

Parador del Cerro

Processing Report
12 November 2021



Survey Data

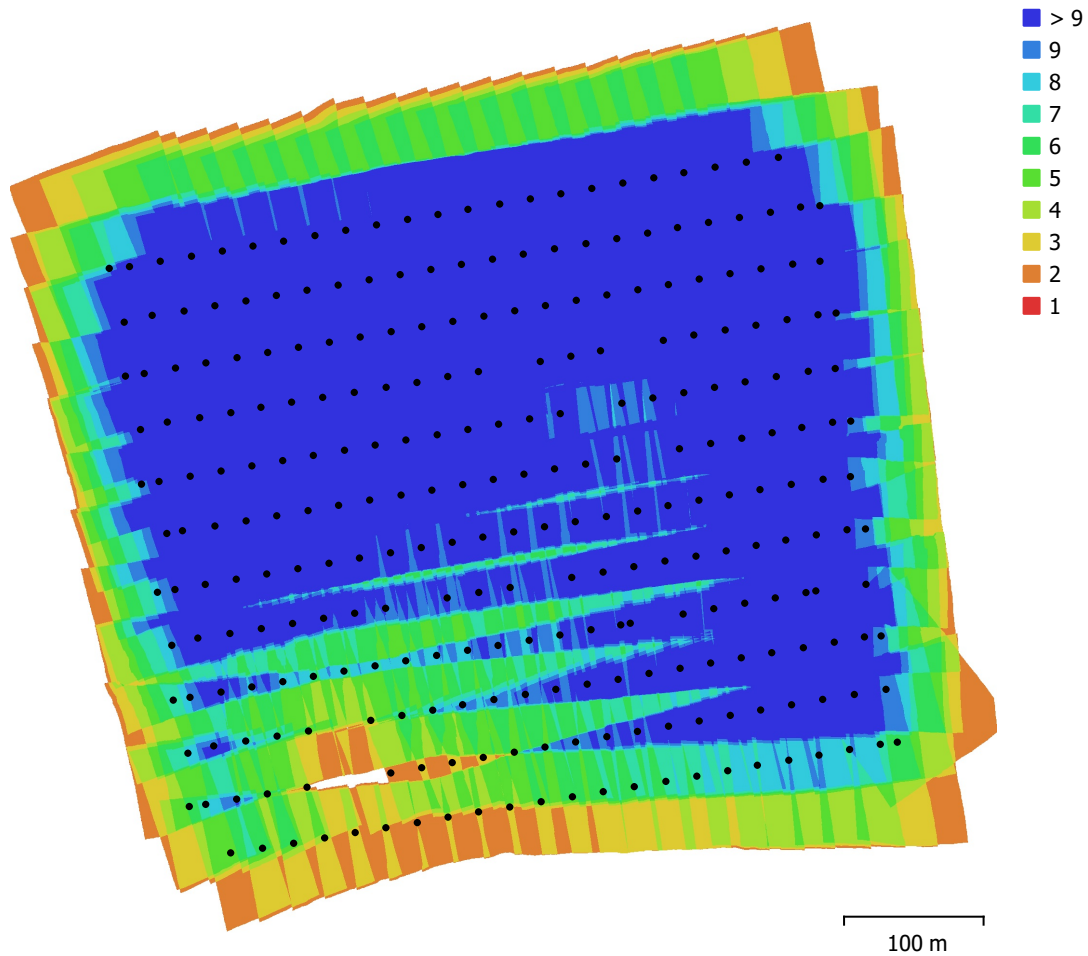


Fig. 1. Camera locations and image overlap.

Number of images:	277	Camera stations:	277
Flying altitude:	99.7 m	Tie points:	230,381
Ground resolution:	2.53 cm/pix	Projections:	1,034,339
Coverage area:	0.344 km ²	Reprojection error:	0.6 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

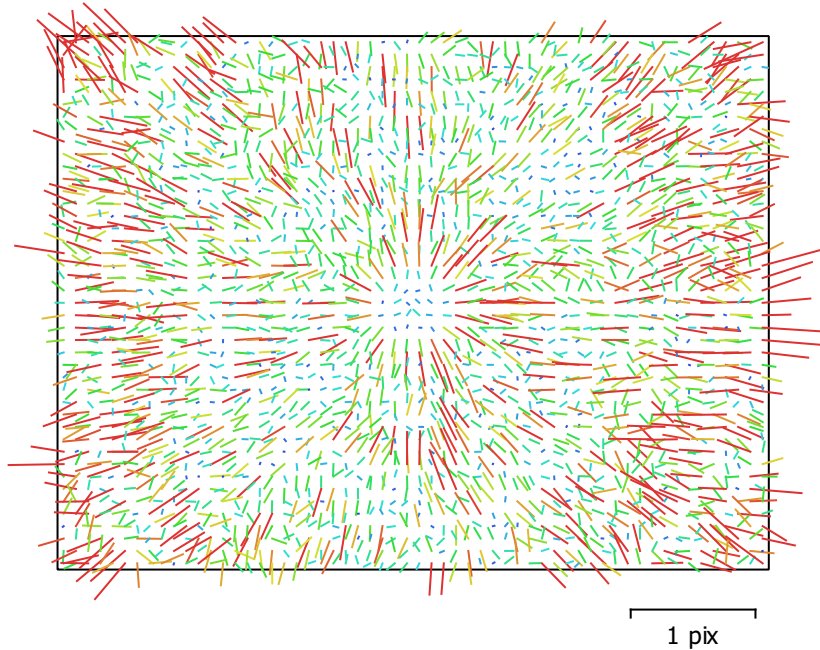


Fig. 2. Image residuals for FC6310 (8.8mm).

FC6310 (8.8mm)

277 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
F	3668.75	0.36	1.00	0.24	0.43	0.22	0.23	0.02	-0.10	0.15	-0.19	-0.02	-0.05
Cx	-6.37451	0.019		1.00	0.08	0.19	-0.09	0.02	-0.04	0.05	-0.06	0.50	-0.03
Cy	16.7357	0.019			1.00	0.29	0.20	0.02	-0.05	0.07	-0.09	-0.05	0.41
B1	-0.265434	0.012				1.00	0.05	0.03	-0.05	0.06	-0.06	-0.03	-0.02
B2	-0.460321	0.011					1.00	0.01	-0.03	0.04	-0.05	0.01	0.01
K1	0.0191733	4.6e-05						1.00	-0.97	0.93	-0.88	0.00	-0.01
K2	-0.0923244	0.00026							1.00	-0.99	0.96	-0.00	0.01
K3	0.182282	0.00059								1.00	-0.99	0.00	-0.02
K4	-0.121167	0.00045									1.00	-0.00	0.02
P1	-0.00012504	1.3e-06										1.00	-0.02
P2	-0.000326827	1.1e-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)
3.96739	1.95707	7.09385	4.42383	8.36021

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)
12	0.73358	0.741264	0.225529	1.04289	1.06699

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	-1.29527	1.49742	0.391984	2.01833	0.541 (10)
2					
3	0.181378	0.573441	-0.293888	0.669404	0.365 (6)
4	1.07359	-0.0793256	-0.0758826	1.07918	0.401 (10)
5	0.0413325	-1.09315	0.39471	1.16296	0.485 (14)
6	-1.04173	-0.864553	-0.0908382	1.3568	0.420 (18)
7	0.0187793	0.501412	-0.0867506	0.509207	0.673 (10)
8	0.211047	-0.0667119	-0.0649824	0.230682	0.390 (10)
9	0.073062	-0.436069	0.104217	0.454264	0.514 (8)
10	-0.648088	-0.0719763	0.152449	0.669656	0.368 (14)
11	1.42277	1.02645	-0.308121	1.78124	0.471 (12)
12	0.0586903	-0.68663	-0.235706	0.728329	0.453 (6)
13	-0.0978806	-0.312383	0.0647082	0.333693	0.543 (2)
Total	0.73358	0.741264	0.225529	1.06699	0.469

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

Digital Elevation Model

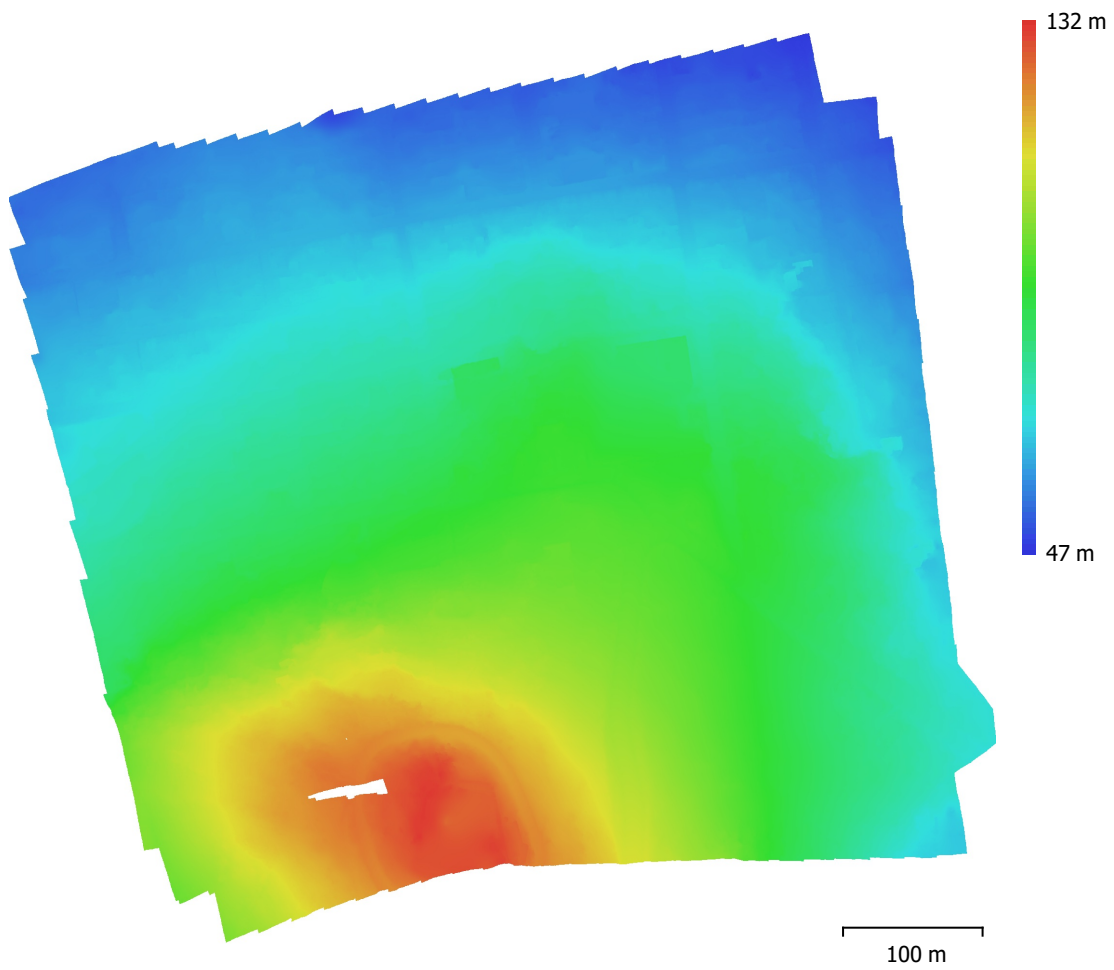


Fig. 5. Reconstructed digital elevation model.

Resolution: 5.06 cm/pix
Point density: 390 points/m²

Processing Parameters

General

Cameras	277
Aligned cameras	277
Markers	13
Coordinate system	WGS 84 / UTM zone 21S EGM08
Rotation angles	Yaw, Pitch, Roll

Point Cloud

Points	230,381 of 249,864
RMS reprojection error	0.179433 (0.600218 pix)
Max reprojection error	0.872523 (41.4242 pix)
Mean key point size	2.8832 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	4.61387

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	14 minutes 17 seconds
Matching memory usage	1.63 GB
Alignment time	1 minutes 6 seconds
Alignment memory usage	157.63 MB

Optimization parameters

Parameters	f, b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	No
Optimization time	2 seconds
Software version	1.7.2.12070
File size	23.61 MB

Depth Maps

Count	277
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Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Processing time	1 hours 42 minutes
Memory usage	3.99 GB
Software version	1.7.2.12070
File size	1.66 GB

Dense Point Cloud

Points	170,568,637
Point colors	3 bands, uint8

Depth maps generation parameters

Quality	High
Filtering mode	Aggressive
Processing time	1 hours 42 minutes
Memory usage	3.99 GB

Dense cloud generation parameters	
Processing time	20 minutes 8 seconds
Memory usage	5.79 GB
Ground points classification parameters	
Max angle (°)	15
Max distance (m)	0.2
Cell size (m)	50
Classification time	6 minutes 45 seconds
Classification memory usage	6.91 GB
Software version	1.7.2.12070
File size	2.41 GB
DEM	
Size	20,075 x 18,774
Coordinate system	WGS 84 / UTM zone 21S EGM08
Reconstruction parameters	
Source data	Dense cloud
Interpolation	Enabled
Processing time	5 minutes 51 seconds
Memory usage	404.45 MB
Software version	1.7.2.12070
File size	551.58 MB
Orthomosaic	
Size	27,945 x 25,721
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	7 minutes 29 seconds
Memory usage	2.26 GB
Software version	1.7.2.12070
File size	5.74 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)