

# PLAYA DEL CERRO

Processing Report

28 June 2024



# Survey Data

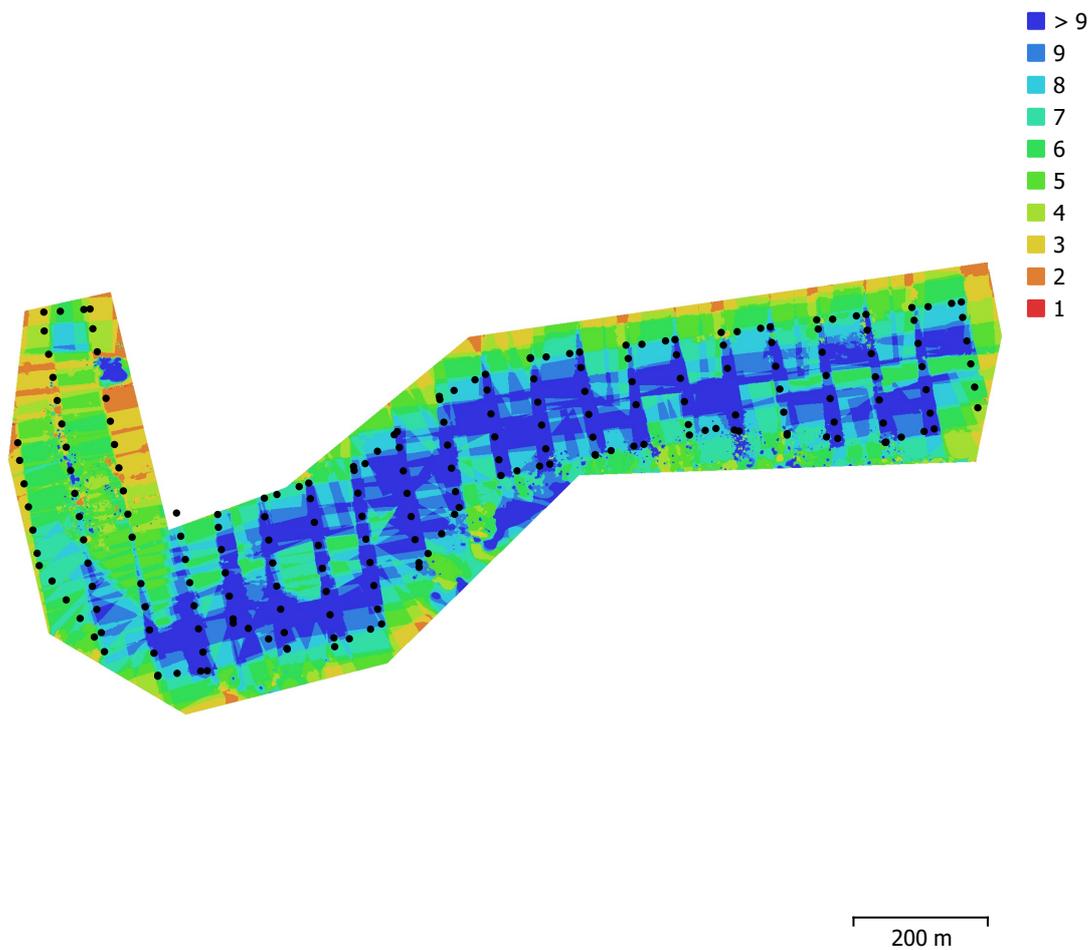


Fig. 1. Camera locations and image overlap.

Number of images:	209	Camera stations:	209
Flying altitude:	115 m	Tie points:	205,422
Ground resolution:	3.2 cm/pix	Projections:	818,277
Coverage area:	0.465 km <sup>2</sup>	Reprojection error:	0.729 pix

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

Table 1. Cameras.

# Camera Calibration

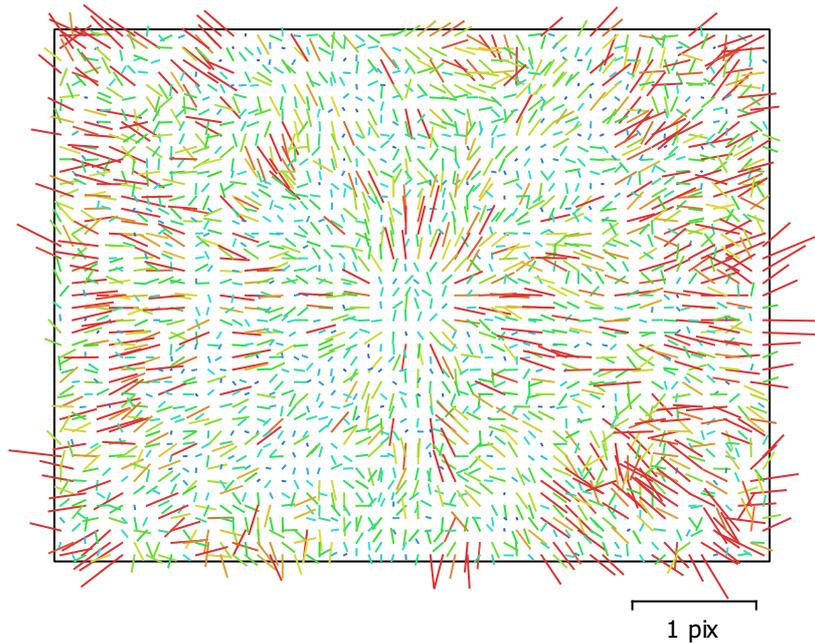


Fig. 2. Image residuals for FC6310 (8.8mm).

## FC6310 (8.8mm)

209 images

Type	Resolution	Focal Length	Pixel Size
<b>Frame</b>	<b>4864 x 3648</b>	<b>8.8 mm</b>	<b>2.61 x 2.61 <math>\mu\text{m}</math></b>

	Value	Error	Cx	Cy	B1	B2	K1	K2	K3	K4	P1	P2
<b>F</b>	<b>3372.58</b>											
<b>Cx</b>	<b>-8.80292</b>	0.07	1.00	0.08	-0.48	-0.11	0.01	-0.00	0.00	-0.00	0.33	-0.02
<b>Cy</b>	<b>8.78838</b>	0.059		1.00	0.02	-0.43	0.00	0.00	-0.00	0.00	-0.00	0.31
<b>B1</b>	<b>-0.631511</b>	0.0061			1.00	0.05	0.03	-0.03	0.03	-0.02	-0.18	0.04
<b>B2</b>	<b>-0.838789</b>	0.0057				1.00	0.01	-0.00	0.00	-0.00	-0.05	-0.16
<b>K1</b>	<b>0.0150882</b>	6.4e-05					1.00	-0.97	0.93	-0.88	0.01	-0.00
<b>K2</b>	<b>-0.0721246</b>	0.00031						1.00	-0.99	0.96	-0.00	-0.00
<b>K3</b>	<b>0.120292</b>	0.00058							1.00	-0.99	0.00	0.00
<b>K4</b>	<b>-0.0679343</b>	0.00037								1.00	-0.00	-0.00
<b>P1</b>	<b>-3.76059e-06</b>	2.1e-06									1.00	-0.04
<b>P2</b>	<b>-0.00035486</b>	2.1e-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)
3.47352	3.50845	37.0996	4.93706	37.4267

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 (mm)	Y error (mm)	Z error (mm)	XY error (mm)	Total (mm)
7	1.37665	0.957814	1.36646	1.67707	2.16328

Table 4. Control points RMSE.

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

<b>Label</b>	<b>X error (mm)</b>	<b>Y error (mm)</b>	<b>Z error (mm)</b>	<b>Total (mm)</b>	<b>Image (pix)</b>
1					
2	-2.40873	0.400445	-2.48093	3.481	0.447 (10)
3	0.816973	-0.357289	0.78266	1.18645	0.879 (6)
4	-0.801113	-0.501738	-0.257384	0.979678	0.204 (4)
5	1.49357	0.451575	-0.519438	1.64454	0.437 (2)
6					
7					
8	1.48372	-0.141326	1.80886	2.34379	0.442 (6)
9					
10	0.476533	1.72614	0.332569	1.82133	1.024 (6)
11	-1.22299	-1.63666	-1.6076	2.59976	0.833 (9)
12					
<b>Total</b>	<b>1.37665</b>	<b>0.957814</b>	<b>1.36646</b>	<b>2.16328</b>	<b>0.697</b>

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

# Digital Elevation Model

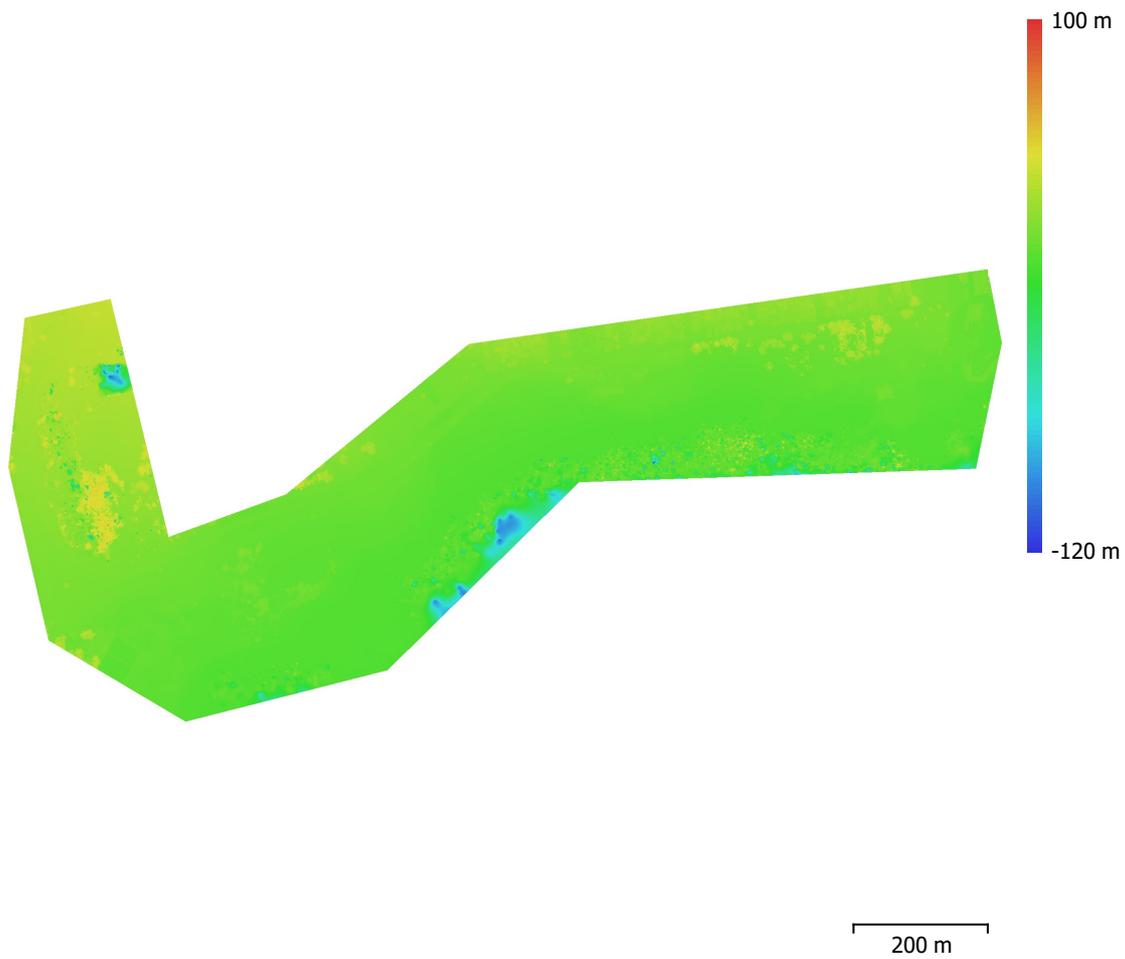


Fig. 5. Reconstructed digital elevation model.

Resolution: 6.41 cm/pix  
Point density: 244 points/m<sup>2</sup>

# Processing Parameters

## General

Cameras	209
Aligned cameras	209
Markers	12

## Shapes

Polygon	1
Coordinate system	WGS 84 / UTM zone 21S EGM08
Rotation angles	Yaw, Pitch, Roll

## Tie Points

Points	205,422 of 221,484
RMS reprojection error	0.183279 (0.729011 pix)
Max reprojection error	0.655318 (25.4378 pix)
Mean key point size	3.88516 pix
Point colors	3 bands, uint8
Key points	No
Average tie point multiplicity	4.07973

## 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	10 minutes 43 seconds
Matching memory usage	1.40 GB
Alignment time	1 minutes 0 seconds
Alignment memory usage	137.13 MB

## Optimization parameters

Parameters	b1, b2, cx, cy, k1-k4, p1, p2
Adaptive camera model fitting	Yes
Optimization time	2 seconds
Date created	2022:11:18 14:38:06
Software version	1.7.2.12070
File size	19.15 MB

## Depth Maps

Count	209
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## Depth maps generation parameters

Quality	High
Filtering mode	Mild
Processing time	54 minutes 54 seconds
Memory usage	2.85 GB
Date created	2022:12:01 12:22:12
Software version	1.7.2.12070
File size	1.14 GB

## Point Cloud

Points	132,573,336
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## Point attributes

Color	3 bands, uint8
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Normal	
Confidence	1 - 18
<b>Point classes</b>	
Created (never classified)	132,573,336
<b>Depth maps generation parameters</b>	
Quality	High
Filtering mode	Mild
Processing time	54 minutes 54 seconds
Memory usage	2.85 GB
<b>Point cloud generation parameters</b>	
Processing time	12 minutes 20 seconds
Memory usage	5.16 GB
Date created	2022:12:01 12:34:33
Software version	1.7.2.12070
File size	1.88 GB
<b>DEM</b>	
Size	35,834 x 19,077
Coordinate system	WGS 84 / UTM zone 21S EGM08
<b>Reconstruction parameters</b>	
Source data	Point cloud
Interpolation	Enabled
Processing time	8 minutes 28 seconds
Memory usage	309.46 MB
Date created	2022:12:02 09:42:00
Software version	1.7.2.12070
File size	859.89 MB
<b>Orthomosaic</b>	
Size	51,926 x 25,684
Coordinate system	WGS 84 / UTM zone 21S EGM08
Colors	3 bands, uint8
<b>Reconstruction parameters</b>	
Blending mode	Mosaic
Surface	DEM
Enable hole filling	Yes
Enable ghosting filter	No
Processing time	7 minutes 41 seconds
Memory usage	2.76 GB
Date created	2022:12:02 09:46:52
Software version	1.7.2.12070
File size	3.61 GB
<b>System</b>	
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)