	4.58674	0.179 (6)
H3	-1.15701	-0.249725	-0.249806	1.20972	0.198 (5)
H4	-1.43925	-1.43641	-0.567867	2.11121	0.186 (6)
H5	1.06802	-1.97197	-1.76319	2.85275	0.157 (6)
H7	0.646627	2.0354	3.05131	3.72445	0.066 (6)
H8	-0.242812	2.83399	-2.17285	3.57935	0.181 (9)
H9	5.45619	1.77186	1.28111	5.87799	0.173 (8)
H11	9.08386	2.57447	8.18606	12.4962	0.380 (8)
H12	6.53564	0.925428	2.91006	7.21384	0.271 (9)
H13	6.85564	0.0710674	1.41421	7.00035	0.209 (8)
H15	4.84658	-3.70195	-0.0771506	6.09915	0.200 (8)
H16	2.91962	1.57712	2.90776	4.41209	0.242 (8)
H18	-0.355627	-0.492352	1.26947	1.40728	0.338 (8)
H19	-4.30974	0.101841	-1.85659	4.69373	0.303 (4)
H20	3.85762	-1.37365	0.0635423	4.09539	0.393 (6)
H21	2.06861	4.13162	0.12509	4.62224	0.123 (3)
H22	-18.1431	-3.01642	-5.40503	19.1699	0.560 (6)
H23	-9.66253	-0.902163	-5.86242	11.3378	0.396 (7)
H24	-7.81436	-0.170818	-4.53711	9.03763	0.089 (6)
H25	-2.41673	-2.55668	-2.87537	4.54368	0.244 (6)
Total	6.05731	2.08673	3.19966	7.16124	0.269

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

Digital Elevation Model

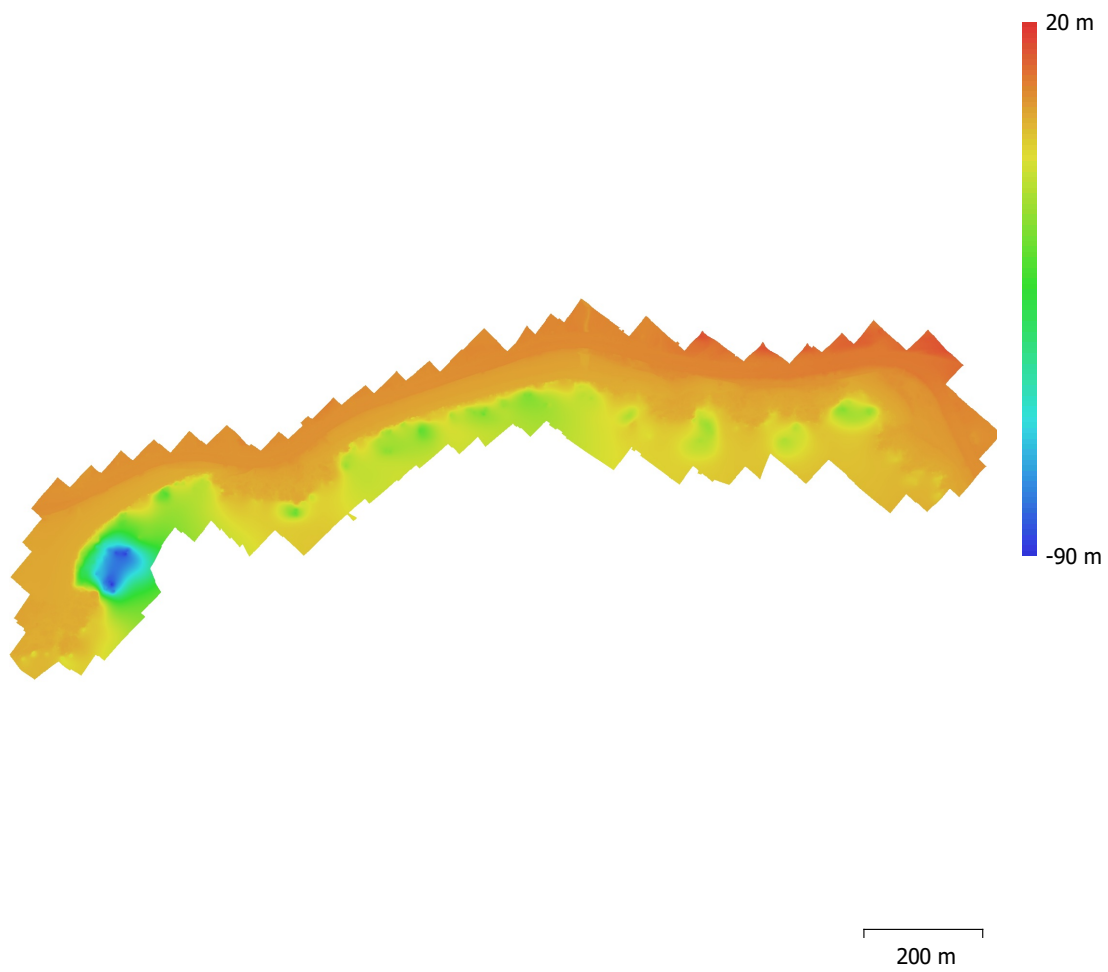


Fig. 5. Reconstructed digital elevation model.

Resolution: 5.12 cm/pix
Point density: 382 points/m²

Processing Parameters

General

Cameras	154
Aligned cameras	154
Markers	21
Shapes	
LineString	609
Polygon	33553
Coordinate system	WGS 84 / UTM zone 21S EGM08
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	148,441 of 157,173
RMS reprojection error	0.163319 (0.677833 pix)
Max reprojection error	0.79913 (17.3373 pix)
Mean key point size	4.06973 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	3.71209

Alignment parameters

Accuracy	High
Generic preselection	No
Reference preselection	Yes
Key point limit	40,000
Tie point limit	4,000
Adaptive camera model fitting	Yes
Matching time	5 minutes 26 seconds
Alignment time	41 seconds

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1-p4
Adaptive camera model fitting	No
Optimization time	3 seconds
File size	12.77 MB

Dense Point Cloud

Points	104,573,006
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Processing time	21 minutes 41 seconds

Dense cloud generation parameters

Processing time	11 minutes 17 seconds
File size	1.34 GB

DEM

Size	50,331 x 20,545
Coordinate system	WGS 84 / UTM zone 21S EGM08

Reconstruction parameters

Source data	Dense cloud
Interpolation	Enabled
Processing time	6 minutes 14 seconds
File size	679.40 MB

Orthomosaic

Size	64,931 x 25,075
Coordinate system	WGS 84 / UTM zone 21S EGM08
Colors	3 bands, uint8

Reconstruction parameters

Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Processing time	8 minutes 7 seconds
File size	2.37 GB

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)